



JANET T. MILLS
GOVERNOR

STATE OF MAINE
DEPARTMENT OF
ADMINISTRATIVE & FINANCIAL SERVICES
BUREAU OF GENERAL SERVICES
77 STATE HOUSE STATION
BURTON M. CROSS BUILDING
111 SEWALL STREET, 4TH FLOOR
AUGUSTA, MAINE 04333-0077

DEPARTMENT OF
ADMINISTRATIVE & FINANCIAL SERVICES
KIRSTEN LC FIGUEROA
COMMISSIONER

BUREAU OF GENERAL SERVICES
WILLIAM LONGFELLOW
BUREAU DIRECTOR

June 7, 2024

Ms. Karen Knuuti
Environmental Specialist
Bureau of Remediation and Waste Management
Maine Department of Environmental Protection
106 Hogan Road
Bangor, ME 04401

Subject: Application for Public Benefit Determination for the Proposed Expansion of the Juniper Ridge Landfill in Old Town

Dear Ms. Knuuti:

Enclosed please find the Maine Bureau of General Services (BGS) Application for a Determination of Public Benefit for a New or Expanded Solid Waste Disposal Facility (Application) to expand the Juniper Ridge Landfill in Old Town, Maine. The substance of the Application was prepared by Sevee & Maher Engineers, Inc. for BGS and NEWSME Landfill Operations, LLC (NEWSME), the Operator of Juniper Ridge Landfill. A Preliminary Investigation Report (PIR) was submitted to you on August 30, 2023, and you determined that the proposed expansion is environmentally feasible in a letter to NEWSME, dated November 6, 2023. BGS respectfully requests that the Maine Department of Environmental Protection approve the Application because it satisfies 38 M.R.S. § 1310-AA and all other applicable laws.

Additionally, please accept this letter as authorization for NEWSME to serve as the agent for BGS in regard to the Application being submitted. The contact at NEWSME is Jeffrey Pelletier, whose phone number is 207.862.4200 ext. 230 and mailing address is Pine Tree & Juniper Ridge Landfills, Casella Waste Systems, 358 Emerson Mill Road, Hampden, ME 04444.

Also, please accept this letter as authorization for the engineering firm of Sevee & Maher Engineers, Inc. to serve as a consultant to NEWSME in the review of this Application. The contact there is Lisa Turner, whose phone number is 207.829.5016 ext. 304 and mailing address is P.O. Box 85A, Cumberland, ME 04021.

Should you have questions about this letter, please do not hesitate to contact me.

Sincerely,

Lane Gould
Landfill Manager

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Solid Waste Program
 17 State House Station
 Augusta, Maine 04333-0017
 Telephone: (207) 287-2651

FOR DEP USE ONLY			
ATS ID: _____	Seq: _____	DEP ID: _____	Received by DEP: _____
Bureau: <u>S</u>	Type of Application: <u>W5</u>	Activity: <u>N</u>	Fees Paid: _____
Project Analyst: _____		Check No.: _____	

**APPLICATION FOR A DETERMINATION OF PUBLIC BENEFIT
 FOR A NEW OR EXPANDED SOLID WASTE DISPOSAL FACILITY**

This form shall be used to submit an application in conformance with the requirements of 38 M.R.S.A., Sections 1310-N-sub-3-A and 1310-AA, and Chapter 400, section 5 of the "Solid Waste Management Regulations". Please see Chapter 400, subsections 5.A and 5.B to determine if your facility is exempt from this determination or may employ a rebuttable presumption of public benefit.

PLEASE TYPE OR PRINT

Company Name: Maine Bureau of General Services **Telephone:** (207) 624-7345
 Applicant's Last Name: _____ First Name: _____
 Contact Person: Lane Gould Telephone: (207) 624-7345

Address Information

Applicant Name: <u>Maine Bureau of General Services</u>	Agent/Consultant Name: <u>NEWSME Landfill Operations LLC/ Sevee & Maher Engineers, Inc.</u>
Telephone: <u>(207) 624-7345</u>	Telephone: <u>(207) 624-7345 / (207) 829-5016</u>
Mailing Address: <u>77 State House Station</u>	Agent Mailing Address: <u>358 Emerson Mill Road</u>
Street Address: <u>111 Sewall Street, 4th Floor</u>	Street Address: <u>358 Emerson Mill Road</u>
Town: <u>Augusta</u> State: <u>ME</u> Zip: <u>04333</u>	Town: <u>Hampden</u> State: <u>ME</u> Zip: <u>04444</u>

Address: Billing

Name: <u>NEWSME Landfill Operations LLC</u>	Consultant Mailing Address: <u>P.O. Box 85A</u>
Mailing Address: <u>358 Emerson Mill Road</u>	Street Address: <u>4 Blanchard Road</u>
Street Address: <u>358 Emerson Mill Road</u>	Town: <u>Cumberland Center</u> State: <u>ME</u> Zip: <u>04021</u>
Town: <u>Hampden</u> State: <u>ME</u> Zip: <u>04444</u>	

Site/Activity Information

Project Description: Public Benefit Determination - New
 Location: 2828 Bennoch Road, Old Town, Maine, 04468 Directions: I-95 north to Exit 199. Take left onto Route 16 and first left onto Juniper Ridge Landfill Access Road

PLEASE SEE PAGE 2 - SIGNATURE REQUIRED

SIGNATURE OF APPLICANT

By signing this application, the applicant certifies that he or she has within 5 days prior to filing: (1) published the public notice form once in a newspaper circulated in the area where the project is proposed to be located, (2) sent a copy of the public notice form by certified mail to the owners of property abutting the land upon which the project is located, (3) sent a copy of the public notice form by certified mail to the chief municipal officer and chair of the municipal planning board of the municipality in which the project is located, (4) filed a complete copy of this application, including all supporting documents and amendments, with the appropriate town clerk, city clerk or, county commissioner of the municipality in which the project is located, and (5) reviewed the appropriate state laws that relate to the proposed project.

I certify that based upon my knowledge, experience, and the best available information, I believe the facility is not inconsistent with local, regional, or state waste collection, storage, transportation, processing, or disposal. I also certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I, the property owner or lessee, authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

DATE: 6/6/2024

NAME: 
(Applicant)

TITLE: Landfill Manager
(If other than applicant, attach letter of agent authorization.)

State of Maine DEP Payment Receipt

Contact Informa Darren Ward - 4 Blanchard Road, Cumberland, ME, 04021
(207) 240-8572
dward@smemaine.com

Billing Informati Darren Ward -
(207) 240-8572
dward@smemaine.com

Product	Reference Number	Customer Number	Payment Amount	Comments
Secure Landfill	New Application		\$710.00	Public Benefit Determination (W5), Juniper Ridge Landfill Expansion

Receipt ID: 5669

Transaction Date: 6/10/2024 1:31:32 PM

Transaction Summary	
Payment	\$710.00
Service Fee	\$2.00
Total	\$712.00

Thank you for your successful transaction.

If you have questions or concerns, please call (207) 287-7688

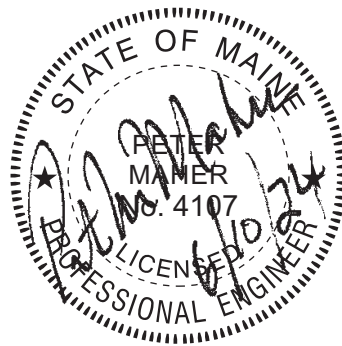
or Email: Payments.DEP@maine.gov

Print

APPLICATION FOR A DETERMINATION OF PUBLIC BENEFIT JUNIPER RIDGE LANDFILL EXPANSION

Prepared for

**MAINE BUREAU OF GENERAL SERVICES (OWNER)
AND
NEWSME LANDFILL OPERATIONS, LLC (OPERATOR)**



June 2024

4 Blanchard Road
P.O. Box 85A
Cumberland, Maine 04021

Tel: 207.829.5016 sme-engineers.com

SME 
SEVEE & MAHER
ENGINEERS

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EXECUTIVE SUMMARY

The Juniper Ridge Landfill (JRL) is a secure landfill located on a 780-acre parcel in Old Town and Alton, Maine. It is owned by the Maine Department of Administrative and Financial Services' Bureau of General Services (BGS) and is operated by NEWSME Landfill Operations, LLC (NEWSME) under a 30-year Operating Services Agreement (OSA), dated February 5, 2004. This application for a Public Benefit Determination (PBD) has been prepared pursuant to 38 M.R.S. §§ 1310-N(3-A) and 1310-AA, and Chapter 400, Section 5 of the Maine Department of Environmental Protection (MEDEP) Solid Waste Management Rules and is submitted as a precursor to a MEDEP solid waste license application to expand the current permitted footprint of JRL approximately 61 acres to the north on State-owned land (Expansion). The proposed Expansion would overlap the permitted landfill footprint and require construction of additional infrastructure, including roads, overhead electric utilities, pump stations, and stormwater detention ponds.

JRL provides disposal capacity for Maine-generated non-hazardous waste streams, including construction and demolition debris (CDD) and the associated processing residues, oversized bulky wastes (OBW), municipal solid waste (MSW) incinerator ash, multi-fuel boiler ash, bypassed MSW from waste-to-energy (WTE) and solid waste processing facilities, municipal and industrial wastewater treatment plant (WWTP) sludge, contaminated soils, non-friable asbestos in demolition waste, catch basin and grit screenings, and oil spill debris. Per the OSA, NEWSME is also required to continue to provide for the disposal of certain pulp and paper mill sludge and ash waste streams until February 4, 2034. The proposed Expansion provides Maine municipalities with a short- and long-term, cost-effective, environmentally secure disposal option for a wide variety of non-hazardous wastes.

MEDEP recently concluded that Maine needs the proposed Expansion. In the Maine Materials Management Plan: 2024 State Waste Management and Recycling Plan Update and 2022 Waste Generation and Disposal Capacity Report (Materials Management Plan), which is provided in Appendix A, MEDEP stated that "the expansion of Juniper Ridge Landfill in Old Town will be necessary to ensure there is adequate capacity for the entire State of Maine over the next ten years."¹ The Material Management Plan was prepared by the MEDEP in accordance with 38 M.R.S. § 2122 for the Joint Standing Committee on the Environment and Natural Resources of the 131st Legislature (January 2024). Likewise, in a December 15, 2023 report prepared for the MEDEP regarding biosolids management in Maine, an Evaluation of Biosolids Management in Maine and Recommendations for the Future (Biosolids Report), which is included in Appendix B, consulting firm Brown and Caldwell concluded "[i]f JRL is not expanded, the state faces a dire situation for solid waste generally in Maine."² With respect to biosolids, the same report noted that "there is no current or proposed alternative outlet in the state that would be able to

¹ Materials Management Plan, page 3.

² Biosolids Report, page 2.

accept the tonnage currently handled at JRL,” which it stated was nearly 90 percent of the biosolids generated in Maine.³

There are approximately only five years of remaining capacity at JRL, as discussed in more detail in Section 1.6. The landfill capacity available statewide, an evaluation of the landfill capacity used annually, and projections of future landfill capacity that will be needed, are discussed in Section 2. The projections provided in Section 2 are based on various factors that impact solid waste disposal, including the uncertain future operations of Maine’s WTE and solid waste processing facilities, and demonstrates that additional capacity at JRL will be needed over the next ten to eleven years to meet the state’s solid waste disposal needs. This is in line with the Materials Management Plan that notes that “even with capacity available statewide for the next ten years, unless significant progress is made in ensuring that the state has existing or new infrastructure for waste processing and disposal, as well as enhancing waste diversion programs, landfill capacity will become an even more pressing issue in 15 years.”⁴

As discussed in Sections 2 thru 5, the proposed Expansion will meet the following standards outlined in Chapter 400, Section 5.E, of the MEDEP’s Maine Solid Waste Management Rules:

- Provides immediate, short-term, or long-term capacity needs of the State;
- Is consistent with the State Waste Management and Recycling Plan and promotes the solid waste management hierarchy;
- Is not inconsistent with local, regional or state waste collection, storage, transportation, processing or disposal; and
- Is not inconsistent with ensuring environmental justice for the community in which the facility is proposed.

JRL is an integral part of Maine’s solid waste management system and the proposed Expansion will provide a needed resource to address future waste disposal demands at the local, regional, and State level. The proposed Expansion at JRL will provide a substantial public benefit in accordance with 38 M.R.S. § 1310-AA(3).

³ Biosolids Report, page 2.

⁴ Materials Management Plan, page 41.

**APPLICATION FOR A DETERMINATION
OF PUBLIC BENEFIT
JUNIPER RIDGE LANDFILL EXPANSION**

1.0 SITE HISTORY AND BACKGROUND

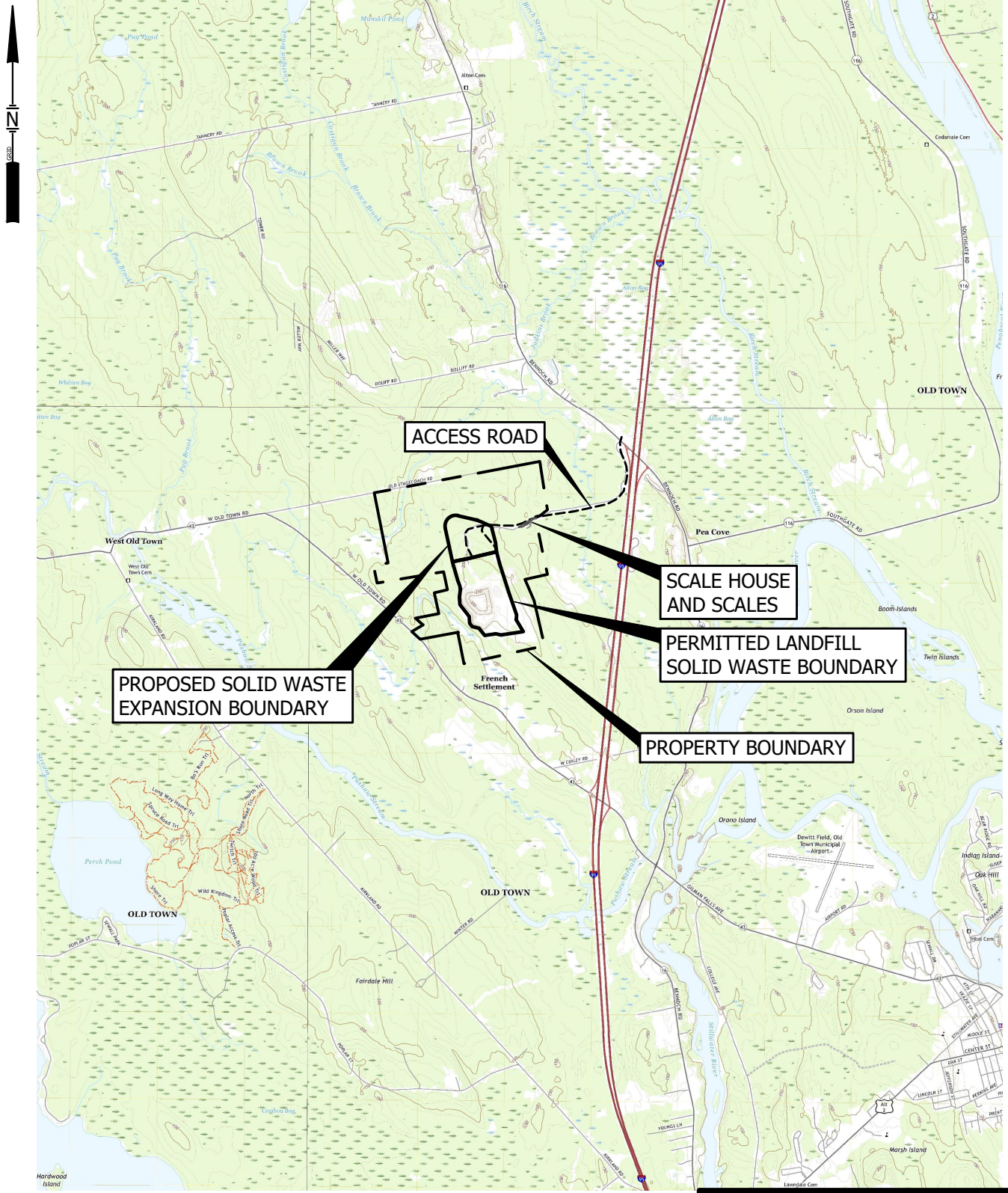
1.1 History of Site Permits and Filings

BGS, the owner of JRL, and NEWSME, the operator of JRL, have prepared this PBD application to expand the landfill beyond the permitted footprint and provide additional disposal capacity for Maine’s solid waste.

JRL is sited on a 780-acre parcel located in Old Town and Alton southwest of Route 16 and north of Route 43, as shown on Figure 1-1. The Site consists of a permitted 121.5-acre secure landfill, maintenance buildings, an aboveground glass-lined leachate storage tank, five primary leachate/leak detection pump stations, an additional three leak detection pump stations, six sedimentation/detention ponds, a permitted till borrow pit and clean wood waste storage facility, access roads, and an active landfill gas extraction system and landfill gas flare. The landfill gas that is extracted contains hydrogen sulfide gas, which is removed on-site using a Thiopaq® system that was installed in 2014. The Thiopaq® system scrubbing tower removes sulfur to meet the facility’s air license requirement and has a removal efficiency of approximately 95 percent. Currently the facility is processing roughly 3,000 standard cubic feet per minute (scfm) of landfill gas, which is flared on-site. The facility was designed to handle 5,000 scfm at 0.5 percent volume of H₂S. A new renewable natural gas (RNG) facility was permitted by a third party in 2022. Construction of the RNG facility started in 2023 and is expected to begin operation in 2024. The RNG facility will convert the landfill gas that has been cleaned by the Thiopaq® system to pipeline quality biomethane that is interchangeable with fossil-based natural gas.

The Site was originally selected through a comprehensive site search, initiated by James River Paper Company Inc. (James River) in 1988, that involved the identification and evaluation of over 58 potential landfill sites within a 20-mile radius of the Old Town papermill. JRL was originally permitted in 1993 and operated by James River. The permit was for approximately 68 acres and provided 3.3 million cubic yards (MCY) of capacity. The State of Maine purchased JRL in 2004 from the Fort James Operating Company, the successor of James River. On February 5, 2004, the State of Maine and Casella Waste Systems (CWS), through its wholly-owned subsidiary, NEWSME, entered into an OSA for operation of the Site. A copy of the OSA is provided in Appendix C.

The MEDEP previously issued a Determination of Environmental Feasibility for the same footprint of the currently proposed Expansion on April 13, 2007, as provided in Appendix D. Following the Determination of Environmental Feasibility, a PBD was submitted in 2011 to expand JRL an additional 115 acres. At that time, however, MEDEP determined that the entire 115-acre footprint was not yet necessary to meet the



BASE MAP ADAPTED FROM 7.5 MIN
USGS TOPOGRAPHIC QUADRANGLE
OLD TOWN, MAINE-2021

FIGURE 1-1
SITE LOCATION
PUBLIC BENEFIT DETERMINATION
JUNIPER RIDGE LANDFILL EXPANSION
OLD TOWN, MAINE



NOT TO SCALE

DWG: SITELOC LMN: SITELOC-EXPANSION CTB: SME-STD.CTB REV: 10/24/2023

\\nserv\cds\Casella\OldTownLandfill\Expansion\2022 Phase 2 Expansion\Acad\Figures\SITELOC.dwg, FIG 1-1, 10/24/2023 2:15:18 PM, sjm

solid waste disposal needs of the State of Maine and in 2012 the MEDEP Commissioner granted a partial approval PBD (provided in Appendix E) for only 54 acres. The most recent expansion at the Site pursuant to that PBD was then approved in 2017 to provide an additional 9.35 MCY of disposal capacity to meet the State of Maine’s long-term solid waste disposal needs. This increased JRL’s permitted solid waste footprint by 54 acres to 121.5 acres. The facility’s solid waste license is provided in Appendix F. The proposed Expansion that is the subject of this application is now intended to complete the full build-out initially sought in 2011 at JRL by approving the remaining 61 acres of landfill footprint.

As emphasized by MEDEP in the Materials Management Plan, JRL’s capacity is expected to run out in approximately five years.⁵ The remaining capacity at JRL is discussed in more detail in Section 1.6. JRL accepted 834,363 tons of waste in 2023 (i.e., approximately 1,017,500 cubic yards (CY) at an average compaction factor of 0.82 tons per CY⁶) and has averaged 860,771 tons annually over the past five years. As stated in the Materials Management Plan, “Maine appears to have adequate capacity for at least ten years before several landfill facilities reach their capacity. *This assumes however that an expansion license application is both received by and approved by the Department for the JRL facility.*”⁷ To meet the short-term and long-term solid waste disposal needs of the State of Maine identified by MEDEP, BGS, and NEWSME propose to expand JRL’s current permitted solid waste footprint by approximately 61 acres to increase the waste disposal capacity by 11.9 MCY.

NEWSME submitted a Preliminary Information Report (PIR) for the proposed Expansion to the MEDEP on August 30, 2023. The MEDEP completed review and issued a Determination of Environmental Feasibility on November 6, 2023, as provided in Appendix G. The PIR met the requirements outlined in Chapter 400.1.E and demonstrated that the proposed Expansion would not be located in an area that was prohibited under the siting criteria outlined in Chapter 401.1.C(2) and would satisfy the restrictive siting criteria of Chapter 401.1.C(3).

This application for a PBD is the next step in the approval process for the proposed Expansion. The standards for the PBD are set forth in 38 M.R.S. § 1310-AA and in Section 400.5 of the Solid Waste Management Rules. The applicable provisions state that to determine that the proposed facility provides a substantial public benefit, the Commissioner must find that:

- The facility meets the immediate, short-term, or long-term capacity needs of the State;
- The facility is consistent with the state waste management and recycling plan and promotes the solid waste management hierarchy;

⁵ Materials Management Plan, page 34.

⁶ Based on compaction factor three year running average used to prepare the end of year landfill capacity remaining estimated for December 2023.

⁷ Materials Management Plan, page 41 (emphasis added).

- The facility is not inconsistent with local, regional, or state waste collection, storage, transportation, processing, or disposal; and
- The facility is not inconsistent with ensuring environmental justice for the community in which the facility is proposed.

These standards are addressed in the following sections and appendices of this report.

1.2 General Project Description

The proposed Expansion will increase the solid waste footprint of the landfill by approximately 61 acres (from 121.5 acres to 182.5 acres), as shown on Figure 1-2. The southern portion of the proposed Expansion will abut and overlie the north slope of the existing permitted landfill. The proposed Expansion will not exceed the facility's current permitted peak elevation of 390 feet-Mean Sea Level or exterior sideslope grades of 3 horizontal to 1 vertical. The waste disposal capacity of the Landfill will increase by approximately 11.9 MCY from approximately 19,944,000 CY to approximately 31,844,000 CY. The projected operating life of the proposed Expansion is approximately 11.3 years based on a 5-year annual waste acceptance average (2019-2024) of 860,771 tons per year placed with a compaction factor of 0.82 tons per cubic yard.

The proposed Expansion will allow for continued disposal of in-state CDD, OBW, front-end process residue (FEPR), bypass MSW, ash, WWTP sludge, contaminated soil, and other non-hazardous waste streams. Historic landfill operations at JRL have demonstrated that the comingled wastes received for disposal are compatible with the engineered primary and secondary liner systems.

1.3 Facility Description

The existing landfill has been designed and constructed as a secure waste disposal facility. The groundwater beneath and adjacent to the Site is protected by a composite liner and a leachate collection system. Leachate generated in the landfill is collected, stored in an aboveground glass-lined leachate storage tank, and transported off-site for treatment and disposal.

To date, Cells 1, 2, 3A, 3B, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15 (totaling 108.4 acres) of the permitted 121.5-acre solid waste footprint have been constructed, with only Cells 16 and 17 remaining to be constructed. The Cell 1 secure liner consists of 24 inches of compacted glacial till and an 80-millimeter (mil) high-density polyethylene (HDPE) geomembrane. The secure liner for Cell 2 consists of 24 inches of compacted glacial till, a geosynthetic clay liner (GCL), and an 80-mil HDPE geomembrane. The secure liner for Cell 3 through Cell 10 consists of 24 inches of compacted clay, a GCL, and an 80-mil HDPE geomembrane.

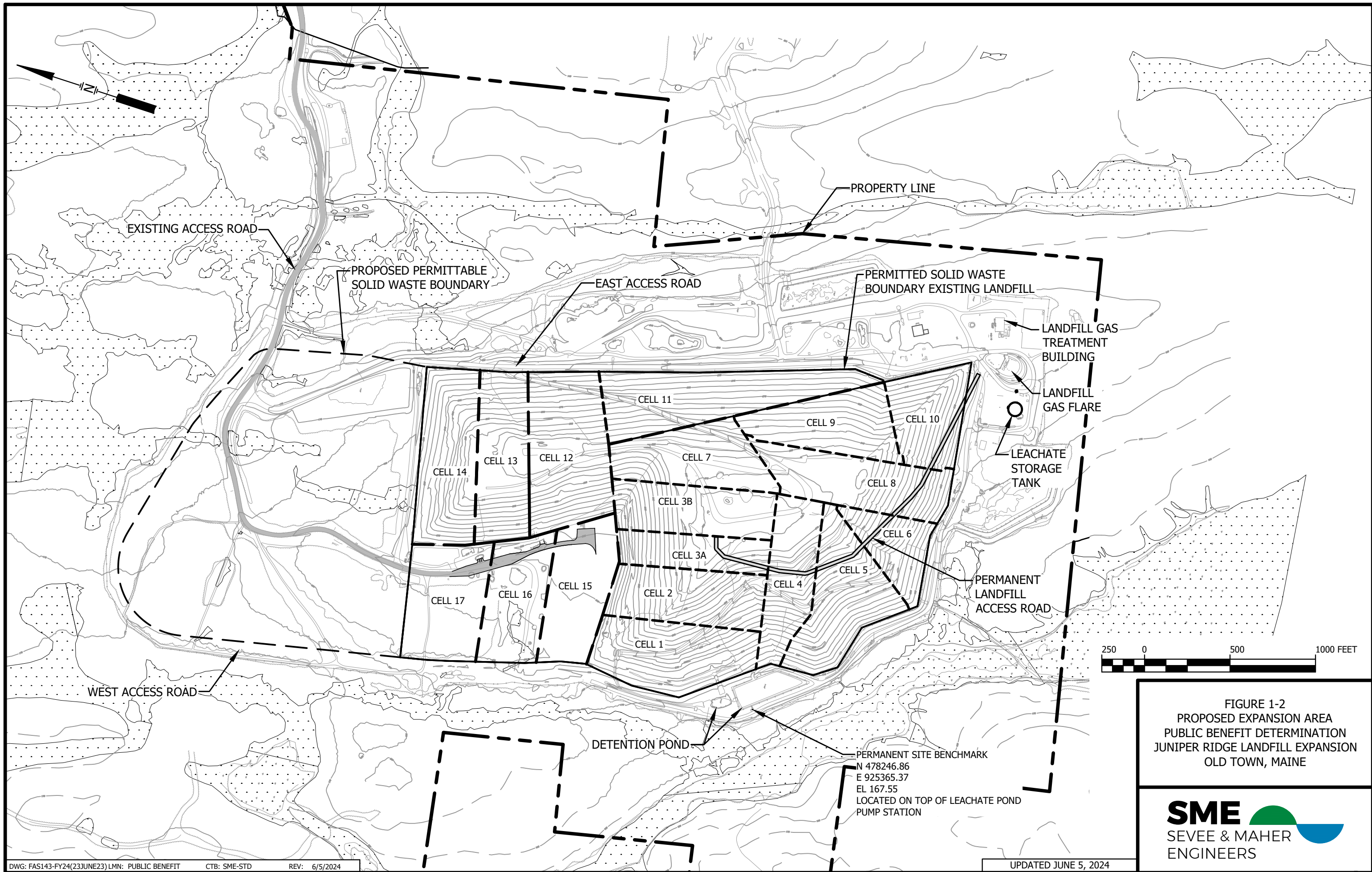


FIGURE 1-2
 PROPOSED EXPANSION AREA
 PUBLIC BENEFIT DETERMINATION
 JUNIPER RIDGE LANDFILL EXPANSION
 OLD TOWN, MAINE



PERMANENT SITE BENCHMARK
 N 478246.86
 E 925365.37
 EL 167.55
 LOCATED ON TOP OF LEACHATE POND
 PUMP STATION

Cell 11 through Cell 15 are constructed with primary and secondary liner systems. The primary liner system is located beneath the leachate collection system and consists of (from bottom to top) 12 inches of compacted clay, GCL, and an 80-mil HDPE textured geomembrane. The secondary liner system is located beneath the leak detection system and consists of (from bottom to top) 12 inches of compacted clay and a 60-mil HDPE textured geomembrane. In areas where the base grades of Cells 11 and 15 are closer than 5 feet to bedrock, the secondary liner is augmented with a layer of GCL and an additional 12 inches of compacted clay. Cell 16 is scheduled to be constructed in 2024, using the same liner system as Cells 11 through 15. A portion of Cell 16 will have augmented liner, as originally permitted. The final cell of the currently permitted area, Cell 17, is scheduled to be constructed in 2026.

Nine acres of final cover were placed on the southeast corner of the landfill in 2023. The final cover system (from top to bottom) consists of 18 inches of vegetative cover soil, 250-mil drainage geocomposite, 40-mil linear low-density polyethylene (LLDPE) textured geomembrane, GCL, and a 12-inch compacted till barrier layer. Slope terraces with a minimum berm height of 1.5 feet were constructed every 75 feet (horizontally) on the final cover slope to control stormwater and convey runoff to riprap-lined downspouts and ultimately to the stormwater detention ponds. Approximately 9.5 acres of final cover is scheduled to be placed during the 2024 construction season. The remaining slopes of the inactive portion of the landfill are covered with HDPE intermediate cover or soil and grass.

The proposed Expansion will be designed for phased operations and will consist of landfill cells sized to provide capacity for approximately one to two years each based upon an estimate of the facility's future waste disposal requirements. Leachate from the cells will be conveyed to the aboveground glass-lined storage tank via the existing dual containment force main. The proposed Expansion's phased development will sequence waste and cover placement, control run-on and runoff in accordance with the facility's Stormwater Management Plan, manage leachate generation, protect the liner system, and maintain overall landfill stability, all while providing much-needed landfill capacity to the State of Maine.

1.4 Maine Counties that Utilize JRL

As shown in Table 1-1 and on Figure 1-3,⁸ in 2023, customers from all sixteen counties in Maine utilized JRL. Waste disposed of at JRL included bypass MSW, wastewater treatment plant sludge, and residue from Maine WTE facilities and CDD wood processors. The proposed Expansion will allow JRL to continue to serve the entire State of Maine.

⁸ Information provided by NEWSME.

Legend

County Boundary

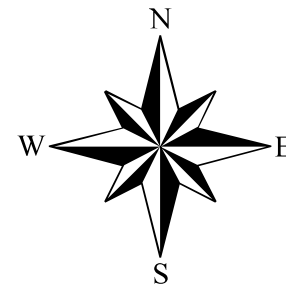
Waste Received by county at JRL in tons (2023)

0-50,000

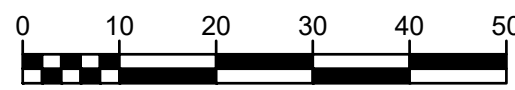
50,000 - 100,000

100,000 - 150,000

> 150,000



Juniper Ridge Landfill



Miles

FIGURE 1-3
COUNTIES SERVED BY
JUNIPER RIDGE LANDFILL IN 2023
PUBLIC BENEFIT DETERMINATION
JUNIPER RIDGE LANDFILL EXPANSION
OLD TOWN, MAINE



TABLE 1-1

WASTE RECEIVED AT JRL BY COUNTY IN 2023

County	Tons	% of Total Volume Disposed at JRL
Androscoggin	139,327	16.7
Aroostook	1,575	0.2
Cumberland	187,430	22.5
Franklin	8,622	1.0
Hancock	44,152	5.3
Kennebec	101,747	12.2
Knox	4,971	0.6
Lincoln	428	0.1
Oxford	3,477	0.4
Penobscot	198,712	23.8
Piscataquis	5,196	0.6
Sagadahoc	52,498	6.3
Somerset	357	0.0
Waldo	18,992	2.3
Washington	6,004	0.7
York	60,876	7.3
Total Waste Received (Tons)	834,363	100 %

1.5 Description of Waste Types Accepted for Disposal at JRL

This section provides an overview of the types of material accepted at JRL and the yearly quantity of materials accepted at the landfill since 2004.

1.5.1 Description of Current Waste Types

JRL is permitted to accept in-state, non-hazardous waste streams as identified in the facility’s solid waste license, which is provided in Appendix F, and summarized in Table 1-2. In addition, JRL can accept MEDEP-individually permitted wastes, licensed for ongoing disposal or for one-time events.

TABLE 1-2

SUMMARY OF WASTES ACCEPTED AT JUNIPER RIDGE LANDFILL

Air & Water Filtration Media	Laundry Sludge
Approved Land Utilization Wastes	Leather Scrap Waste
Asbestos (non-friable)	Manufacturing Wastes
Biomass Boiler Ash	Marijuana, Hemp & Invasive Plant Species
Biomedical Incinerator Ash	MSW (Bypassed from Maine WTE and solid waste processing facilities)
Burned RR ties & Associated Ash	MSW Incinerator Ash
Catch Basin Grit	Non-Hazardous Chemical Products
Clean Wood Open Burn Ash	Off-Spec Foods and Off-Spec Products
Construction & Demolition Debris	Oversized Bulky Wastes
Contaminated Soil	Pigeon Waste
Dead Animal Carcasses (on a case-by-case basis)	Pulp & Paper Mill Sludge
Dredged Spoils From Waterways	Sandblast Grit
Dried Paint Residue & Related Debris	Sulfur Scrubbing Residue
Filter Press Cake & Collagen Scrapings	Treated Biomedical Waste
Filter Medias – Ambient and Non-Ambient Sources	Urban Fill-Type Soils
Fossil Fuel Boiler Ashes	Virgin Petroleum Product Contaminated Debris
Gasoline Contaminated Soil & Debris Surface Spill	Waste Oil Contaminated Soil & Debris (Oily Debris)
Gasoline Contaminated Soil & Debris (Underground Storage Tank)	WWTP Sludge
Grit Screening Waste	Water Treatment Plant Sludge

The percentages of the primary waste streams relative to the average tonnage disposed of at JRL from 2020 to 2023 is shown below in parentheses:⁹

- CDD¹⁰ (38 percent);
- Bypass MSW¹¹ (25 percent);
- CDD Processing Fines (9 percent);
- Municipal/Industrial Wastewater Treatment Plant Sludge (10 percent);
- OBW (9 percent);
- Miscellaneous Waste¹² (4 percent);
- Ash (3 percent); and
- Non-Bypassed MSW (licensed only in the 2004 permitted footprint in 2020) (2 percent).

⁹ Information provided in JRL Annual Reports from 2020 to 2023.

¹⁰ Includes mixed CDD and wood from CDD.

¹¹ Bypassed MSW from household and commercial sources.

¹² Such wastes include contaminated soils, catch basin grit, oil spill debris, spoiled food, non-friable asbestos, and other non-hazardous waste.

In 2023, 51,022 tons of CDD processing fines¹³ and clean wood waste was recycled as alternative daily cover (ADC) in accordance with 38 M.R.S. § 1310-N(5-A)(B)(2). Between 2020 and 2023, an average of 80,029 tons of fines were used as ADC during landfill construction. In 2023, ADC represented approximately six percent of the material disposed of at JRL. If ADC materials were not available, virgin sand and gravel, which are not classified as waste, would instead be used as a daily cover material. ADC materials constitute an approved reuse of waste and preserves landfill capacity for materials that are classified as non-hazardous waste.

JRL is also permitted to accept material classified as special waste, as defined by 38 M.R.S. § 1303-C(34), which is any solid waste that exists in an unusual quantity or chemical state, or combination thereof “that may disrupt or impair effective waste management or threaten the public health, human safety or the environment, and requires special handling, transportation and disposal procedures.” Special waste includes, but is not limited to: ash, industrial and industrial process waste, WWTP grits and screenings and sludge, debris and residuals (including contaminated soil) from non-hazardous chemical spills, petroleum spills and cleanup of those spills. These waste volumes are included in JRL’s annual reporting to MEDEP, however, as noted in the Materials Management Plan, they are not included in the State’s estimate of MSW and CDD disposal.¹⁴

JRL does not accept out-of-state waste or hazardous waste.

1.5.2 Annual Quantity of Materials Accepted at JRL

The annual tonnage of material accepted at JRL from 2004, when it became a State-owned landfill, through 2023 is presented in Table 1-3 and has generally increased from approximately 54,000 tons in 2004 to approximately 834,000 tons in 2023.

¹³ CDD processing fines are generated by sorting/processing CDD.

¹⁴ Materials Management Plan, page 8 and Appendix B.

TABLE 1-3

ANNUAL TONNAGE ACCEPTED AT JRL

Calendar Year	Tons of Material
2004	53,905 ¹⁵
2005	252,314 ¹⁶
2006	525,758
2007	472,600
2008	617,782
2009	528,622
2010	708,198 ¹⁷
2011	703,880
2012	637,303
2013	606,254
2014	629,021
2015	631,762
2016	670,900
2017	702,529
2018	735,942
2019	818,457
2020	835,261
2021	882,124
2022	933,649
2023	834,363

1.6 Current JRL Capacity

As noted in JRL’s 2023 annual report that was submitted to the State in April 2024, JRL had an estimated remaining capacity of 5,356,397 CY as of December 31, 2023. The year-end estimate reported to MEDEP is based on scaled truck volumes in cubic yards that are converted to a tonnage based on the landfill’s airspace utilization factor, which represents the density of the waste once it has been compacted in-place. This is verified by an aerial survey that is performed in the summer when conditions are most ideal to estimate the in-place volume and is consistent with the reporting method noted in the Materials Management Plan.¹⁸ A figure showing the extent of the 2023 aerial survey is provided in Appendix H. Table 1-4 summarizes the estimated remaining developed and undeveloped capacity for the years 2021 to 2023 based on aerial surveys and end of year waste volume estimates.

¹⁵ The OSA was signed in February 2004; first year of operation by NEWSME was a continuation of the same waste streams that had been accepted previously while the landfill was still largely being used for the Old Town papermill. Thus, 2004 was not representative of the expected operations at JRL from a volume standpoint.

¹⁶ 2005 operations were limited to a “sludge-mixing” trial.

¹⁷ The amount and type of material accepted at JRL in 2010 reflected the first full year of closure of the Pine Tree Landfill (PTL). Many of the Maine-generated waste streams previously disposed at PTL were sent to JRL for disposal.

¹⁸ Materials Management Plan, page 31.

TABLE 1-4

JRL ANNUAL ESTIMATED REMAINING CAPACITY

Year	Total Remaining Capacity (CY)
2021	7,294,907
2022	6,332,172
2023	5,356,397

As illustrated in Table 1-4, the remaining permitted capacity was as of December 31, 2023 was approximately 5.36 MCY based on the most recent aerial survey performed in June 2023. As a result, the current capacity in the permitted landfill footprint is anticipated to run out in 2028, five years from now, assuming an annual waste acceptance rate of 860,771 tons per year placed with a compacted factor of 0.82 tons per cubic yard.

The in-place waste compaction and long-term settlement rates at JRL will impact the remaining capacity at any point in time. Maximizing compaction of the waste mass at JRL requires managing the placement of incoming waste, which varies. Favorable waste compaction is currently being achieved at JRL through the use of two primary compactors capable of handling the daily tonnage with a spare that can be utilized if needed. The compactors travel over waste that is typically placed in lifts of five to ten feet and on average each compactor can process 1,200 to 1,500 tons of waste per day.

1.7 Influences on JRL Waste Disposal Rates Since the 2017 Expansion and Potential Influences on Future JRL Waste Disposal Rates

As noted above, NEWSME submitted a PBD in 2011 for a 21-MCY expansion to provide sufficient capacity for the disposal of Maine-generated waste and meet the waste disposal obligation to the mills in Old Town for the OSA term.¹⁹ The MEDEP Commissioner partially approved the 2011 PBD for 9.35 MCY, as noted in Appendix E, as this was thought to be the capacity necessary using projected annual fill rates in 2004 to provide long-term capacity and meet the State’s solid waste disposal needs. There are several factors, however, that have resulted in more waste being disposed of at JRL since the previous PBD approval, including changes in Maine legislation, reduced capacity at solid waste processing and WTE facilities, and the impact of non-recurring waste streams. These factors have combined to consume the permitted capacity faster than MEDEP initially anticipated, thus necessitating the proposed Expansion sooner than expected. The impact of these factors and their potential impact to future waste disposal rates are discussed below.

¹⁹ The JRL OSA requires NEWSME to maintain a reserve annual capacity for 50,000 tons of wastes from Old Town Fuel and Fiber (and their successors) for the full term of the contract.

1.7.1 Changes in Maine Legislation

One of the key factors causing the rate of disposal at JRL to increase is recent legislation. In the summer of 2020, sampling of retail milk showed elevated levels of perfluoroalkyl and polyfluoroalkyl substances (PFAS). This led to a statewide investigation by the Maine Department of Agriculture, Conservation, and Forestry.²⁰ In 2021, MEDEP began actively sampling sites that had previously been approved for the land application of wastewater sludge to determine the presence of PFAS compounds. In 2021, the Maine Legislature amended Maine’s Superfund Law so that should the U.S. Environmental Protection Agency (U.S.EPA) list PFAS as hazardous under the federal Superfund Law, PFAS will also be a hazardous substance under Maine law.²¹

The concern regarding PFAS led to the passage of LD 1911²² in April 2022, which prohibited the MEDEP from issuing new licenses or granting authorization to apply or spread sludge and septage at any location in the State. The law also allowed for the “disposal or placement at a solid waste landfill of any of the materials that are prohibited from application, spreading, sale or distribution.” This has increased landfill disposal of wastewater sludge and, in turn, also created a need for OBW, which is mixed with the sludge during landfill placement to provide bulking and achieve the adequate physical characteristics needed for safe landfilling. In 2020, the MEDEP noted 25,000 tons of sludge had been land applied and 7,000 tons of sludge processed by the Hawk Ridge Composting Facility in Unity, Maine. With the passage of LD 1911, this sludge needed to be diverted to JRL for disposal. Using a 4 to 1 mixing ratio for OBW and sludge, which is a generally accepted industry standard, receiving the additional sludge at JRL requires approximately 128,000 tons of OBW (or similar material) annually, significantly decreasing the anticipated immediate- and short-term life of the permitted landfill area.

Although admittedly unpredictable, there is no indication that the legislative ban on disposal of sludges will be lifted in the near future nor are there currently economically feasible alternative methods for the disposal of sludge containing PFAS. As a result, placement in a secure landfill like JRL is likely to be the preferred method for managing PFAS-laden sludge for the immediate- and short-term, and potentially the long-term, as well, since JRL has become Maine’s fastest and most economical solution for handling emerging solid waste issues.²³ As stated previously, in 2022, JRL accepted nearly 90 percent of the

²⁰Fairfield-Area PFAS Investigation, Maine Department of Environmental Protection, <https://www.maine.gov/dep/spills/topics/pfas/fairfield/index.html#:~:text=The%20investigation%20began%20after%20the,dairy%20farm%20in%20June%202020.>

²¹ 38 M.R.S. § 1362(1)(C). EPA promulgated a rule earlier this year designating two types of PFAS, perfluorooctanoic acid and perfluorooctanesulfonic acid, as hazardous substances. 89 Fed. Reg. 39124 (May 8, 2024).

²² 38 M.R.S. §§ 1304(20) & 1306(7).

²³ Materials Management Plan, page 41.

biosolids generated in Maine²⁴ and “there is no current or proposed alternative outlet in the state that would be able to accept the tonnage currently handled at JRL,” according to a study for MEDEP.²⁴

In April 2022, the Legislature passed LD 1639²⁵ classifying certain waste processing facility residue as “out of State waste” if the residue volume exceeds the total volume of in-state waste processed by the facility in the calendar year. This directly impacted the Resource Lewiston processing facility (Resource), which scaled back operations, reducing the volume of OBW generated, since out of State waste cannot be placed in JRL. The law took effect on February 1, 2023, and by February 23, 2023, the increased sludge disposal at JRL due to LD 1911 and a shortage of bulking material due to LD 1639 resulted in JRL temporarily stopping sludge acceptance and diverting sludge to other disposal locations due to landfill stability concerns.

The emergency passage of LD 718²⁶ in June 2023 mitigated the impacts of LD 1639 by allowing additional bulking material to be accepted at JRL. Specifically, a facility like Resource is permitted until July 1, 2025, to dispose of residues equal to the total weight of residue it collects that was initially generated in-state, plus 25,000 tons, in any twelve month period. This legislation temporarily provides JRL with the bulking material needed to place sludge properly and safely for disposal as it is received and provides time to determine if an alternative sludge bulking material is available in large enough volume for daily use. If sludge volumes remain consistent with 2020 through 2023 data, based on the average volume of sludge accepted in those years, JRL anticipates receiving approximately 83,200 tons of municipal and industrial sludge per year. At the 4 to 1 mixing ratio noted above, this would require 332,800 tons of OBW, if OBW were to be the sole bulking material at JRL. However, JRL does not receive a large enough volume of OBW to bulk with OBW alone. For this reason, a combination of OBW, CDD, and other less effective/inconsistently available bulking materials (e.g., bypass MSW) is used. It should also be noted that not all CDD that is received at the landfill is available to be mixed with sludge. CDD is a high-strength waste that is typically placed on the landfill side slopes to maintain stability. Due to these limitations, JRL staff have had to rely on bypass MSW to help fill the gaps.²⁶ BGS and JRL are not aware of any business that is likely capable of handling this volume, and are conservatively planning that immediate and short-term landfill capacity will be needed for sludge disposal until a new solution is identified to manage sludge containing PFAS.

²⁴ Biosolids Report, page 2.

²⁴ Biosolids Report, page 2.

²⁵ 38 M.R.S. § 1303-C(40-A).

²⁶ BGS has issued a Request for Qualifications for a consultant to perform a study to determine if there will be sufficient and consistent amounts of bulking agent available to support continued acceptance of the current levels of municipal biosolids and other wet wastes at the Juniper Ridge Landfill after July 1, 2025. 38 M.R.S. § 1310-N(5-A).

1.7.2 Municipal Review Committee Solid Waste Processing Facility

Another factor that has led to increased disposal at JRL is the ongoing need to landfill bypass MSW from the inoperable processing facility in Hamden, Maine. In 2017, the Municipal Review Committee, Inc. (MRC), an organization of 115 Maine municipalities, received a license from the MEDEP to develop a new solid waste processing facility to manage the waste generated in those communities. A copy of the license is provided in Appendix I. The facility was designed to accept and manage 650 tons of MSW from the MRC per day, but it has been idle since May 2020. During the time when the facility was not operating, MRC's bypass MSW was diverted to a combination of WTE facilities and landfills, including JRL.²⁷ Bypass MSW sent to JRL from MRC has increased from 1,170 tons in 2019 to 61,280 tons in 2023, as shown on Table 1-5.

TABLE 1-5
ANNUAL TONNAGE OF MSW SENT TO JRL FROM MRC

Calendar Year	Tons of Material
2019	1,170
2020	8,358
2021	17,547
2022	20,385
2023	61,280

Notes:
¹ Information provided by NEWSME.

The MRC formed Municipal Waste Solutions, LLC (MWS) in 2022 in order to purchase the processing facility.²⁸ In June 2023, MWS announced a partnership with Innovative Resource Recovery (Innovative), a materials management company, to resume solid waste processing at the Hampden facility.²⁹ The slides from MRC's December 2023 Annual Meeting noted construction upgrades were scheduled in 2024 and the facility would be restarted in 2025.³⁰ JRL will continue to receive bypass MSW until it begins operations. Once operations resume, MSW will still be bypassed from the facility during maintenance and unscheduled outages. Given the challenges of starting up an idle disposal facility, it is anticipated that the MRC/Innovative bypass MSW will continue to require a landfill such as JRL for disposal whether the MRC/Innovative facility is operational or not. Actual bypass MSW and residue volumes will not be known until the facility resumes operations.

²⁷ Materials Management Plan, page 35.

²⁸ Materials Management Plan, page 35.

²⁹ Municipal Review Committee and Innovative Resource Recovery Join Forces as Co-Owners of Municipal Waste Solutions' Hampden Facility (June 30, 2023), <https://www.mrcmaine.org/wp-content/uploads/2023/06/Innovative-Announcement-6.30.2023.pdf>.

³⁰MRC Annual Meeting Minutes, December 6, 2023, slide 18.

1.7.3 Penobscot Energy Recovery Company WTE Facility (now known as Eagle Point Energy Center LLC (EPEC))

Likewise, reduced operations at the WTE facility formerly known as Penobscot Energy Recovery Company (PERC), located in Orrington, Maine, have also led to increasing rates of disposal at JRL. PERC originally served nearly 200 municipalities and is permitted to accept 310,000 tons of MSW annually to produce electricity for sale on the electrical grid. PERC’s disposal and power purchase agreements expired in 2018. The expiration of the agreements, combined with a diversion of solid waste to the then new MRC facility and other operational factors, resulted in reduced operations at PERC and prolonged maintenance shutdowns. In 2020, the boiler operating time was reduced, resulting in an operational reduction in waste incineration capacity to 210,000 tons per year.³¹

The facility produced several types of residue that required disposal in a secure landfill, including bypass MSW, FEPR, and ash. Bypass MSW sent to JRL from PERC increased from 24,079 tons in 2018 to 185,329 tons in 2023 when the facility was not operating or operating at a reduced capacity due to maintenance/operational issues, as shown on Table 1-6.

TABLE 1-6
ANNUAL TONNAGE OF MSW SENT TO JRL FROM PERC

Calendar Year	Tons of Material
2018	24,079
2019	36,352
2020	94,249
2021	180,454
2022	171,658
2023	185,329

Notes:
¹ Information provided by NEWSME.

PERC significantly reduced operations in May 2023 and a foreclosure auction for the facility was scheduled for July 2023. The auction was postponed three times and in September 2023 the facility shut down. Since the September 2023 shutdown of PERC, all bypass MSW, including MRC bypass MSW, has been sent to JRL for disposal.³² The facility was auctioned to the new owner, which announced the facility, now known as EPEC, planned to resume waste processing by the end of 2023; however, as of the date of this

³¹ Materials Management Plan, page 30.

³² JRL currently accepts swap tonnage as provided in an agreement between the MRC and Pine Tree Waste, Inc. (“Pine Tree”) through which MRC member communities’ bypass MSW is delivered to JRL while equivalent tonnage that otherwise would be delivered by Pine Tree to JRL is instead delivered by Pine Tree to Crossroads. This swap arrangement helps to lessen transportation costs to MRC member communities.

submission, that has not occurred.³³ It is unclear whether or when the facility will reach full processing capacity and it is likely some bypass MSW will continue to be disposed of at JRL in the immediate future. Further, even if EPEC operates successfully, it will require an option for bypass MSW during maintenance and unscheduled outages, just as with other WTE facilities.

1.7.4 Non-recurring Waste Streams and Natural/Manmade Disasters

In recent years, JRL has seen an increase in disposal tonnage due to non-recurring waste streams and unusual events. Non-recurring waste streams may include but are not limited to on-time large demolition projects and the relocation of other unlined landfills to JRL. Unusual events can include natural/manmade disasters (e.g., hurricanes, tornados, floods, ice storms, oil spills, etc.) that generate large amounts of CDD or non-hazardous special wastes. These events are unpredictable and can significantly impact waste disposal capacity rates at JRL.

Over the course of 2022 and 2023, the City of Old Town relocated approximately 50,100 CY of CDD from its unlined CDD landfill in Old Town to JRL for disposal. The transfer of waste decreased the City's potential liability associated with the unlined CDD landfill, while placing the waste in a landfill with a secure liner system. This is an example of the type of unplanned event that requires capacity in a secure landfill like JRL. Prudent planning for the future requires having capacity available in the State's landfill for similar events.

1.7.5 Other Maine Landfills

Another element that contributes to the rate of disposal at JRL is the statutory ban on new commercial landfills in Maine. As the existing municipal landfills reach capacity, or if any of the currently operating generator-owned landfills close prematurely, the need for additional State-wide disposal capacity would accelerate and likely influence the need for disposal capacity at JRL. Likewise, if the proposed Expansion was *not* authorized, because of the ban on new commercial landfills, the State would need to identify how to dispose of the approximately 880,000 tons per year of waste that is estimated to go to JRL under current conditions.

The Brunswick landfill closed in 2021. The Hatch Hill landfill in Augusta has applied for an expansion, but even with the expansion it may reach its capacity by 2034.³⁴ According to the Maine Materials Management Plan:

³³ Weidmayer, Marie, Orrington incinerator will restart by end of year with new name, Bangor Daily News, November 27, 2023.

³⁴ Materials Management Plan, page 41.

Statewide, other than the issue specific to Maine’s Eastern Maine region, Maine appears to have adequate capacity for at least 10 years before several landfill facilities reach their capacity. This assumes however that an expansion license application is both received by and approved by the Department for the JRL facility. As of the date of this report, the Department has received a PIR from JRL for a future expansion. The loss of JRL as a disposal facility would create catastrophic capacity issues as it receives over 50 percent of all material landfilled in Maine annually.³⁵

1.8 Host Community Agreement

As operator of the JRL, NEWSME has entered into a host community agreement with the City of Old Town and a community benefit agreement with the Town of Alton that provides significant financial benefits to each municipality. A copy of the host community agreement and community benefit agreement is provided in Appendix J and Appendix K, respectively. NEWSME also pays a State disposal fee on certain materials that are disposed of at the landfill, which in 2023 amounted to approximately \$3 million dollars. As shown in Table 1-7, in 2023, JRL host community and neighborhood benefits to the City of Old Town and the Town of Alton was approximately \$2.6 million dollars. NEWSME provides a number of direct economic benefits to neighbors living in the immediate proximity of JRL, including property tax reimbursement and a property value guarantee and this is included in the total shown in Table 1-7. NEWSME and JRL are also a major employer in the Old Town area, as daily operations and construction development at the Site utilizes many local contractors and vendors. These host benefit and community benefit arrangements will continue with the proposed Expansion.

³⁵ Materials Management Plan, page 41.

TABLE 1-7

JUNIPER RIDGE LANDFILL COMMUNITY AND NEIGHBORHOOD BENEFITS AND STATE DISPOSAL FEES

Year	City of Old Town Total Benefit	Town of Alton Total Benefit	Landfill Neighbors Total Benefit ⁽¹⁾	State Disposal Fee	Total
2023	\$2,335,071	\$292,049	\$168,409	\$3,095,063	\$5,890,592
2022	\$2,528,537	\$285,123	\$166,779	\$1,948,349	\$4,928,788
2021	\$2,407,085	\$252,180	\$155,611	\$2,037,257	\$4,852,133
2020	\$2,316,721	\$225,067	\$176,658	\$1,963,726	\$4,682,172
2019	\$2,047,615	\$212,620	\$182,805	\$1,934,400	\$4,377,440
2018	\$1,937,021	\$184,997	\$179,021	\$1,639,400	\$3,940,438
2017	\$1,474,699	\$172,828	\$179,563	\$1,518,421	\$3,345,510
2016	\$1,359,471	\$158,841	\$222,304	\$1,405,883	\$3,146,499
2015	\$1,186,312	\$140,312	\$340,770	\$1,285,625	\$2,953,019
2014	\$1,235,822	\$85,083	\$179,814	\$1,358,485	\$2,859,204
2013	\$1,022,361	\$76,268	\$202,604	\$739,728	\$2,040,961
2012	\$1,222,787	\$89,333	\$325,132	\$480,837	\$2,118,089
2011	\$1,481,009	\$91,833	\$170,101	\$523,125	\$2,266,068
2010	\$1,485,840	\$96,076	\$164,905	\$585,565	\$2,332,386
2009	\$1,174,433	\$74,823	\$656,415	\$625,591	\$2,531,262
2008	\$1,188,251	\$87,639	\$408,351	\$980,905	\$2,665,146
2007	\$971,449	\$63,814	\$909,054	\$718,793	\$2,663,110
2006	\$1,089,024	\$63,984	\$442,032	\$606,947	\$2,201,987
2005	\$203,290	\$15,014	\$632	\$191,027	\$409,963
2004	\$78,452	\$0	\$295,500	\$123,627	\$497,579
Total	\$28,745,251	\$2,667,884	\$5,526,458	\$23,762,754	\$60,702,347

Notes:

¹ Not requirements under the Town of Alton or the City of Old Town Agreements.

2.0 PROJECT PURPOSE AND NEEDS

2.1 Project Purpose

The proposed Expansion provides a significant public benefit by meeting Maine’s short-term (five-year) and long-term (ten-year) solid waste disposal needs. As noted throughout the Materials Management Plan, significant changes in Maine’s solid waste landscape, including the idling of EPEC (formerly PERC) in 2023, the continued idling of the MRC/Innovative waste processing facility in Hampden, and the ban on land application of WWTP sludges have resulted in increased landfill disposal of bypass MSW and sludge.³⁶ The landfill will continue to provide a place for disposal of sludge and for JRL to comply with the OSA provision to provide disposal capacity for the Old Town paper mill, currently owned by Nine Dragons Paper Holdings Limited (known as ND Paper; formerly Old Town Fuel and Fiber), as needed, through 2034.

The short-term and long-term disposal needs of the State and the projected landfill capacity required to meet those needs are discussed in the remainder of this Section.

2.2 Maine’s Available Capacity for Solid Waste Disposal at Landfills

There are eight landfills licensed by the MEDEP to accept Maine’s MSW and MSW bypass.³⁷

Four landfills are municipally owned and used primarily for the disposal of MSW and CDD generated within their specific regions. These landfills include: Bath, Hatch Hill (located in Augusta), Presque Isle, and Tri-Community (located in Fort Fairfield). As noted in the January 2023 Maine Solid Waste Generation and Disposal Capacity Report for Calendar Years 2020 and 2021 (Capacity Report), the combined remaining capacity of these facilities as of 2021 was 2,303,572 CY.³⁸ A copy of the Capacity Report is provided in Appendix L. A total of 140,018 tons was disposed of in these four landfills in 2022.³⁹

Two landfills are used primarily for the disposal of residue, including ash, from two WTE facilities.⁴⁰ The Lewiston Landfill is municipally owned and primarily accepts residue from the Mid-Maine Waste Action Corporation (MMWAC) WTE facility, which serves mid-coast communities. The ecomaine WTE facility in Portland is owned and operated by regional entities, and the residue from the facility is sent to its own landfills located in South Portland and Scarborough. The combined remaining landfill capacity for these two facilities as of 2021 is 1,328,969 CY.⁴¹

³⁶ Materials Management Plan, pages 13 and 41.

³⁷ Materials Management Plan, page 30.

³⁸ Capacity Report, Table 10, page 21.

³⁹ Materials Management Plan, Table 12, page 32.

⁴⁰ Prior to the facility shutdown residue ash from the EPEC facility was sent to JRL.

⁴¹ Capacity Report, Table 10, page 21.

The Crossroads Landfill, located in Norridgewock, is a private commercial landfill owned and operated by Waste Management, Inc. (WM), a solid waste management company. An expansion of 7,757,000 CY was approved in May 2021, increasing the remaining capacity as of December 31, 2021, to 8,533,231 CY and extending the life of the landfill from two years to approximately 19 years.⁴² WM started using the recently licensed space in 2023.⁴³

The State also owns the undeveloped Carpenter Ridge Landfill, which is located outside of Lincoln and has a design capacity of 1,800,000 CY.⁴⁴ It is unlikely that this will be developed within the lifetime of the proposed Expansion for JRL, and thus we do not anticipate that this capacity will be available in the immediate-, short-term, or long-term. Further, the current license for Carpenter Ridge only authorizes disposal of special wastes and thus, even if it were available, it could not accept MSW, MSW bypass, or CDD.

As noted in the JRL's 2023 annual report, JRL had an estimated remaining capacity of 5,356,397 CY as of December 31, 2023. The Capacity Report noted the combined remaining permitted landfill disposal capacity of the eight active landfills was approximately 19.5 MCY at the end of 2021.⁴⁵ The Materials Management Plan notes the volume utilized in 2018 through 2022⁴⁶ and the remaining statewide landfill capacity as of 2022 is summarized in Table 2-1.

In addition to the landfills noted above, there are 19 municipally-owned smaller facilities (generally less than 6 acres in size) that accept wood waste and CDD.⁴⁷ There are also seven generator-owned and operated landfills, which by definition support the disposal of waste generated by the owner of the landfill (i.e., pulp and paper landfills), as shown on the list of MEDEP-approved active landfills provided in Appendix M. These landfills serve a limited geographic area and are not licensed or equipped to serve the State's needs. The wastes disposed at these generator-owned landfills are not discussed in the Materials Management Plan update.⁴⁸ A few small municipally-operated landfills that only accept CDD are expected to close within the next five years. The closure of these landfills will have a minimal impact on the State's future disposal capacity due to the limited amount of waste they are currently receiving.⁴⁹

⁴² Capacity Report, pages 21-22.

⁴³ Materials Management Plan, page 34.

⁴⁴ Materials Management Plan, page 36.

⁴⁵ Capacity Report, Table 10.

⁴⁶ Materials Management Plan, page 32.

⁴⁷ Materials Management Plan, page 30.

⁴⁸ Materials Management Plan, page 30.

⁴⁹ Capacity Report, page 24.

TABLE 2-1

AVAILABLE DISPOSAL CAPACITY AS OF 2022

Landfill Location	Landfill Capacity Available at end of 2021 (CY)	Landfill Capacity Used in 2022 (Tons)	Landfill Capacity Used in 2022 ⁵ (CY)	Landfill Capacity Remaining at End of 2022 (CY)
Municipal Landfills ¹	2,303,572	198,578 ³	248,223	2,055,350
Ash Landfills ¹	1,328,969	64,277 ³	80,346	1,248,623
Commercial Landfill ¹	8,533,231	301,175 ³	376,469	8,156,762
State-Owned Landfill ²	7,294,907	933,649 ⁴	962,735	6,332,172
Total Landfill Capacity Currently Permitted	19,460,679	1,497,679	1,667,773	17,792,907
<p><u>Notes:</u></p> <p>¹ Remaining capacity for municipal, ash, and commercial landfills is provided in Table 10 of the 2020/2021 Capacity Report and Table 12 and page 34 of the 2022 Materials Management Plan.</p> <p>² Remaining capacity based on annual survey. The quantity reported to MEDEP for 2018 thru 2022 did not include the developed capacity in Cell 11 thru Cell 17 and this was revised in the 2022 annual report submitted in April 2023.</p> <p>³ Based on Table 12 and page 34 of the 2022 Materials Management Plan.</p> <p>⁴ Remaining capacity for State-Owned Landfill based on JRL annual reporting.</p> <p>⁵ Converting tons to cubic yards using 0.8 tons per cubic yard based on previously reported data for municipal landfills and self-reported value for state-owned landfill.</p> <p>⁶ The JRL OSA requires 50,000 tons of annual capacity be reserved for wastes from the Old Town paper mill, currently owned by ND Paper, thru 2034.</p>				

Accordingly, Maine’s permitted landfill capacity to serve the needs of the State as of the end of 2022 was approximately 17.8 MCY as shown in Table 2-1.

2.3 Maine’s Solid Waste Disposal Needs

The annual quantity of MSW and CDD in Maine that required disposal at either a WTE facility or landfilled in 2022 was 1,547,594 tons⁵⁰ as summarized in Table 2-2.

There are three WTE facilities in Maine that are licensed to accept both in-state and out-of-state MSW for solid waste disposal.⁵¹ These facilities divert some waste from landfills, but still generate residues, including ash, that require landfill disposal, as discussed in Section 2.2. There is also one processing facility, MRC/Innovative, that is licensed to provide solid waste disposal. The facility operated for a short period of time in a limited capacity and during that period bypass MSW was sent to JRL.⁵² The facility’s solid waste license, which is provided in Appendix I, notes that diversions of 20 to 30 percent are expected due to MSW bypass and materials that are not able to be processed by the facility.

⁵⁰ Materials Management Plan, Table 7, page 23.

⁵¹ Materials Management Plan, page 29.

⁵² Materials Management Plan, page 35.

TABLE 2-2

ANNUAL DISPOSAL CAPACITY NEEDED (BASED ON 2022 DATA)

Disposal Required	Annual Capacity Needed (Tons)
Annual MSW Requiring Disposal at a Landfill or WTE ¹	952,520
Maine Generated CDD ²	595,074
MSW and CDD Requiring Disposal at a Landfill or WTE	1,547,594
MSW Disposed of via WTE	(382,609)
Disposed of Out-of-State ³	(67,565)
MSW and CDD Requiring Landfill Disposal	1,097,420
<p><u>Notes:</u></p> <p>¹ Maine generated MSW (exclusive of CDD) disposed of in landfills, at WTE facilities or exported out-of-state as noted in the Materials Management Plan. Excludes MSW that is recycled, composted, or anaerobically digested.</p> <p>² CDD disposed of in-state, out-of-state, or used as landfill daily cover, shaping, or grading material as noted in the Materials Management Plan. Excludes CDD that is recycled into new wood products or beneficially used as fuel.</p> <p>³ Includes MSW and CDD disposed out-of-State.</p>	

The quantity of MSW and CDD that requires landfill disposal each year, excluding solid waste diverted to WTE and processing facilities, is 1,097,420 tons.

The volume of MSW and CDD, excluding waste that is recycled or beneficially reused, has increased from 2018 to 2022 as shown in Table 2-3.

TABLE 2-3

CHANGE IN MSW AND CDD DISPOSAL FROM 2018 TO 2022

	2018	2019	2020	2021	2022	
Maine MSW landfilled in state	371,682	403,644	408,967	460,128	515,474	
Maine MSW disposed via waste-to-energy	434,652	420,687	441,804	365,941	382,609	
Maine MSW disposed out-of-state	16,947	19,764	89,046	77,591	54,437	
Tons MSW Generated (Excluding Waste that is Recycled/Beneficially Reused)	823,281	844,095	939,817	903,660	952,520	
MSW Generated % Change (Year over Year)		2.53%	11.34%	-3.85%	5.41%	Annual Average 3.86%
Mixed CDD disposed in state	412,783	440,336	481,050	485,238	505,282	
Mixed CDD disposed out-of-state	1,495	1,423	4,736	4,424	13,128	
Processed CDD sent to a landfill for daily cover, shaping, grading	14,603	16,335	13,828	15,392	76,664	
Total CDD Generated (Excluding Waste that is Recycled/Beneficially Reused)	428,881	458,094	499,614	505,054	595,074	
CDD Generated % Change (Year over Year)		6.81%	9.06%	1.09%	17.82%	Annual Average 8.70%
Tons MSW and CDD Disposed (Including materials landfilled and used for cover shaping and grading)	1,252,162	1,302,189	1,439,431	1,408,714	1,547,594	
MSW and CDD Disposed % Change (Year over Year)		4.00%	10.54%	-2.13%	9.86%	Annual Average 5.56%
Notes:						
1 2018 and 2019 MSW values from previously issued state reports. ⁵³						
2 2020 and 2021 MSW values from Table 1 and CDD values from Table 2 of the Capacity Report.						
3 2022 value from Table 7 of the Materials Management Plan.						

⁵³ Maine Solid Waste Generation and Disposal Capacity Report for Calendar Years 2018 and 2019, prepared by the MEDEP for the Joint Standing Committee on the Environment and Natural Resources of the 130th Legislature (January 2021), Table 1 and Table 2, pages 4 and 5.

The projected immediate, short-term, and long-term projected solid waste disposal needs of the state are presented in Table 2-4.

TABLE 2-4
PROJECTED DISPOSAL CAPACITY NEEDED

Disposal Required	Required Immediate Capacity 2023 -2025 (Tons)	Required Short Term Capacity 2023 - 2027 (Tons)	Required Long Term Capacity 2023 - 2032 (Tons)
MSW and CDD requiring disposal at a landfill or WTE	5,182,458	9,139,183	21,140,446
MSW and CDD diverted from landfill ¹	1,413,203	2,564,549	5,790,965
CDD and MSW Requiring Landfill Disposal (Tons)	3,769,255	6,574,634	15,349,481
Total Landfill Capacity Needed ² (CY)	4,711,569	8,218,292	19,186,851
Remaining Statewide Landfill Capacity (CY)	13,081,337	9,574,615	-1,393,944
<p><u>Notes:</u></p> <p>¹ Disposed of at either a WTE facility or exported out-of-state.</p> <p>² The JRL OSA reserves an annual capacity for 50,000 tons of wastes from ND Paper until the OSA expires in 2034. Estimates after the OSA expires include an additional 50,000 tons of available capacity.</p> <p>³ Waste weight to volume conversion factor of 0.80 tons per cubic yard based on previously reported tonnage and airspace utilization for municipal and state owned landfills.</p>			

In sum, Table 2-4 projects a shortage in landfill capacity in less than ten years. These projections are based on the following assumptions that may or may not occur:

- The State maintains a consistent recycling rate of 34 percent. The recycling rate, however, has decreased since the previous Expansion was approved in 2017 due to the impact of changes in global polices. Newly proposed legislation aimed at improved and expanded recycling (e.g., extended producer responsibility legislation) is intended to keep the recycling rate from declining further, but that impact is uncertain. Improved recycling rates could also reduce the volume of MSW requiring landfill disposal, which would also increase available capacity; however, combined MSW, CDD, and organics recycling decreased from an average of 27.7 percent for 2018 and 2019⁵⁴ to 24.46 percent in 2022.⁵⁵ A further decrease may likely be observed in 2023 and 2024 as biosolid organics are now being diverted to landfills for disposal, changed economics of recycling have caused many municipalities in Maine to consider curtailing or eliminating their programs, and decreased market values have caused some towns that operate facilities which collect source-

⁵⁴ Maine Solid Waste Generation and Disposal Capacity Report for Calendar Year 2018 & 2019, page 11.

⁵⁵ Materials Management Plan, page 23.

separated materials to stop collecting mixed plastics, redirecting this recycling stream to disposal.⁵⁶ This further reduces state-wide recycling rates.

- The annual amount of waste generated within the state, excluding waste that is recycled or beneficially reused, has increased an average of 5.6 percent from 2018 to 2022. This is consistent with the observed average increase of 5.1 percent from 2018 to 2022 for all MSW and CDD noted in the Materials Management Plan.⁵⁷ As noted in the Materials Management Plan, since 2018, the total amount of waste landfilled, including waste shipped to out-of-state landfills, has increased.
- Future quantities of exported waste remain similar to the average of the data reported from 2020 to 2022 with no growth rate applied. The volume of MSW exported from Maine increased notably from 2019⁵⁸ to 2020 and 2021⁵⁹ due to changes in legislation prohibiting the land application of PFAS containing sludge. The volume of exported sludge decreased slightly in 2022.⁶⁰ Likewise, sludge disposal at JRL increased as a result of 2022 legislation addressing PFAS-contaminated sludge and disposal of OBW. As noted in the Materials Management Plan “The use and type of sludge bulking material is generally landfill-specific and can consist of various types of wastes like CDD (including bulky wastes), ash, and soil, although bulky wastes are preferred.”⁶¹ PFAS volume reduction and destruction technologies are currently being evaluated across the country. These technologies are relatively new and the return to agronomic utilization is likely several years in the future and will not provide a short-term solution for Maine’s landfill capacity challenges. Until these technologies become viable and scaled to work in Maine, landfill capacity will need to be managed to include disposal of sludges and necessary bulking materials.⁶² The volume of exported CDD is much lower in comparison and is more consistent year over year.
- Operation of ecomaine and the Lewiston WTE facilities continues at the existing mix of tonnages (out-of-state waste, processing residues, etc.) with no increases to permitted capacity. The growth rate is not applied since the maximum annual capacity of processing facilities is permitted by the MEDEP.
- The immediate projected landfill capacity is based on the MRC/Innovative facility processing fifty percent of its annual capacity in 2025 and 2026 with the residues generated requiring landfill disposal. The short and long-term projection is based on the facility processing seventy percent of the MSW accepted with 30 percent of its volume being sent to landfills as residues as noted in

⁵⁶ Materials Management Plan, page 24.

⁵⁷ Materials Management Plan, page 26.

⁵⁸ Maine Solid Waste Generation and Disposal Capacity Report for Calendar Years 2018 and 2019, Report to the Joint Standing Committee on the Environment and Natural Resources, 130th Legislature, First Session, January 2021, pages 4 and 5.

⁵⁹ Capacity Report, page 6.

⁶⁰ Materials Management Plan, page 23.

⁶¹ Materials Management Plan, page 12.

⁶² Materials Management Plan, page 13.

the MRC solid waste license.⁶³ The 5.6 percent growth is applied to the three-year average of the bypass MSW to estimate the increased amount of MSW received for processing. The MRC/Innovative facility plans to begin operations at some level in 2025. As noted in Section 1, MRC/Innovative has not operated since May 2020. Construction improvements are scheduled for 2024 and operations are reportedly expected to resume in 2025.⁶⁴ The facility has only operated for a short period of time and there are no published records on the solid waste volumes processed by the facility during previous operations. The processing capacity of the facility is approximately 180,000 tons per year.⁶⁵ When the facility resumes operations, it will not operate at full capacity right away.

- The EPEC facility begins operations at some level in the next several years. The projected landfill disposal capacity needed in the immediate future is based on EPEC processing at 50 percent for the immediate and short term, through 2025. After this time, the processing rate is increased to sixty percent of the 210,000 tons permitted capacity, which is the average of what was processed in 2018 and 2019 before the facility began experiencing operational issues. The 5.6 percent growth rate is applied to estimate the increased amount of MSW received for processing. The new owners of the EPEC facility (formerly known as PERC) have announced that the facility plans to start processing MSW mid-January 2024,⁶⁶ though the expected interim processing rate is unknown. The quantity of bypass MSW sent to JRL from the facility increased from 94,249 tons in 2020 to 180,454 tons in 2021⁶⁷ after the boilers' operating time was reduced. This equates to the facility processing fifty percent of the MSW received as shown in the Materials Management Plan.⁶⁸ EPEC has indicated intentions to replace one boiler in Q1, and another between Q1 and Q2, 2025
- The projection assumes full reliance on the Crossroads Landfill to handle the entire State's disposal needs is not feasible, realistic, or consistent with providing cost effective disposal and transportation for solid waste disposal.
- There is no significant change in municipally-operated landfills (i.e., closures or changes in waste acceptance rates).

As suggested by the above evaluation, the solid waste market is unpredictable and dynamic. MSW is a commodity and estimates of capacity or life beyond five to ten years may change, as waste stream amounts can vary significantly from year to year as generators and haulers seek more cost-effective

⁶³ MRC solid waste license, page 29.

⁶⁴ MRC Annual Meeting Minutes, December 6, 2023, slide 18.

⁶⁵ MRC Annual Meeting Minutes, December 6, 2023, slide 18.

⁶⁶ Weidmayer, Marie, Relief from Greater Bangor's trash crisis could come in 2024, Bangor Daily News, December 28, 2023.

⁶⁷ Information provided by NEWSME.

⁶⁸ Materials Management Plan, Table 10, page 29.

facilities landfills change their operations, and customers generate more or less waste that requires disposal.⁶⁹ Most of these variables are beyond JRL's control.

The projections show that capacity from the proposed Expansion is needed in the long-term. In addition, as noted in Section 1, as of June 2023, JRL has approximately five years of remaining capacity. The time needed by the MEDEP to process and review the application (and process potential appeals) could result in the proposed Expansion capacity not being available for several years. During this time, the remaining state-wide landfill capacity is reduced annually, as shown in Table 2-2. An estimated permitting and development schedule for the proposed Expansion is presented in Figure 2-1.

As recognized in the Biosolids Report, this capacity problem separately exists specifically for sludge management, as well. The report's authors recognized that the last expansion at JRL took years to permit and build and stated that without the additional capacity from an expansion at JRL, "the state faces a dire situation." The authors even went so far as to recommend that "the State work with [Casella] to ensure that an application [to expand JRL] is submitted as soon as possible."⁷⁰ It concludes that expansion is critical – if JRL were not expanded, "there will be no Maine landfill with enough capacity to meet solid waste needs and much of the biosolids produced will need to be sent out of state and greatly increased cost for utilities and ratepayers." Thus, for sludge, there could be a shortage of capacity as soon as 2028, if JRL were not expanded.

As noted, there is uncertainty regarding the operation of the MRC/Innovative and EPEC facilities as both require maintenance before full-scale operations can resume. If one or both facilities become operational, they would provide additional MSW disposal capacity and reduce the amount of MSW bypass requiring disposal at JRL, however both facilities have had significant challenges for several years and those challenges may not be resolved within the life of the proposed Expansion. Table 2-5 outlines the state-wide landfill disposal need in the event these facilities remain inoperable and landfill capacity is needed for disposal of residues. The available state-wide landfill capacity would be exhausted in year nine under this scenario. Further, even if both facilities were to operate a full capacity, they will still need a place to send their residuals and MSW bypass, and JRL can fulfill that need, as well.

⁶⁹ Materials Management Plan, page 27.

⁷⁰ Biosolids Report, page 4.

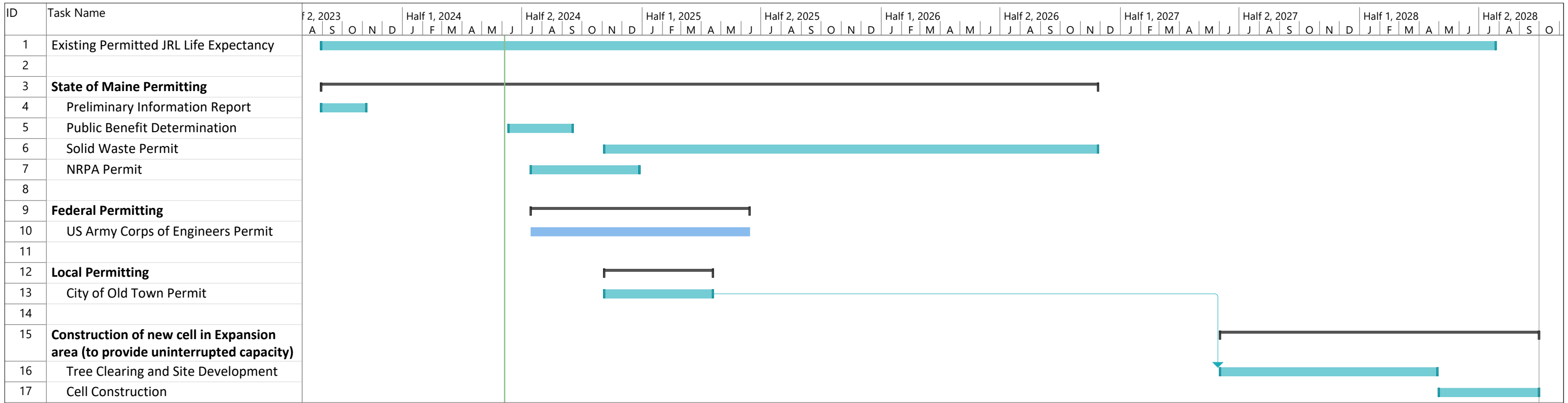


FIGURE 2-1
Juniper Ridge Landfill Proposed Expansion - Permitting and Development Schedule

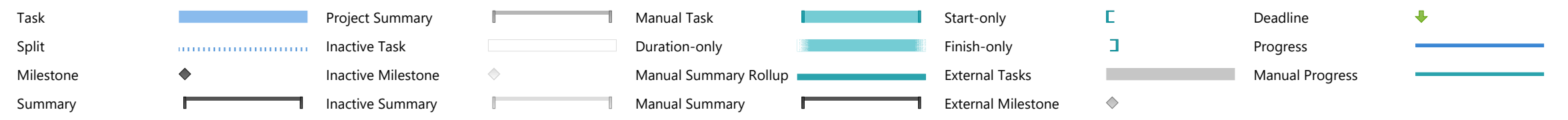


TABLE 2-5

PROJECTED DISPOSAL CAPACITY NEEDED EXCLUDING EPEC AND MRC/INNOVATIVE

Disposal Required	Required Immediate Capacity 2023 -2025 (Tons)	Required Short-Term Capacity 2023 - 2027 (Tons)	Required Long-Term Capacity 2023 - 2031 (Tons)
MSW and CDD requiring disposal at a landfill or WTE	5,182,458	9,139,183	18,471,768
MSW and CDD diverted from Maine landfills ¹	966,548	1,610,913	2,899,643
CDD and MSW requiring Landfill disposal (Tons)	4,215,911	7,528,270	15,572,125
Total Landfill capacity needed ² (CY)	5,269,889	9,410,338	19,465,157
Remaining statewide Landfill capacity (CY)	12,523,018	8,382,568	-1,672,250
<p>Notes:</p> <p>¹ Disposed of at either a WTE facility or exported out-of-state.</p> <p>² The JRL OSA reserves an annual capacity for 50,000 tons of wastes from ND Paper until the OSA expires in 2034. Estimates after the OSA expires include an additional 50,000 tons of available capacity.</p> <p>³ Waste weight to volume conversion factor of 0.80 tons per cubic yard based on previously reported tonnage and airspace utilization for municipal and state-owned landfills.</p>			

Table 2-5 projects a significant shortage in landfill capacity in approximately nine years. As noted previously, this does not account for the time needed to permit the proposed Expansion. These timeframes (for immediate, short, and long) are compressed because, as a practical matter, the permitting for these projects requires several years from the beginning of the licensing process to the end when construction and operation are allowed to take place.⁷¹ Further, the State’s capacity needs should be judged in a practical way by what is needed to have a fully-functioning state-wide solid waste management system, not by the date when an environmental catastrophe would be created because of a shortfall (meaning, a complete inability to properly dispose of some portion of waste supply). This obviously requires planning ahead and authorizing more capacity before a shortfall is reached.

The presence of multiple landfills that serve the entire state provides a measure of competition for waste disposal. If JRL were not permitted to expand, there would be substantially less competition, thereby raising the risk that disposal prices could increase. This is particularly true when one considers that JRL provided capacity for over 50 percent of the material landfilled in Maine annually.⁷² From 2018 to 2022 an average of 61 percent of the MSW and CDD generated within the State, excluding material that was recycled or beneficially reused, was disposed of at JRL. The proposed Expansion provides an additional disposal option for waste that could not be accepted elsewhere or that is accepted at only a few facilities state-wide. The proposed Expansion also provides capacity for when emerging solid waste issues occur.⁷³ In addition, Maine law bars development of new commercial landfills, and thus the future needs can only be met by expanding the existing facilities.

⁷¹ Materials Management Plan, page 42.
⁷² Materials Management Plan, page 41.
⁷³ Materials Management Plan, page 41.

concentrationThe Materials Management Plan noted that Maine’s landfill capacity appears adequate for the next 15 years (but this is assuming that the JRL facility is licensed for expansion), and after that time period landfill capacity will be quite limited.⁷⁴ As shown in Tables 2-4 and 2-5, based on current and anticipated disposal and recycling rates, it is estimated that 19.2 MCY to 19.5 MCY of state-wide landfill capacity will be required over the next nine to ten years after which time state-wide landfill capacity will be exhausted. The proposed Expansion at JRL of 11.9 MCY is a public benefit and provides the landfill capacity necessary to meet the short-term and long-term solid waste disposal needs of the State.

⁷⁴ Materials Management Plan, page 49.

3.0 CONSISTENCY WITH THE STATE'S SOLID WASTE MANAGEMENT AND RECYCLING PLAN AND PROMOTION OF THE SOLID WASTE HIERARCHY

Section III, Part A of the Materials Management Plan presents two hierarchies included in Maine statute to provide guidance in solid waste management decision making. First, the solid waste management hierarchy outlined in 38 M.R.S. § 2101 set as a State policy an integrated approach to solid waste management prioritizing waste handling as follows (from most desirable option to least desirable option): (1) reduction of waste generated at the source, including both amount and toxicity of the waste; (2) reuse of the waste; (3) recycling of waste; (4) composting of biodegradable waste; (5) waste processing that reuses the volume of waste needing land disposal, including incineration; and (6) land disposal of waste. Second, Maine's food waste hierarchy provides additional guidance and prioritizes reducing surplus food generation at the source, donating surplus food to feed hungry people, diverting food scraps for use as animal feed, composting of food scraps and diversion to waste utilization technologies to create fuels and recover energy, and finally, land disposal or incineration of food scraps.⁷⁵

The proposed Expansion is consistent with this integrated approach to solid waste management. The proposed Expansion supports recycling efforts by providing a location to dispose of un-processible residues from the State's volume reduction and recycling programs and serves as a back-up when those facilities are not operating. The landfill provides a location for material that cannot be safely used as feed for WTE facilities or composted, such as sludge containing PFAS.

The remainder of this section demonstrates how the proposed Expansion is consistent with the Materials Management Plan and an integral part of the State's solid waste management infrastructure. Specific information is provided on facilities and programs run by CWS that support the Materials Management Plan's recycling and source reduction objectives and minimize the amount of material requiring disposal at JRL and other disposal facilities within the State. This section also summarizes BGS programs and efforts to support the solid waste hierarchy.

3.1 Waste Characterization and Solid Waste Infrastructure Use

Data contained in the Capacity Report, the Materials Management Plan, and the 2022 JRL Annual Report quantify how Maine managed its MSW tonnage in 2020 through 2022.⁷⁶ As shown on Table 3-1, JRL provided a significant amount of the required disposal capacity for both MSW and the residues associated with the State's WTE and solid waste processing facilities. JRL handled the equivalent of 12 percent, 16 percent, and 19 percent of the total unprocessed MSW generated in the State in 2020, 2021, and 2022, respectively. This is significant considering that JRL does not typically accept direct disposal of MSW,⁷⁷

⁷⁵ Materials Management Plan, page 19, 20, 52, and 53.

⁷⁶ Statewide data is not currently available for 2023.

⁷⁷ In 2020 JRL received 55,470 tons non-bypass MSW for disposal in the old footprint as part of the last extension of the facilities MSW permit for the landfill footprint permitted in 2004.

other than bypass MSW and residues from Maine’s WTE and processing facilities, and CDD processing residue. As discussed in Section 1, increases in MSW disposed at JRL are mainly due to bypass MSW accepted from communities served by MRC/Innovative and EPEC while both facilities remain inoperable. Further, if one or both of those facilities is to start-up in the future and operate consistently, it will require a place to dispose of its residues and bypass MSW, and thus it will require access to a landfill.

TABLE 3-1
MANAGEMENT OF MAINE’S MSW AND PERCENTAGE OF LANDFILLED MSW
DISPOSED OF AT JRL

Maine Generated MSW	2020 ¹ (Tons)	2021 ¹ (Tons)	2022 ² (Tons)
Total MSW Generation	1,424,391	1,362,598	1,439,218
Recycled/Reused	484,574	458,938	486,698
Disposed via WTE ³	441,804	365,941	382,609
Landfilled in State	408,967	460,128	515,474
Disposed of out-of-state	89,046	77,591	54,437
MSW Disposed of at JRL ⁴	166,336	221,926	276,619
JRL Disposal as percentage of Total MSW	12%	16%	19%
Notes: ¹ Capacity Report, Table 1. ² Materials Management Plan, Table 7. ³ Includes Maine MSW only. ⁴ Totals recorded by NEWSME.			

The total tonnage of in-state and out-of-state MSW disposed of via WTE averaged approximately 28 percent of MSW from 2020 through 2022.⁷⁸ Table 3-2 summarizes the waste tonnages disposed of at these facilities. The associated residue and bypass MSW that was landfilled at JRL between 2020 and 2022 averaged 92 percent annually of the total bypass volume accepted. Consistent with the State’s waste management hierarchy the proposed Expansion will continue to support WTE facilities that reduce the quantity of MSW and require landfill disposal for residues.

⁷⁸ Capacity Report, Table 1 and Materials Management Plan, Table 7.

TABLE 3-2

WASTE MATERIAL MANAGEMENT AT MAINE’S THREE WTE FACILITIES, COMPARED TO RESIDUE DISPOSAL AT JRL

	2020	2021	2022
Maine Generated MSW disposed via WTE Facilities ⁽¹⁾ (Tons)	441,804	365,941	382,609
Out-of-State MSW disposed via WTE Facilities ⁽¹⁾ (Tons)	13,887	14,401	2,426
Total Maine Generated MSW disposed via WTE Facilities ⁽¹⁾ (Tons)	462,508	385,100	385,035
Percent MSW received at WTE Facilities compared to total MSW Generated in the State	32%	28%	27%
By-pass MSW accepted at JRL from PERC, MMWAC, and ecomaine ⁽²⁾	102,508	204,378	256,234
JRL percentage of total residue disposal	22%	53%	67%
<p><u>Notes:</u></p> <p>¹ Information for 2020 and 2021 provided in Table 1 & Table 8 of the Capacity Report. Information for 2022 provided in Table 7 of the Materials Management Plan.</p> <p>² Based on JRL annual reports provided by NEWSME.</p>			

From 2020 to 2022, CDD represented an average of approximately 28 percent of the overall tonnage of solid waste produced in the State.⁷⁹ CDD is used by landfills as cover material and as a bulking material for municipal and industrial WWTP sludge.⁸⁰

Table 3-3 summarizes how Maine generated CDD was handled in 2020 through 2022 and notes the portion recycled and landfilled, and the percentage of landfilled CDD that is accepted at JRL.⁸¹ As this table shows, JRL provides a valuable resource to handle the State’s CDD disposal and will continue to do so with the proposed Expansion.

⁷⁹ Based on information provided in Table 1 and Table 2 of the Capacity Report and Table 7 of the Materials Management Plan.

⁸⁰ Materials Management Plan, pages 10 and 49.

⁸¹ CWS facilities handle the majority of the CDD materials recycled in the State. These facilities are discussed in Sections 3.3.

TABLE 3-3

MANAGEMENT OF MAINE'S CDD

	2020	2021	2022
Total Waste Generated in State ⁽¹⁾ (Tons)	1,930,501	1,872,875	2,048,723
Processed CDD sent to a landfill for daily cover, shaping, grading ⁽¹⁾ (Tons)	13,828	15,392	76,664
CDD Recycled ⁽¹⁾ (Tons)	6,496	5,223	14,431
CDD Landfilled in Maine ⁽¹⁾ (Tons)	481,050	485,238	505,282
CDD Landfilled Out-of-State ⁽¹⁾ (Tons)	4,736	4,424	13,128
Total CDD Generated ⁽¹⁾ (Tons)	506,110	510,277	609,506
CDD disposed of at JRL ⁽²⁾ (Tons)	321,949	319,038	332,290
Notes:			
¹ Total CDD generated excluding CDD that was exported out of state. Information for 2020 and 2021 is provided in Tables 1 and 2 in the Capacity Report. Information for 2022 is provided in Table 7 of the Materials Management Plan.			
² Calculated as the sum of mixed CDD. Information from JRL Annual Reports.			

In addition to reviewing Maine’s solid waste management hierarchy and Maine’s food recovery hierarchy, the Materials Management Plan also outlines the goal of decreasing the amount of solid waste disposed by five percent per capita every five years and achieving a 50 percent statewide rate of recycling (38 M.R.S. § 2132).⁸² The State’s recycling, source reduction, and volume reduction efforts also serve to reduce, to the greatest extent feasible, the volume of wastes, and the risks related to waste handling and disposal, prior to landfilling. Maine’s recycling efforts from 2020 to 2022 are summarized in Table 3-4. Maine’s recycling rate averaged 34 percent from 2020 to 2022.

TABLE 3-4

RECYCLING IN MAINE

Maine in-state recyclables	2020	2021	2022
Total Recycled (Tons)	484,574	458,938	486,698
% of MSW Recycled	34.0%	33.7%	33.8
Notes:			
¹ 2020 and 2021 information provided in Table 4 of the Capacity Report.			
² Information for 2022 provided in Table 7 of the Materials Management Plan.			

3.2 JRL Consistency with the Waste Reduction, Reuse, Recycling, and Composting Priorities Contained in the Plan

As shown in Tables 3-1 through 3-3, JRL is an integral component of the State’s solid waste management plan. Providing continued disposal capacity at JRL supports a circular economy and is aligned with the solid waste and food waste hierarchies. A circular economy is designed to prevent waste generation and promote reuse of finite materials (e.g., plastic and metals) and renewable materials (e.g., food waste and

⁸² Materials Management Plan, page 20.

other organics)⁸³ and helps to achieve an economically and environmentally sustainable waste management system in Maine. The remainder of this Section demonstrates that the proposed Expansion will continue to be consistent with the solid waste hierarchy priorities of reduction, reuse, recycling and composting, and provide long-term disposal capacity for WTE and processing facility residue.

3.2.1 Source Reduction and Reuse

From 2020 to 2023, approximately 47 percent of the solid waste accepted for disposal at JRL was the residues from WTE or solid waste processing facilities. By its definition, residues are wastes generated as a result of the handling, processing, composting, incineration (ash from WTE facilities and biomass and fossil fuel combustion), or recycling of solid waste, including, without limitation, FEPR, fines and other residues from CDD processing facilities, and ash from incineration facilities and non-compostable compost screenings.⁸⁴

JRL does not itself generate solid waste or engage in waste processing. Rather, it supports the solid waste hierarchy by providing disposal capacity for the variety of residues generated during the operation of material processing, recycling, and WTE facilities as well as bypass MSW that would otherwise accumulate during facility maintenance shutdowns.

A summary of the type and quantity of the residues from source reduction that were disposed at JRL from 2020 to 2023 is shown in Table 3-5.

TABLE 3-5

SUMMARY OF RESIDUES FROM SOURCE REDUCTION FACILITIES DISPOSED OF AT JRL OR BENEFICIALLY REUSED IN JRL OPERATIONS¹

Waste Category	2020	2021	2022	2023
CDD ² (Tons)	324,743	319,082	332,437	347,265
By-Pass MSW and MSW Residue ³ (Tons)	117,666	228,609	283,683	274,690
FEPR and OBW (Tons)	86,035	82,435	79,172	78,673
CDD Processing Residue – Fines (Tons)	100,134	95,519	73,689	50,774
MSW Incinerator Ash (Tons)	31,265	28,210	29,502	2,619
Total MSW and CDD	659,843	753,855	798,483	754,021
Notes:				
¹ Information provided by NEWSME.				
² Sum of mixed CDD and wood from CDD. Much of the construction demolition debris which is taken to the landfill has been either source picked to remove clean wood and metal which are then recycled.				
³ Sum of bypass MSW and MSW residue.				

Per the Maine Solid Waste Management Act,⁸⁵ recycling shall include the use of waste or waste-derived products as a material substitute in construction. JRL operations support the hierarchy’s goal of reuse by

⁸³ CWS 2022 Sustainability Report, page 23.

⁸⁴ Chapter 400, Section 1.Tt.

⁸⁵ 38 M.R.S. § 1310-N(5-A)(B)(2).

using recycled material in construction and operations that “reduce the extraction of virgin natural resources, and often the energy use and other impacts related to extraction, processing, and transport of natural resources⁸⁶ and provides an outlet for reuse of recycled materials that decreases the use of valuable non-renewable natural resources that are not waste (e.g., sand and gravel). Processing fines are a residue of CDD processing that is considered to be a recycled material. Virgin sand, a material that is experiencing a global shortage,⁸⁷ would need to be used instead of ADC if recycled materials were not available. Recycled materials are also used for internal gas pipe bedding material, internal road base material, internal drainage control structures, as ADC, and for shaping and grading material at the landfill. The use of waste or waste-derived recycled materials will continue as part of operations in the proposed Expansion.

3.2.2 Recycling, Beneficial Reuse, and Composting

The wastes disposed at JRL and to be disposed at the proposed Expansion are primarily materials that cannot be processed or recycled for a variety of reasons:

- The nature of the waste or its chemical constituents make it unsuitable for recycling;
- The waste is a residue from recycling and processing activities; or
- The State and its municipalities lack the recycling infrastructure and financial resources to handle the material.

3.2.3 Toxics Reduction

The Management Plan also identifies removal of toxics from the MSW waste stream as part of the highest priority of the hierarchy.⁸⁸ Operation of the proposed Expansion will be fully consistent with this goal. JRL is licensed to accept only non-hazardous wastes. NEWSME has prepared and will continue to implement a detailed Hazardous and Special Waste Handling and Exclusion Plan for JRL to ensure that unacceptable materials are identified and not placed into the landfill.

3.2.4 Greenhouse Gas Reduction, Energy Self Reliance and Conservation

Landfill gas generated by the JRL waste mass is currently combusted at a flare at the facility. This will continue if needed after the renewable natural gas (RNG) facility begins operation and throughout the development of the proposed Expansion. Methane destruction supports the State’s goal to reduce greenhouse gas emissions.⁸⁹

⁸⁶ Materials Management Plan, page 21.

⁸⁷ Demand for Frac Sand and Concrete Drives Scarcity, Investopedia, Accessed November 24, 2023.
<https://www.investopedia.com/investing/demand-frac-sand-and-concrete-drives-scarcity/>

⁸⁸ Materials Management Plan, Appendix A, page 52.

⁸⁹ Materials Management Plan, page 11.

3.2.5 Renewable Natural Gas

Landfill gas produced by waste disposed at JRL is currently collected and flared in accordance with regulatory and permit requirements; however, in order to find a higher and better use for the landfill gas, JRL has developed a renewable energy project at the landfill in collaboration with a nationally recognized biogas energy development partner. The project, which is currently in the start-up phase of operation, will process landfill gas into a RNG fuel product that will be injected into Maine's natural gas distribution system, adding a renewable component to that system. This project will ensure that solid waste disposed at JRL will become a source of renewable energy, displacing more carbon intensive fossil based natural gas, primarily in the transportation sector, where emissions reductions are otherwise challenging to achieve.⁹⁰ This project is designed to operate for decades into the future and is anticipated to continue to beneficially utilize landfill gas from an expansion and continued operation of JRL. This is consistent with the Management Plan use of conversion technologies to produce fuels.⁹¹

3.3 Casella Waste System's Support of the Solid Waste Hierarchy within the State of Maine

CWS, NEWSME's parent company, is a key driver of sustainable materials management in Maine, delivering significant investment and innovation at every level of the State's solid waste hierarchy. CWS operates recycling, source reduction, reuse, and toxics reduction programs and facilities consistent with the solid waste hierarchy and in support of achieving the State's recycling objectives. These efforts minimize the volume of materials requiring landfill disposal and are discussed in detail in the remainder of this Section.

CWS has developed, implemented, and managed, state of the art recycling, source separation, and beneficial reuse programs in Maine to address both the recycling and source reduction goals of the State. These programs provide Maine citizens with access to solid waste management options that prevent

⁹⁰ The primary renewable energy market which creates a demand for RNG is the 2007 federal renewable fuel standard (RFS), a US compliance market which requires a portion of the supply of transportation sector fuels to be comprised of qualified renewables, such as ethanol substituted for gasoline, biodiesel, and biogas sourced compressed natural gas (i.e., BioCNG). The RFS requires a rigorous U.S.EPA certification process, requiring complete tracking of the RNG from source (i.e., landfill gas collected) to the dispensing of BioCNG into actual vehicles or fleet before the RNG commodity, tracked as "RINs," can be certified and monetized. As such, the RFS market provides one of the most environmentally beneficial uses for RNG, displacing petroleum based fuels in the transportation sector. A secondary market for RNG which is growing rapidly is the demand for "green" natural gas (i.e., RNG) within existing natural gas utility distribution systems. Increasingly natural gas utilities and large industrial customers are voluntarily setting long-term targets to increase the content of RNG within their systems and or use. This creates a market and demand for RNG separate from the compliance driven RFS program, but requiring similar rigors of assurance and certification to insure integrity. JRL's RNG development partner, Archaea-BP, has a longstanding involvement with and understanding of the various RNG commodity markets and has developed markets for the RNG produced by the JRL RNG project which will initially be heavily weighted in to RFS market pathways (i.e., transportation fuels) with projected increased participation in the Green RNG markets as demand for that environmental product increases and matures within Maine.

⁹¹ Materials Management Plan, page 20.

disposal and landfilling of these materials, which is consistent with the Materials Management Plan. CWS will continue these programs with the proposed Expansion. This Section highlights existing CWS programs/services which help support the Maine's solid waste and food waste hierarchies.

3.3.1 Infrastructure & Expertise

CWS infrastructure investments have been essential to Maine's recycling performance and are positioned to support continued growth in the coming years. CWS facilities in Maine include a single-stream recycling facility in Lewiston, a commercial recycling facility in Scarborough, recyclables transfer station capacity throughout the State, drop-off locations for recyclables, and a fleet of vehicles for collecting curbside recyclables. The company also leverages its brokerage expertise to get Maine recyclables to market.

3.3.2 Recycling

CWS is the largest recycler in the State of Maine, recycling over 93,000 tons per year of residential, commercial, and industrial recyclables through its two recycling facilities and its brokerage operation and contributes significantly to Maine's overall recycling and diversion rate.⁹² An overview of Casella's approach to recycling is provided on the website.⁹³

As the use of consumer electronics increases, more electronic devices and batteries are making their way into the municipal waste stream, from laptop computers and tablets to vape pens. Many of these products are recycled through Maine's product stewardship program for electronic wastes. Non-covered products are likely to end up in the landfill or to be managed at a waste processing facility.⁹⁴ CWS has constructed and operates Zero-Sort[®], a single-stream recycling and consolidation operation, which requires no separation by the generator. This includes a single-stream recycling facility in Lewiston and a commercial recycling facility in Scarborough. CWS has found the benefits of single-stream recycling include: increased ease and convenience to residents due to lack of sorting; reductions in disposal costs; increases in the range of materials that can be recycled; and faster collection of materials resulting in collection and transportation savings. All of these advantages may encourage more people to participate in recycling and, ultimately, give the State the opportunity to meet the recycling goal outlined in the Materials Management Plan.⁹⁵

In addition to the single-stream recycling programs, CWS also collects and handles recyclables for a number of communities and businesses in the State. CWS has worked directly with municipalities and businesses to provide solutions for recycling challenges. One of the biggest challenges to municipal recycling is motivating residents to properly sort their recyclables. CWS recently worked with a large city in Maine to provide assistance for and support of curbside tagging programs, bi-annual audits and post-

⁹² Casella Recycling Establishment Report Form 2023.

⁹³ Casella Waste Systems website, Recycle Better webpage, <https://www.casella.com/services/recycling>.

⁹⁴ Materials Management Plan, page 19.

⁹⁵ Materials Management Plan, page 20.

tagging audits, school presentations, and also participated in an Earth Day event. In 2022, CWS’s Westbrook Transfer Station/Scarborough hauling division partnered with the City Public Works Department to reduce residents’ recycling contamination. Over a three-week span, the group audited over 5,000 bins by examining the contents and providing direct feedback to customers to identify sources of contamination that had been placed in the bin, bringing the contamination rate down from over 24 percent to 12 percent. In addition to tagging, the team analyzed the City’s census data to better understand what factors might be posing a barrier to better recycling and created specialized educational resources as a result. In 2023, CWS deployed a mobile recycling app for the City to enable further community outreach and education. The app allows residents to look up whether items can be recycled, so materials can be placed in the correct bin which reduces contamination and ensures materials that are collected can be recycled.

CWS has also worked with a national beverage manufacturer to support recycling and sustainable material management initiatives across 29 locations, 46 vendors, and 36 managed waste and recycling streams. Casella’s innovations have included the development of de-packaging capacity, which processes fully-packaged, non-saleable goods to separate packaging from beverages so both streams can be recycled. To date, the manufacturers’ locations have collectively contributed to a diversion rate of 93.7 percent.

3.3.3 Universal and E-Waste Consolidation Facilities

CWS, with the help of North Coast Services, helps collect and manage universal and electronic wastes throughout Maine, utilizing many of its transfer stations and/or consolidation facilities.

In addition to traditional recyclables, CWS recycles universal and electronic waste, which includes white goods, tires, electronic waste, batteries, and fluorescent light bulbs. In 2023, this resulted in over 2,500 tons of additional recycling.

Table 3-6 provides a summary of the total volumes of universal and e-wastes handled at CWS facilities in Maine in 2023.

TABLE 3-6

SUMMARY OF UNIVERSAL AND ELECTRONIC WASTE COLLECTED FROM CWS STATE-WIDE IN 2023

Waste Type	Quantity Handled (Tons)
Mixed Metal and White Goods	2,108.3
Tires	273.3
Electronics	136.5
Batteries	8.2
Light Bulbs	25,563 light bulbs (Equivalent)
<p>Note: ¹ Many transfer stations provide locations for residents to sort waste. The facility operators also sort the material during processing, as needed.</p>	

These programs divert waste from the landfill, support the State's toxics reduction initiatives, and help to ensure that Maine citizens are provided with management options at all levels of the solid waste hierarchy.

3.3.4 Wood Waste Processing

At several transfer stations throughout Maine, CWS separates clean wood from CDD and collects land clearing debris and other clean wood waste. These materials are then sent to other facilities for further processing or used to make recycled products. In 2023, collection occurred in Hampden, Houlton, Naples, and Westbrook, diverting approximately 742 tons of wood waste from direct disposal.

CDD fines generated during the processing of wood wastes are primarily used at JRL as part of the landfill's ADC, but at times have been used as a gas transmission layer below the intermediate cover, as internal gas piping bedding, and as internal road base material. There is also a transfer station at JRL that collects clean wood waste which is then chipped and used on-site for ADC. These on-site uses are forms of recycling that reduce the need for virgin materials, such as sand, thereby preserving these resources and helping the State reach its 50 percent recycling goal.

3.3.5 Composting, Processing, and Beneficial Reuse

CWS has a direct role in recovering organics in Maine. In 2023, CWS recovered over 31,000 tons of organics through processing and beneficial reuse. As market demand for composting services continues to develop in Maine, CWS encourages interested customers to work with local compost, de-packaging, and digestion companies. Casella connects customers with third parties who provide composting and anaerobic digestion services for food waste organics. The company also supports many municipal customers with leaf and yard debris collection for composting, although tonnage is not consistently tracked for these services.

CWS works with individual customers to process and beneficially use their non-traditional solid waste streams and generate value-added agricultural products and agronomic soil amendments. In recent years, CWS managed the beneficial reuse of 15,000 to 30,000 tons per year of a major chemical manufacturer's byproduct that was rich in organic matter, magnesium, and lime value. The product improves agricultural and planting soils and enhances crop yields. This material has helped local farmers and soil blenders improve soil quality and performance.

3.3.6 Support of Legislative Rulemaking for Extended Producer Responsibility for Packaging

Maine's Extended Producer Responsibility (EPR) bill for packaging waste was signed into law in July 2021. The law requires producers to finance a stewardship organization that will, among other responsibilities, reimburse municipalities for applicable recycling and solid waste management costs. Municipalities will be eligible for payments only if they opt-in to the program and meet certain conditions. The purpose of

the law is to motivate producers to create packaging that can be easily recycled and contains more recycled content, and to reduce the cost to municipalities to manage post-consumer packaging. CWS has been engaged throughout the legislative and rulemaking processes for Maine’s ERP program. CWS participated and provided data and comments throughout the 2023 summer stakeholder session in support of making the program a success and ensuring it will work well for customers, who include both municipalities and producers. ERP is expected to begin program operations in 2026.⁹⁶

3.3.7 Education and Innovation

CWS supports its recycling customers with education signage and outreach materials that are available online at CWS’s website.⁹⁷ Other initiatives include:

- Educational outreach at schools, businesses, and community events;
- Student internships centered on recycling education as well as curbside bin inspections and tagging; and
- The deployment of the CWS mobile recycling app that enables customers to easily search and identify if a material is accepted for curbside recycling, and to look up local options for donations and recycling. In 2023, the company deployed the app to six Maine communities accounting for thousands of households. The mobile app has been popular and additional deployments are planned for 2024.

3.3.8 State-Owned Landfill

Lastly, CWS supports the State’s solid waste hierarchy by operating Maine’s State-owned landfill. Although positioned at the bottom of the hierarchy, landfill disposal capacity is an essential resource for the citizens of Maine. It provides necessary capacity for the safe and secure disposal of materials that cannot be managed at higher tiers of the hierarchy. Its ability to receive large quantities of materials in the event of natural disasters, WTE and processing facility shutdowns, and other disruptions has been essential to the protection of human health and the environment and contributes to the State’s ongoing independence and resilience. The proposed Expansion will continue to provide disposal capacity for non-hazardous and special wastes generated in the State, including sludge containing PFAS.

3.4 BGS Efforts to Promote the Solid Waste Hierarchy

JRL is owned by the State and management and oversight duties are performed by BGS, in part because the State obligates CWS in the OSA to use its best efforts to follow the waste management hierarchy in operating JRL. This includes annual capacity review and ongoing communication with CWS, the landfill operator. BGS maintains two webpages designated to JRL. One provides up-to-date links for the facility’s

⁹⁶ Materials Management Plan, page 18.

⁹⁷ Casella Waste Systems website, Recycle Better. www.casella.com/recyclebetter

monthly reports, annual reports and specific permits.⁹⁸ The second webpage provides notices of upcoming meetings related to the landfill.⁹⁹

As part of its oversight at JRL, BGS assists with the following:

- Promotes the solid waste hierarchy and provides a link to the State's most recent waste generation capacity report on the website;
- Collects, synthesizes, and reports on solid waste programs and data; and
- Ensures sufficient, environmentally secure, disposal capacity for Maine's MSW.

BGS furnishes municipal decision-makers with information, direction and technical and financial assistance to aid them in managing their solid waste in an environmentally beneficial and cost-effective manner. This assistance includes:

BGS also provides direct support to the General Manager and Environmental Compliance Manager of JRL. The General Manager has the overall responsibility for supervision and management of site operations, staffing, construction, budgets, and compliance. With respect to the proposed Expansion, the General Manager's responsibilities include the following:

- Maintain liaison with the MEDEP, the BGS, the City of Old Town, the Town of Alton, and the Landfill Oversight Committee, to ensure that the Expansion is being operated in accordance with state, federal and local requirements;
- Address staffing and equipment needs of the facility and its operations; and
- Coordinate construction activities.

The Environmental Compliance Manager is responsible for the site's compliance with state, federal, and local permits, applicable federal regulations, site inspections, waste streams approval, state and federal reporting, and environmental training. The Environmental Compliance Manager also acts as a MEDEP contact for waste acceptance, inspections, permitting, and reporting.

Finally, BGS:

- Monitors JRL's activities, track monthly, quarterly and annual reports;

⁹⁸ Department of Administrative and Financial Services, Bureau of General Services. Juniper Ridge Landfill. <https://www.maine.gov/dafs/bgs/maines-state-owned-landfills/juniper-ridge-landfill>. Accessed January 9, 2024.

⁹⁹ Department of Administrative and Financial Services, Bureau of General Services. Maine's State Owned Landfills. <https://www.maine.gov/dafs/bgs/maines-state-owned-landfills/juniper-ridge-landfill>. Accessed January 9, 2024.

- Monitors complaints;
- Attends on site safety meetings;
- Attends regularly scheduled meetings with JRL staff;
- Maintains the license for the undeveloped Carpenter Ridge landfill site/facility; and
- Recommends construction and operation of this facility at the appropriate time, as conditions and situations demand.

3.5 Consistency with the State Plan: Summary and Conclusion

The information presented in this Section demonstrates that the proposed Expansion is consistent with the policy of the State, as outlined in 38 M.R.S. § 2101, to pursue and implement an integrated approach to hazardous and solid waste management that adheres to food waste recovery and a waste management hierarchy establishing priorities of waste handling in this order: (1) reduction of waste generated at the source, including both amount and toxicity of the waste; (2) reuse of waste; (3) recycling of waste; (4) composting of biodegradable waste; (5) waste processing that reduces the volume of waste needing land disposal, including incineration; and (6) land disposal of waste.

The proposed Expansion allows the State to continue to provide safe handling and disposal of Maine-generated solid wastes by providing secure, long-term disposal capacity for the residues that remain after the waste volumes are reduced to the maximum extent practicable. As demonstrated in this Section, BGS and NEWSME are both directly involved in operating and supporting facilities and programs that support the Materials Management Plan's principal goals of source reduction and recycling.

4.0 CONSISTENCY WITH LOCAL, REGIONAL OR STATE WASTE COLLECTION, STORAGE, TRANSPORTATION, PROCESSING OR DISPOSAL

Components of a MSW management system include collection, transportation, facility operations, marketing of recyclables, and final disposal. The overall cost of MSW management for a municipality and its residents is determined by, among other things, the amount generated and disposed, the disposal fee, operational and transportation costs, and the cost of or revenue from recycled materials.¹⁰⁰ The proposed Expansion is consistent with local, regional, and statewide collection, storage, transportation, processing, or disposal practices as described below.

Collection is the first step in getting MSW to either a transfer station or disposal facility. By statute, 38 M.R.S. § 1305, each municipality in Maine is responsible for providing “solid waste disposal services for domestic and commercial solid waste generated within the municipality.” This allows each municipality local control to determine the management system it will use to fulfill this responsibility, including how much of the system will be publicly or privately-owned and/or operated, and how the system is funded.¹⁰¹

Municipalities typically contract for curbside collection services and can set operational requirements to realize the overall cost savings achieved by such efficiencies. Taking responsibility for collection of MSW from households also enables municipalities to transition to management strategies proven to decrease disposal rates and increase recycling and composting of organics.¹⁰² Solid waste collection, hauling, and recycling in Maine is performed by a mix of public and private entities.¹⁰³ Roughly 60 Maine municipalities receive some form of collection and recycling service from CWS, including curbside, drop-off, transfer, and/or brokerage. In 2023, CWS managed a registered fleet of approximately 160 packer trucks in Maine and provided reliable waste collection to approximately 167,800 households via municipal contracts as well as 33,800 subscription businesses and households. This system, operated by NEWSME’s parent company, is consistent with local, regional, and state-wide collection practices.

A MSW management system has to consider the cost to transport waste from the collection location to a disposal facility, which can be significant.¹⁰⁴ As shown on Figure 4-1, JRL is centrally located and accessible to municipalities across the State. This demonstrates it is consistent with transportation requirements and

¹⁰⁰ Maine Materials Management Plan 2014 State Waste Management and Recycling Plan Update & 2012 Waste Generation and Disposal Capacity Report, Report to the Joint Standing Committee on the Environment and Natural Resources, 126th Legislature, Second Session, January 2014, Appendix F.

¹⁰¹ Maine Materials Management Plan 2014 State Waste Management and Recycling Plan Update & 2012 Waste Generation and Disposal Capacity Report, Report to the Joint Standing Committee on the Environment and Natural Resources, 126th Legislature, Second Session, January 2014, Appendix F.

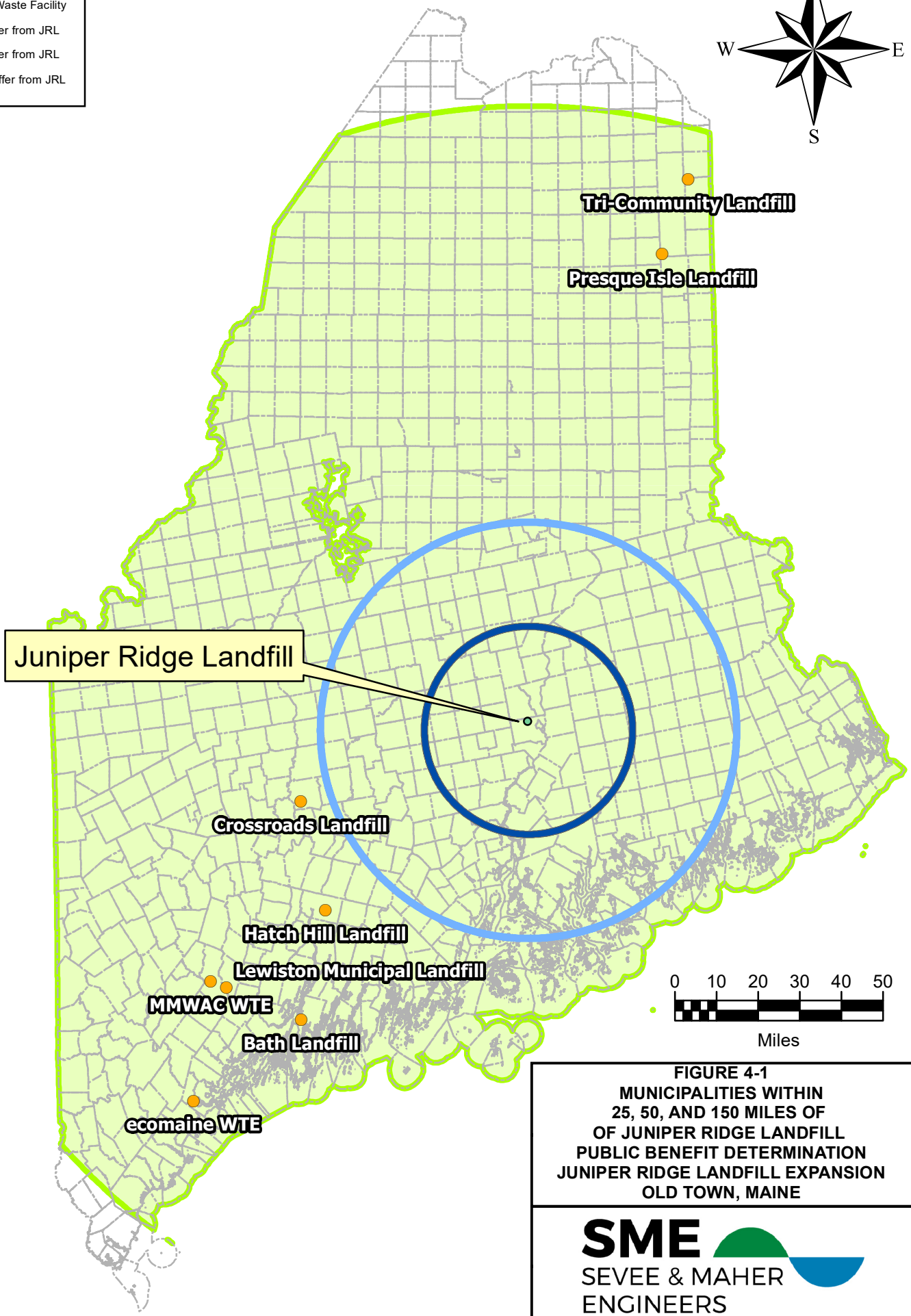
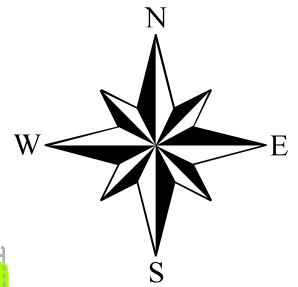
¹⁰² Maine Materials Management Plan 2014 State Waste Management and Recycling Plan Update & 2012 Waste Generation and Disposal Capacity Report, Report to the Joint Standing Committee on the Environment and Natural Resources, 126th Legislature, Second Session, January 2014, Appendix F.

¹⁰³ Capacity Report, page 27.

¹⁰⁴ Materials Management Plan, page 27.

Legend

- Significant Waste Facility
- 25 Mile Buffer from JRL
- 50 Mile Buffer from JRL
- 150 Mile Buffer from JRL



Juniper Ridge Landfill

Crossroads Landfill

Hatch Hill Landfill

Lewiston Municipal Landfill

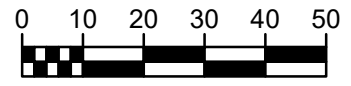
MMWAG WTE

Bath Landfill

ecomaine WTE

Tri-Community Landfill

Presque Isle Landfill



Miles

FIGURE 4-1
MUNICIPALITIES WITHIN
25, 50, AND 150 MILES OF
OF JUNIPER RIDGE LANDFILL
PUBLIC BENEFIT DETERMINATION
JUNIPER RIDGE LANDFILL EXPANSION
OLD TOWN, MAINE



a feasible option if needed. As shown on Figure 1-2, JRL provides a disposal option to counties north and south of the landfill.

As noted in Section 2, from 2018 to 2022, JRL accepted approximately 61 percent of the MSW and CDD disposed of in the State, and accepted residues from all of the State’s active WTE and solid waste processing facilities. The closest landfill to JRL is located approximately 60 miles southwest in Norridgewock. As shown previously on Figure 1-2, JRL is located in Penobscot County and provided disposal capacity for over 199,000 tons of solid waste from the County in 2023. The proposed Expansion is located in close proximity to Maine’s second largest city, Bangor, and is the only landfill in the central part of the State. Having a disposal option in this part of the State allows collection vehicles that service this area to complete their routes within a day without spending excess time or fuel. This helps to keep waste disposal affordable and reduces the impacts of trucking on the environment (e.g., wear and tear on roadway and fuel emissions). In addition, Figure 1-2 also shows a significant portion of the waste delivered to JRL comes from Maine’s most populated areas, including Portland, Lewiston, and Augusta, demonstrating that it serves local, regional, and State-wide needs in Maine.

In addition to transportation costs, solid waste management system costs also include the tipping fee at the final disposal location. Tipping fees change over time and may be dependent on the waste volume, type, and whether the waste is residential or commercial.¹⁰⁵ Municipal tipping fees in fall 2023 averaged \$93.66 per ton for MSW and \$108.22 per ton for CDD as shown on Table 4-1. This is consistent with JRL not-to-exceed tipping fees, which may be adjusted annually based on the prior year’s consumer price index in accordance with the OSA. JRL’s 2023 not-to-exceed tipping fees are provided in Appendix N.

**TABLE 4-1
SUMMARY OF MSW AND CDD TIPPING FEES AT MAINE MUNICIPAL LANDFILLS**

Disposal Site	2023 MSW Disposal Fee (per Ton)	2023 CDD Disposal Fee (Per Ton)
Bath Landfill ¹	\$110.00	\$130.00
Hatch Hill Landfill ¹	\$72.00	Not Available
MMWAC ¹	\$109.00	\$104 for commercial haulers
Presque Isle Landfill ¹	Not Available	\$104.94
Tri-Community Landfill ¹	Not Available	\$104.94
MRC ¹	\$82.69	Not Available
JRL ²	\$94.60	\$97.22
Average ¹	\$93.66	\$108.22
Notes:		
¹ As noted on the Bath Landfill, Hatch Hill Landfill, MMWAC, AWS Tri-Community Landfill, AWS Presque Ise Landfill, and MRC websites.		
² Per the JRL OSA, “not-to-exceed tipping fees last updated on March 14, 2023.		

¹⁰⁵ 2014 Solid Waste Generation and Disposal Capacity Report, Appendix F.

Some wastes that are not present in the waste stream in large quantities are still challenging for waste handling, processing, and disposal facilities to manage due, in part, to their chemical composition, fire potential, or detriment to the environment if spilled.¹⁰⁶ The proposed Expansion is consistent with providing disposal and storage options for waste streams that cannot be disposed of at many locations. JRL is permitted to accept a variety of waste and is a resource that is available to the State for the disposal of materials that have limited disposal options. This includes contaminated soils from spills, non-friable asbestos in demolition waste, and sand/grit from catch basin cleanings. These non-hazardous wastes need to be disposed of in a secure landfill. This would also include demolition waste resulting from the cleanup of natural disasters. JRL also provides storage of wood waste that has been diverted from landfills. Diverted wood waste can be used for landfill shaping, grading, and ADC material or used in the manufacturing of materials such as particle board or as biomass fuel.¹⁰⁷ Waste diverted to JRL is typically used for shaping, grading, and ADC.

CWS has partnered with a local manufacturer and supported their environmental commitment, specifically around zero waste to landfill, to provide disposal solutions. Their beneficial use program for ash, in partnership with CWS, has gone from a MEDEP compliance issue to successful diversion of over 1,600 tons of wood ash for beneficial use in agriculture during the summer of 2022.

Both the EPEC and MRC facilities expect to start operations in the short-term and, as noted in Section 2 and Section 3, JRL will be essential to their operation, as it will provide a place for the disposal of the residue generated during normal operations and bypass MSW that requires disposal when the facilities are not operating. JRL provides local and regional support to WTE and solid waste processing facilities.

The proposed Expansion and the state-wide support provided by CWS is not inconsistent with local, regional, and State waste management efforts in waste collection, storage, transportation, processing, or disposal.

¹⁰⁶ Materials Management Plan, page 17.

¹⁰⁷ Capacity Report, page 8.

5.0 CONSISTENCY WITH ENSURING ENVIRONMENTAL JUSTICE FOR THE COMMUNITY IN WHICH THE FACILITY IS PROPOSED

The proposed Expansion is not inconsistent with ensuring environmental justice for the community in which the facility is proposed pursuant to 38 M.R.S. § 1310-AA(3)(E) in accordance with Chapter 400 Section 5.E.(5).

The Department's Rules are intended to alert the public to advise people of their opportunities to provide comment or become an intervenor. The Rules require the Commissioner to accept written public comment during the course of processing an application and also requires that a public meeting be held in the vicinity of the proposed facility to hear public comments. The Commissioner must consider and address these comments when making the PBD determination. This is consistent with 38 M.R.S. § 1310-AA(3)(E) requirements to provide meaningful public involvement.

The performance standards in the Rules contain provisions to equally protect people that could potentially be impacted by the landfill siting and operations.¹⁰⁸ These include design as well as evaluation of potential impacts to site environs if there were failures of the landfill systems. The Rules also require facilities to have MEDEP-approved monitoring programs to detect changes in groundwater, surface water, and air quality before a license is issued to a facility.¹⁰⁹ An expansion of the monitoring program to include the additional 61 acres will continue to protect people and the environment surrounding the landfill.

The City of Old Town and Town of Alton receive financial benefits through host community agreements, as do neighbors living in immediate proximity of JRL, who receive benefits such as property tax reimbursement and a property value guarantee. These benefits will continue as a part of the Expansion.

In conjunction with the Expansion and to supplement these existing local benefits, CWS will establish a program to support area youth, comprised of two primary components. The first component would consist of funding for a scholarship program designed to reduce barriers to education through financial assistance. The second component would be an annual funding contribution to a program or programs that are designed to improve outcomes for and provide access to opportunities for youth. CWS has successfully implemented scholarship funding through its municipal partner, the Ontario County Landfill, that can provide a model for success at JRL.

To ensure the public is informed about the proceedings and opportunities to participate, CWS will provide additional notice and opportunity to provide comment in the permit proceeding, outlined below.

¹⁰⁸ Chapter 401 Section 2.F.

¹⁰⁹ Chapter 401 Section 3.K.

- Facility abutters and the offices of municipalities in which the facility is located (or proposed to be located) will be notified via a public notice approximately five days before the PBD is submitted;
- The public notice will also be published once in a newspaper circulated in the area where the project is located; and
- The MEDEP will post this information on their public website.

In addition to what is required in the Department's Rules, BGS and NEWSME will provide more public notice and opportunities to provide comment than is required by law. This will include publishing the public notice in the Penobscot Times and the Bangor Daily News and mailing the notice to the Landfill Advisory Committee and the Penobscot Nation.

In addition to the public meeting that will be held with MEDEP to satisfy 38 M.R.S. § 1310 AA(3)(E), NEWSME will also conduct four public milestone meetings to update the MEDEP and the public on the investigation and design portions of the project during the design process and prior to submitting the application.

Section 8 of the PBD provides more information on the public notices that were filed and abutters that were notified.

6.0 FACILITY'S INTENDED USE

BGS and NEWSME intend for the proposed Expansion at JRL to continue to provide disposal capacity for the same waste streams that are presently accepted and any future non-hazardous waste streams that cannot be managed at higher levels of the hierarchy. The proposed Expansion will provide long-term State-wide disposal capacity and supports multiple disposal options at all levels of the solid waste hierarchy.

7.0 TITLE, RIGHT OR INTEREST

Both applicants have sufficient title, right, or interest to submit this application.

The proposed Expansion will be located on a parcel of land owned by the State of Maine (approximately 780 acres), located southwest of Route 16 and north of Route 43 in Old Town, Maine. The proposed Expansion will occupy approximately 61 acres of this parcel and, in addition, will overlap approximately 12.9 acres of the existing landfill footprint. The original State Planning Office deed is recorded in Book 9188, Page 152 at the Penobscot County Registry of Deeds and is provided in Appendix O. The deed was amended with a declaration of covenant and restrictions in March 2018 to protect 57 acres of wetlands and 309 acres of adjacent upland. A copy of the amended declaration of covenant is provided in Appendix O.

The proposed Expansion will be operated by NEWSME pursuant to the OSA, which is provided in Appendix C.

8.0 TAX MAP AND ABUTTERS

As required by Chapter 400, BGS and NEWSME have given public notice of an intent to file the PBD for the proposed Expansion. The public notice is provided in Appendix P for reference and was sent by certified mail to the facility abutters, the Town of Alton, the City of Old Town, Penobscot Nation, and the Landfill Advisory Committee. The notice was published in *The Morning Sentinel* and *Bangor Daily News* on June 7, 2024; a copy of the published notice is also provided in Appendix P.

The abutters list, tax map, and copies of the certified mail receipts are also provided in Appendix P.

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APPENDIX A

**MAINE MATERIALS MANAGEMENT PLAN: 2024 STATE WASTE MANAGEMENT
AND RECYCLING PLAN UPDATE AND 2022 WASTE GENERATION AND DISPOSAL
CAPACITY REPORT**

Report to the Joint Standing Committee on Environment and
Natural Resources
131st Legislature, Second Session

Maine Materials Management Plan: 2024 State Waste Management and Recycling Plan Update and 2022 Waste Generation and Disposal Capacity Report

January 2024

Contacts

Carla Hopkins
Director, Division of Materials Management
207-446-4366
Carla.J.Hopkins@maine.gov

Brian Beneski
Supervisor, Recycling Programs
207-592-0248
Brian.Beneski@maine.gov



MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 State House Station | Augusta, Maine 04333-0017
www.maine.gov/dep

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Executive Summary

[38 M.R.S. § 2122](#), requires the Department of Environmental Protection (“Department”) to update a Statewide Waste Management and Recycling Plan (“Plan”) every five years. This update includes an analysis of, and a plan for, the management, reduction, and recycling of solid waste for Maine. While not required, this year’s Plan also includes information about existing disposal capacity in order to plan for projected capacity needs. Information in this Plan includes the 2022 data normally included in the Waste Generation and Disposal Capacity Report ([38 M.R.S. § 2124-A](#)) which is not due again until January 15, 2026. While this Plan includes the key elements required by statute, many additional elements are included in this Plan to paint a broader picture of how solid waste is managed, handled, and disposed of in Maine. All of these factors combined are complicated and intertwined with geography, transportation and logistics, business and economics, and policy. This report evaluates some of those intertwined factors and also highlights steps that are being taken to better understand these complexities, and what the Department can do to enhance management of waste streams in Maine.

Maine is currently faced with difficult challenges regarding waste management, ranging from the sufficiency of long-term disposal capacity to infrastructure gaps and inconsistent access by Maine communities to programs such as recycling or composting. All of these challenges play an important role in Maine’s ability to meet statutory goals of the solid waste management hierarchy including waste reduction and waste diversion. As a path forward to finding solutions to these challenges, multiple comprehensive assessments are currently underway that will provide significant insight into Maine’s waste streams, the results of which will lend certainty and credibility to future planning efforts. These studies are described in greater detail within the Plan and include a comprehensive analysis of food loss and waste, the components of municipal solid waste and construction and demolition debris, and sludge capacity and management solutions. It is critical the comprehensive data from these studies allow for appropriate solutions to be identified for Maine’s challenges.

The key takeaways from this Plan include the following:

- Maine is currently grappling with a shortage of waste disposal options for the Eastern Maine Region.
- The expansion of Juniper Ridge Landfill (“JRL”) in Old Town will be necessary to ensure there is adequate capacity for the entire State of Maine over the next 10 years.
- Assuming an expansion of JRL takes place, Maine has between 15-20 years of capacity left for its statewide waste disposal (with the exception of Aroostook County which has about 40 years capacity remaining).
- To best manage the waste disposal capacity concerns the Department will plan for enhanced waste reduction and diversion programs as well as evaluate key infrastructure needs for waste disposal.
- Increases in waste disposal capacity for Maine will likely need to include expanding landfill space, full operation of incineration and waste processing facilities, and/or implementing new technologies to treat waste streams to either reduce volume or prevent the need for landfilling.

- Current assessments underway will help inform the Department of how to best enhance waste reduction and diversion programs. One of these assessments is complete, while the others are anticipated to be completed in 2024, 2025 and 2026.
- Implementation of the product stewardship program for packaging materials will play an important role likely beginning in 2026 in waste reduction and reuse, while simultaneously supporting recycling efforts at municipalities by 2027.

This Plan is based on the best available data at the time of its release, including input provided by the public, and other publicly available information. Prior to development of this Plan, the Department hosted a series of five regional stakeholder meetings seeking input for updating this Plan. The meetings were held from late June to early August of 2023 in Presque Isle, Machias, Orono, Augusta, and Portland. Meetings were accessible both in-person and remotely, ensuring all interested parties were able to participate. As a result, the Department received valuable feedback that is discussed in this Plan.

I. Introduction

This 5-year update to Maine's Materials Management Plan has been prepared in accordance with [38 M.R.S. § 2122](#), which states: "The department shall prepare an analysis of, and a plan for, the management, reduction and recycling of solid waste for the State." [38 M.R.S. § 2123-A](#) requires that, "[t]he State Plan [to] include the following elements:

1. Waste characterization. The state plan must be based on a comprehensive analysis of solid waste generated, recycled and disposed of in the State. Data collected must include, but not be limited to, the source, type and amount of waste currently generated; and the costs and types of waste management employed including recycling, composting, landspreading, incineration or landfilling.
2. Waste reduction and recycling assessment. The state plan must include an assessment of the extent to which waste generation could be reduced at the source and the extent to which recycling can be increased.
3. Determination of existing and potential disposal capacity. The state plan must identify existing solid waste disposal and management capacity within the State and the potential for expansion of that capacity.
4. Projected demand for capacity. The state plan must identify the need in the State for current and future solid waste disposal capacity by type of solid waste, including identification of need over the next 5-year, 10-year and 20-year periods."

[38 M.R.S. § 2122](#) also requires that each plan update must be based on the priorities and recycling goals established in [38 M.R.S. §§ 2101](#) and [2132](#) and must provide guidance and direction to municipalities in planning and implementing waste management and recycling programs at the state, regional and local levels. The Department published its initial statewide Materials Management Plan in January 2014, and updates it every 5 years to incorporate changes in waste generation trends, changes in waste recycling and disposal technologies, development of new waste generating activities and other factors affecting solid waste management.

The Department views this Plan as an opportunity to comprehensively evaluate and provide information regarding materials management throughout the state. Stakeholder meetings were convened in Presque Isle, Machias, Orono, Augusta, and Portland to assist in this Plan's development and content. Recordings and transcripts for the stakeholder meetings are available on the Department's [Materials Management Plan for Solid Waste and Recycling](#) webpage. The Department thanks all stakeholders who attended these meetings virtually or in person for their participation and input to this Plan.

Based on an analysis of current waste management practices in Maine and guided by Maine's Solid Waste Management and Food Recovery Hierarchies (see Appendix A), this 5-year update includes strategies and actions focused on:

1. Increasing waste reduction, food rescue, goods repair (electronics, clothing, furniture, etc.), and reuse initiatives;

2. Continued focus on increasing the diversion of organics from disposal;
3. Diverting materials from landfill disposal;
4. Exploring potential pathways to broaden the economic feasibility and appeal of materials recovery such as green jobs training programs or small business opportunities not yet widely developed in Maine; and
5. Evaluating strategic needs for expansion of waste disposal capacity (landfilling and incineration) and waste processing technologies.

This Plan highlights key challenges with meeting Maine’s statutory solid waste disposal reduction and diversion goals and suggests areas of potential exploration and action to determine their suitability for implementation in Maine. Such action will require investments in additional waste management and recycling infrastructure.

II. Waste Generation and Characterization

A. Waste Generation

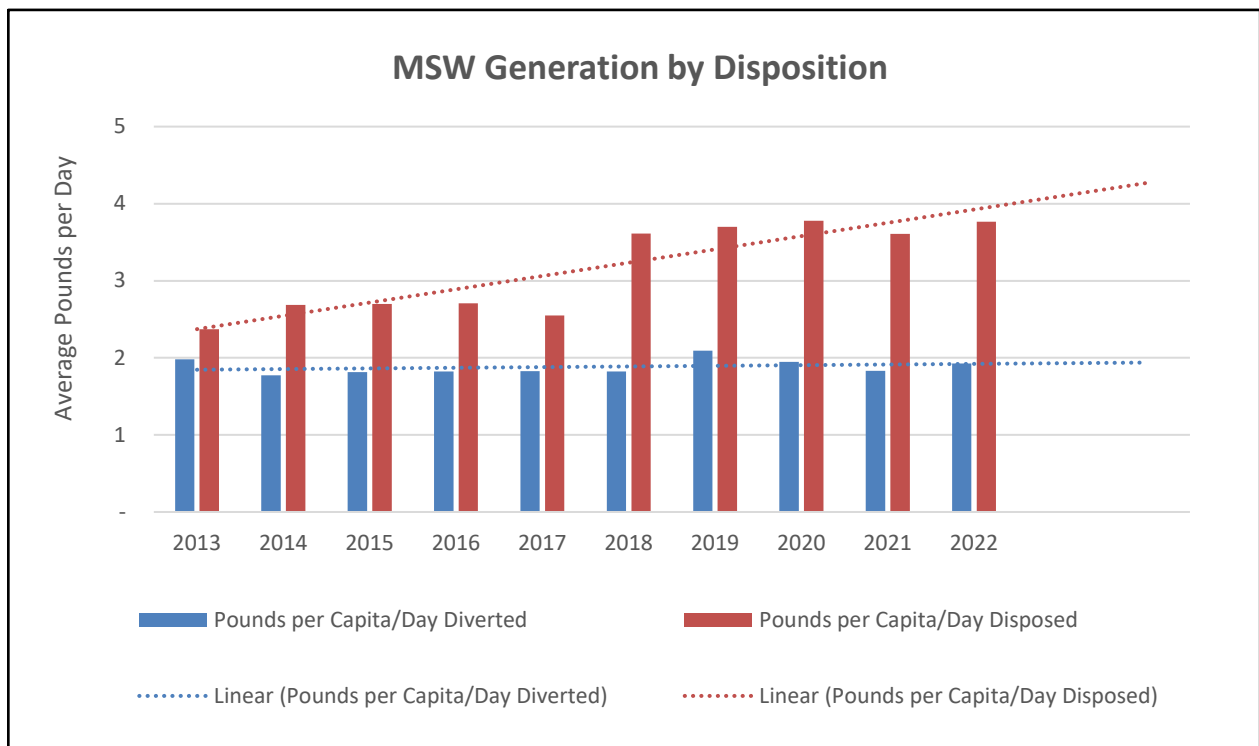
Solid waste, defined by [38 M.R.S. § 1303-C\(29\)](#) as “useless, unwanted or discarded solid material with insufficient liquid content to be free-flowing,” is generated by Maine’s households and industrial, commercial, and institutional sectors. [38 M.R.S. § 1305](#) assigns responsibility for the management of the municipal solid waste (“MSW”) to each municipality specifying that “[e]ach municipality shall provide solid waste disposal services for domestic and commercial solid waste generated within the municipality.” As there is no specific guidance provided, each municipality chooses how to meet its own responsibility by managing MSW through a combination of municipal and commercial waste handling services, facilities, and systems. Industrial and institutional generators manage the solid waste they generate through their own privately-owned facilities or through contracting with commercial services. While this market-based approach has provided municipalities and other entities with control over how to manage their waste materials, it has become increasingly clear that market failures are contributing to systemic issues such as increased disposal; limited competition among service providers that can increase costs for municipalities; underdeveloped infrastructure, particularly for waste diversion programs; and pricing structures that strongly favor disposal over diversion across much of the state.

Every two years, the Department develops and submits a Waste Generation and Disposal Capacity Report (“WGDC Report”) to the Joint Standing Committee on Environment and Natural Resources pursuant to [38 M.R.S. § 2124-A](#). The WGDC Report provides an overview of Maine’s solid waste generation, diversion, and disposal activities during the previous two calendar years, and an evaluation of Maine’s progress toward our waste reduction and recycling goals, some of the same reporting requirements for this Plan. It also includes a projection of the solid waste disposal needs of Maine for the next 5, 10, and 20 years, and how the fill rate at each solid waste landfill could affect the expected lifespan of that landfill. Recent years’ WGDC reports can be found online at www.maine.gov/dep/publications/reports/index.html.

For the past several years, the WGDC report has been a biennial report. However, [38 M.R.S. § 2124-A](#) was amended in 2023¹ to modify the frequency for the WGDC Report to an annual basis. Since reporting requirements for both reports are similar, the Department has combined the 2024 WGDC Report for the 2022 reporting year with this Plan.

Review of the WGDC Reports from the past several years shows that the amount of MSW disposed in Maine has been trending up, while diversion (including all tracked food rescue, animal feed, repair and reuse, recycling, composting, anaerobic digestion, etc., for which data is available²) has remained roughly constant although this data is limited. The per capita disposal and diversion rates are depicted in Figure 1 below.

Figure 1. Municipal Solid Waste Generation Per Capita



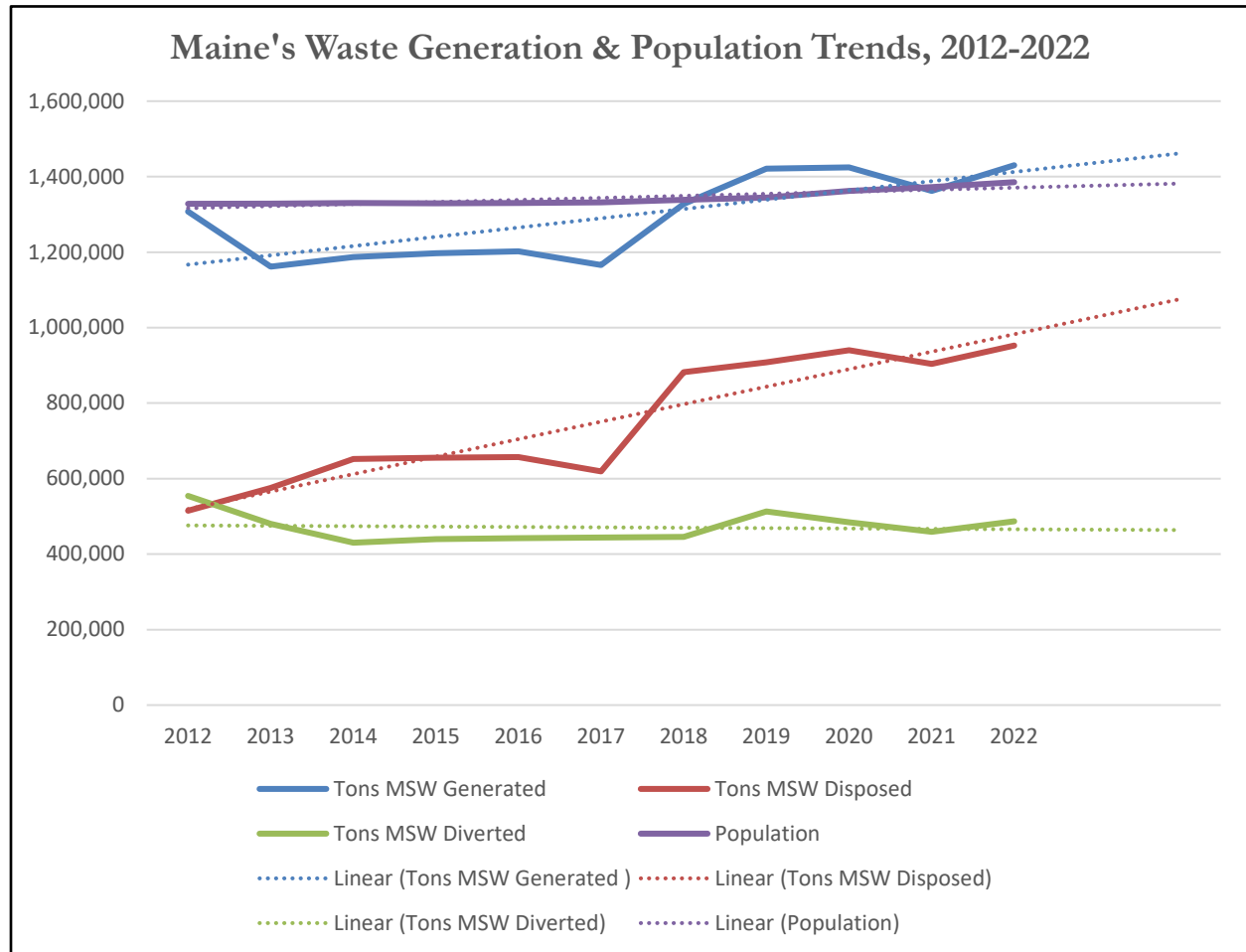
Maine’s population is growing but the per capita data suggests that the increase in disposal tonnage is not simply a factor of increased population. As shown in Figure 2 below, Maine’s disposal tonnage is trending upward faster than the population is growing, while tracked diversion activities remains flat. Subsequently, additional waste disposal capacity will be needed in the long-term, unless there is additional infrastructure in place as well as robust implementation of statewide diversion programs to recover recyclables and organics, and other materials that could

¹ [38 M.R.S. § 2124-A](#) was amended in 2023 by L.D. 1172 – *An Act to Reestablish Annual Reporting on Solid Waste in Maine*. This law requires submittal of the WGDC Report on or before January 1, 2026 and annually thereafter.

² Data for food rescue, animal feed, and repair and reuse is extremely limited; this likely represents only a small subsection of the total quantity of material diverted through such activities.

be diverted from waste disposal. Systemic changes and infrastructure investments will be necessary to reverse this trend.

Figure 2. Waste Management and Population Trends 2012-2022³



B. Waste Characterization

1. Studying Waste in Maine

As described in more detail below, the Department is in the process of moving forward with several different studies to better characterize and understand waste streams in Maine. These studies will be utilized by the Department to assist in long-term waste management planning by providing a comprehensive understanding of the composition of waste currently being disposed. This will allow the Department to target majority components of the waste stream

³ MSW disposed includes MSW incinerated, landfilled, and exported for disposal. It does not include MSW incinerator ash, which is a special waste that was included with MSW totals until 2018, when the Department decided to include that material with special waste totals. While incinerator ash is a residue of incinerating MSW, it is classified as a special waste (“SPW”) in Maine.

for future reduction, diversion, recycling, composting, and anaerobic digestion, and reduce the overall amount of material requiring disposal. It will also aid in planning for the best management of the available space in our landfills and the capacity of Maine's other waste management facilities. Below is a discussion of each of the studies that will be providing critical information that will be necessary in the next phase of solid waste management planning for Maine.

a. General/All Waste Stream Study

The composition of waste generated in Maine and disposed in Maine's facilities can be quite varied. As an example, Table 1 presents the waste types disposed at the Juniper Ridge Landfill ("JRL") in Old Town. The sort categories for a waste characterization study being conducted (discussed later in this Report) on behalf of the Department in 2024 can be found in Appendix B.

Although the Department has not conducted a formal waste characterization study, the Department has evaluated the data provided by various waste management facilities in annual reports submitted to the Department. To supplement this evaluation, the Department is also in the process of contracting a comprehensive statewide audit called a Waste Characterization Study ("WC Study") to begin in 2024. The data gathered from this statewide WC Study will provide a baseline of data for Maine's waste streams and by sector to include the types, amounts and sources of materials generated and destined for disposal. In addition, the WC Study will provide the state with an improved understanding of the sources, content, and condition of construction and demolition debris ("CDD"). It is anticipated that this WC Study will be completed by the beginning of 2025. Funding for the WC Study was provided by the United States Environmental Protection Agency ("USEPA") Solid Waste Infrastructure for Recycling ("SWIFR") grant. This SWIFR grant program includes funding specifically to states for waste characterization studies. Once the WC Study is completed, it will be appended to this Plan and will include additional recommendations based on the study's findings.

Table 1. Summary of Wastes Accepted at Juniper Ridge Landfill in 2022

MSW & CDD Wastes	Total (tons)
Bypass MSW	276,619
CDD/MSW Processing Residue - OBW (Disposed of in the Original 2004 Permitted Footprint)	4,222
CDD/MSW Processing Residue - OBW (Disposed of in the Expansion Permitted Footprint)	74,950
CDD Processing Residue - Fines	73,689
Mixed CDD	332,290
Wood from CDD	147
Residue/Trash from Single Stream	7,064
Total MSW & CDD	768,981⁴
Special Wastes (SPW)	Total (tons)
Burn Pile Ash and/or Hot Loads Area Ash	239
Burnt Structure Debris/Ash	1,828
Catch Basin Grit & Street Sweeping	680
Coal, Oil & Multi-fuel Boiler Ash	4,259
Contaminated Soil & Debris	20,977
Industrial (Miscellaneous)	525
Industrial WWTP Sludge	15,888
Leather Scraps	70
Lime Mud/Grit	4,784
MSW Incinerator Ash	29,502
Municipal WWTP/POTW Sludge	78,383
Non-Friable Asbestos	561
Non-Hazardous Chemical Related	1,033
Oil Spill Debris	1,037
Polyethylene & Cellulose Trimmings	1,917
Pulp Mill Waste	751
Sandblast Grit	533
Spoiled Foods	458
Sulfur Scrubbing Residues	545
Water/Air Filtration Media	10
WWTP Grit Screenings	692
Total SPW	164,672

⁴ Totals for Waste Types (MSW, CDD, and SPW) in Table 1 are based on adding the individual tonnages by material type and vary slightly from the table provided within Juniper Ridge Landfill's annual report most likely due to rounding.

b. Food Waste Stream Study

In addition to the WC Study, the Department is also conducting a Food Loss and Waste Generation Study (“FLWG Study”) funded by a Climate Pollution Reduction Grant from USEPA⁵, which will provide extensive insight into the locations, types, and quantity of food loss and waste, as well as the quality of that food, across the state. Information gathered from studies in other states and municipalities have shown that food scraps, food-related wastes, and other organic materials may comprise roughly 40% of Maine’s solid waste stream and are for the most part suitable for diverting into higher and better uses in a range of activities from feeding hungry people or animals to being transformed into valuable soil amendments that may improve the health and vitality of agricultural land and soils.

To strategically plan for addressing food loss and waste, it is imperative that the Department gather reliable data on how much food is generated and wasted and how that waste is currently managed, as well as characterizing the quality of the surplus food to identify higher and better uses. The FLWG Study will provide comprehensive data on the quantity, quality, types, and sources of surplus food and food scraps currently generated by geographic location. Additionally, data collected will be broken down by generating sector and geographic location, providing a robust source of information about surplus food generation by entities such as grocers, farmers, restaurants, food pantries, schools and universities, prisons, hospitals, and other businesses generating food-related wastes. The data collected from this study will allow the Department to prepare an informed analysis, and a plan for moving food up the food recovery hierarchy within the entire State in an effort to mitigate hunger as well as reduce greenhouse gas emissions and conserve the energy, water and financial capital embedded in wasted food, with an added benefit of improving soil health by recovering nutrients and returning them to agricultural land and soils.

This assessment is the first phase in the state’s movement towards developing a comprehensive plan for addressing food loss and waste in Maine. Initially, the results of this assessment will be used as the basis for an assessment of the greenhouse gas emissions impact from food loss and waste. This assessment will also be used as the baseline for an initial assessment of the current waste management infrastructure’s ability to meet Maine’s greenhouse gas emissions reduction goals and waste reduction and diversion goals and provide recommendations for infrastructure improvements.

c. Sludge/Biosolids Waste Stream Study

A significant issue that has come to the forefront in recent years which will likely influence multiple aspects of materials management from recycling to landfilling to organics management in the future is the presence of per- and polyfluoroalkyl substances (“PFAS”). Used in household products, industrial settings, and firefighting foam since

⁵ In collaboration with the Governor’s Office of Policy Innovation and the Future (“GOPIF”), which is passing grant funding through to the Department to conduct the FLWG Study.

the early 1950s, these chemicals are persistent and bioaccumulative in the environment.⁶ The Maine Legislature has enacted a number of laws relating to PFAS including a ban on the land application, distribution or sale of sludge and sludge-derived products, effective August 2022⁷, a ban on carpets, rugs, and fabric treatments with intentionally added PFAS, effective January 2023, as well as a ban on products with intentionally added PFAS effective January 2030.⁸ Rulemaking is currently underway to prohibit PFAS in certain food service packaging.⁹

With the passage of the ban on the land application of sludge and sludge-derived products, this material is being almost exclusively driven toward Maine's landfills because there is a dearth of other options for economically viable disposal in both the state and region.¹⁰ The physical nature of this material complicates landfill operations requiring the use of bulking material, sometimes at a high ratio, to provide landfill stability. The use and type of sludge bulking material is generally landfill-specific and can consist of various types of wastes like CDD (including bulky wastes), ash, and soil, although bulky wastes are preferred. Adding more wastes in the form of both sludge and bulking materials increases the overall rate at which Maine landfills will reach maximum capacity.

In response to the marked increase in municipal Wastewater Treatment Plant ("WWTP") sludge and associated bulking materials disposed in Maine starting in 2022, as well as challenges to landfill operations that occurred in early 2023, the Department, in collaboration with the Maine Water Environment Association ("MWEA"), commissioned a study to evaluate sludge management practices in Maine and make recommendations for the future. It is intended that this study will provide important information that may be useful for policy decisions moving forward. This study, [An Evaluation of Biosolids Management in Maine and Recommendations for the Future](#), was completed on December 15, 2023. The study assesses current sludge generation rates, limiting factors at landfills (for example, limits on wet wastes and the need for bulking agents), uncertainty of future landfill capacity in Maine, and different types of sludge management strategies. The strategies recommended include volume reduction by dewatering, anaerobic digestion, thermal drying, as well as PFAS destruction

⁶ See EPA's guide to PFAS for more information: <https://www.epa.gov/pfas/pfas-explained>.

⁷ See [38 M.R.S. §1306 \(7\)](#).

⁸ See [38 M.R.S. §1614](#).

⁹ See [32 M.R.S. § 1733 \(3-B\)](#).

¹⁰ In March 2023, the Department investigated alternative outlets other than in-state landfill disposal for sludge generated from municipal WWTPs. It became clear that Maine had no other alternatives available within the state for disposal of this waste stream. Operators of Sewage Sludge Incinerators ("SSIs") and landfills in the entire northeast region had no additional capacity to take Maine's sludge. As a result options remaining were to ship the waste stream to a company in New Brunswick, Canada to use to make sludge derived compost or to ship the waste to landfills as far away as Ohio or South Carolina. Sending to Canada proved to be the most economically viable outcome despite a steep rise in costs to WWTPs. More background information is available in this report [Maine DEP Biosolids Management Final Report.pdf](#).

technologies for piloting in Maine. The study also provides information relating to both costs and feasibility of each of the recommendations.

As volume reduction and PFAS destruction strategies are developed and implemented for managing sludge, the need to rely solely on landfills for disposal will shift. Across the country, researchers are working on technologies that will allow for treatment and destruction of PFAS in several types of media including sludges.¹¹ Should any of these technologies become feasible to scale up and deploy in a cost-effective manner, the door might be reopened for a cautious return to agronomic utilization, with proper sampling and monitoring to ensure that the treated materials are safe for such use. Because these technologies are still in pilot phase, the return to agronomic utilization is likely several years in the future and will not provide a short-term solution for Maine's landfill capacity challenges. Until these technologies become economically viable and scaled to work in Maine, landfill capacity will need to be managed to include disposal of sludges and necessary bulking materials.

d. Packaging Material Waste Stream / Recycling Needs Assessment Study

[38 M.R.S. § 2146](#) enacted in 2021, requires the Department to establish a new product stewardship program for packaging materials. The overall intent of the program is to reduce the amount of packaging from consumer products that go into the landfill and to provide a mechanism to compensate municipalities for handling these packaging materials. The legislature determined that a significant volume of waste going into landfills is in part due to the amount of packaging materials that are used in consumer products (and that are used in shipping of products by third party sellers). The intent of this new law was to create a new program using a producer responsibility model to incentivize producers to reduce the generation and use of unnecessary packaging materials, and thus lower the overall volume of these materials needing a place for waste disposal. Rules for this new program are currently being developed. As part of this program a statewide needs assessment for recycling will be conducted. This assessment will not be completed until the new program is in place and will likely be completed sometime after 2026. This study, which will be funded by producers of packaging, will provide valuable information regarding gaps in Maine's recycling programs with respect to packaging.

¹¹ See [PFAS Disposal and Destruction Research | US EPA](#) and DEP's website on [Treatment and Disposal for PFAS - PFOA and PFOS, Maine Department of Environmental Protection](#).

2. Current Understanding of Maine's Waste Streams

This section of the report will focus on Maine's current understanding of its waste streams. As explained in Section 1, the Department is looking forward to amassing new information about its waste streams so that it can better plan into the future. Until information is obtained from the completed studies, the Department is relying on other sources of existing information including Annual Reports from waste disposal and waste processing facilities, Recycling Establishment Reports, and Municipal Recycling Progress Reports submitted to the Department.

a. Construction and Demolition Debris ("CDD")

Using the existing information listed above, the Department prepares a biennial WGDC Report outlining the waste generated and ultimately disposed of in Maine. Providing a delineation of waste by type and sector is beyond the statutory scope of the WGDC Report, however, the report provides a basic analysis of the following waste streams: MSW, CDD and similar material, SPW, and wood wastes. As shown in Figure 3 below, MSW comprises the majority of waste generated in Maine, followed by CDD, with other materials making up a smaller proportion of the overall waste managed. Also illustrated in the figure is the amount of material that landfill owners received for cover material and other uses by the landfill, which may include a wide variety of permitted materials, including CDD, processing residues from CDD, and other special wastes. As CDD is the second largest category of waste, this Plan will focus on its generation and disposal in more detail. Future addendums to this Plan will incorporate the results and recommendations of the WC Study and the FLWG Study once completed. Figure 3 below includes total Maine-generated wastes disposed within Maine landfills and incinerators, and wastes generated within Maine and exported to out-of-state landfills for disposal. Waste tonnage used as cover material is included as this material also takes up valuable space within landfills.

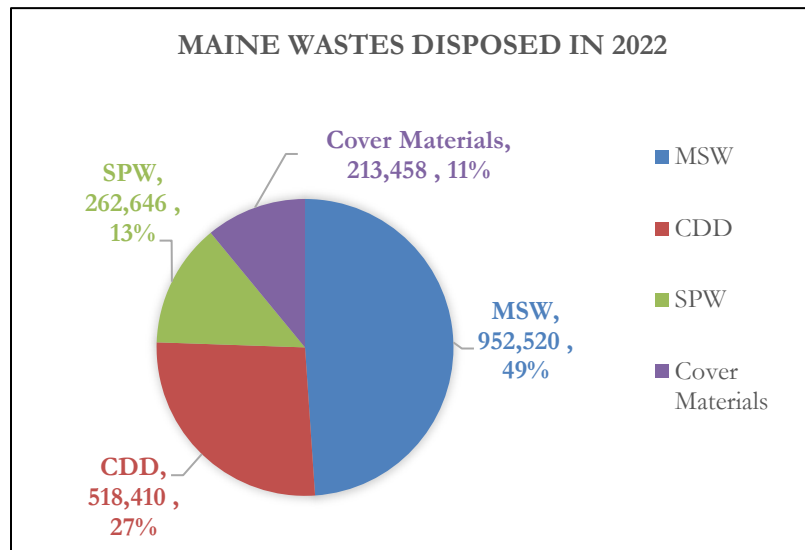
For comparison, while CDD makes up nearly 30% of Maine's waste stream, not including the significant amounts of cover material comprised of CDD, Vermont's 2018 waste characterization study showed that CDD makes up just 16% of its waste.¹² Like Maine, New Hampshire and Vermont are both in the process of conducting waste characterization studies that will be available in the beginning of 2025. Study results from Vermont and New Hampshire will provide a valuable and interesting comparison to the composition of Maine's waste stream.

Several facilities in Maine receive CDD or other wastes and process them to recover materials such as metal, wood chips, or plastics. After processing, much of the residue or waste that cannot be recovered is then sent to disposal facilities. Some of these

¹² See: <https://dec.vermont.gov/sites/dec/files/wmp/SolidWaste/Documents/2018-VT-Waste-Characterization.pdf>.

processing residues can be used for landfill cover and shaping, while some materials are not suitable for an alternate use within the landfill and must be managed as waste.

Figure 3. Maine Generated Wastes Disposed in 2022



Once processed by a Maine facility, any outgoing material from the facility is considered to be a waste generated within the state.¹³ Processing facilities are required to be licensed by the Department. As permitted, these facilities may receive material from both within and outside of Maine as well as send disposal material to facilities within or outside of Maine.

As an example, Table 2 depicts the origin of material received by ReSource Waste Services of Lewiston LLC (“ReSource Lewiston”) and WIN Waste Innovations in Eliot (formerly Aggregate Recycling Corporation), the two largest processing facilities in Maine by volume for 2022. The total amount of material sent to Maine landfills from these facilities in 2022 was 130,580 tons. Tables 3 and 4 specify the destinations of the materials leaving these facilities after processing. There are other smaller processing facilities that operate in a similar manner but are not highlighted here.

¹³ Waste generated within the state is defined at [38 MRS § 1303-C \(40-A\)\(C\)](#).

Table 2. Origin of Materials Received at Large Maine CDD Processing Facilities in 2022

Facility	ME	MA	NH	CT	RI	Unknown ¹⁴	Total
ReSource Lewiston (Tons)	36,563	87,991	40,123	-	-	-	164,677
% of Total	22%	53%	24%	-	-	-	-
WIN Waste Innovations (Tons)	11,586	6,279	18,552	2	501	20,083	57,003
% of Total	20%	11%	33%	0.004%	1%	35%	-
Total Tons by State	48,149	94,270	58,675	2	501	20,083	221,680
Overall % of Total	22%	43%	26%	0%	0%	9%	-

Table 3. ReSource Lewiston Material Disposition

	Recycling (Non-Landfill Use)	Landfill Use (shaping, grading, cover, etc.)	Maine Landfill Disposal	Total to Maine Landfill	Total Tons
Percent of Total Tons by Disposition	9%	44%	47%	91%	-
Amount from Maine ¹⁵ (Tons)	3,470	16,331	17,519	33,850	37,320
Proportional Amount from OOS ¹⁶ (Tons)	12,158	57,222	61,385	118,607	130,765
Total Tons	15,628	73,553	78,904	152,457	168,085

¹⁴ These materials were received prior to when the facility began tracking the origin of received material.

¹⁵ The proportional amount for Maine is based on the percent of waste materials received at the facility originally generated in Maine. For example, approximately 22% of the materials received at ReSource Lewiston was from Maine in 2022.

¹⁶ The proportional amount for OOS (“Out-of-State”) is based on the percent of waste materials received at the facility originally generated in another state. For example, approximately 78% of the materials received at ReSource Lewiston was from Massachusetts and New Hampshire in 2022.

Table 4. WIN Waste Innovations Material Disposition

	Recycling (Non-Landfill Uses)	Ash Landfill (Ground Cover) - Exported to MA	Maine Landfill Disposal	Total Tons
Percent of Total Tons by Disposition	3%	15%	81%	-
Proportional Amount from Maine ¹⁷ (Tons)	429	1,925	10,335	12,689
Proportional Amount from OOS ¹⁸ (Tons)	1,716	7,701	41,341	50,758
Total Tons	2,145	9,626	51,676	63,447

Materials diverted from a landfill by ReSource Lewiston’s processing included 11,572 tons of various materials including CDD wood chips sent for particle board production, plastics, sheetrock, tires, and aggregate sent for fill or further processing. According to the Annual Report submitted to the Department by Resource Lewiston, 73,553 tons were sent to the JRL for shaping, grading, cover, or use in landfill venting systems in 2022. WIN Waste Innovations similarly accepted a larger quantity of materials from other states than from within Maine and sent a larger quantity of waste to Maine landfills than it received from within Maine, as shown in Tables 2 and 4. For example, WIN Waste Innovations received approximately 11,586 tons of waste from Maine in 2022, during which time the facility received approximately 25,334 tons from other New England states, and, prior to tracking the state from which material was received, took in about 19,235 tons of mixed construction and demolition debris and 848 tons of ground asphalt shingles for which the origins are unknown. WIN Waste Innovations took in approximately 57,003 tons of material in total and sent just over 50,000 tons of debris to Maine landfills, with the majority (46,457 tons) going to JRL. In some cases, the amount of outgoing waste or recyclable material reported for a calendar year may be greater than the amount accepted by a facility during that year due to materials that had been stored on-site from the previous year’s activity.

b. Problematic Material¹⁹

Some wastes that are not present in the waste stream in large quantities are still challenging for waste handling, processing, and disposal facilities. These wastes are

¹⁷ The proportional amount for Maine is based on the percent of waste materials received at the facility originally generated in Maine; for example, approximately 20% of the materials received at WIN Waste Innovations was from Maine in 2022.

¹⁸ The proportional amount for OOS is based on the percent of waste materials received at the facility originally generated in another state; for example, approximately 80% of the materials received at WIN Waste Innovations was from Massachusetts and New Hampshire in 2022.

¹⁹ Problematic materials are unwanted materials that are difficult to manage in household and commercial waste such as mercury-containing auto switches, thermostats, and bulbs; rechargeable batteries; and paint. These materials can be challenging to manage due, in part, to their chemical composition, fire potential, or detriment to the environment if spilled.

described in more detail in this section. Some of these waste types are managed through product stewardship programs in Maine, as described in the [Department's Annual Product Stewardship Report](#). Other waste types in this category require more robust handling, processing and disposal measures. Once the WC Study has been completed, the Department may evaluate further whether any special measures should be taken for wastes that fall into this category.

i. Producer Responsibility Programs

Maine currently has [product stewardship](#) programs, which aid in diverting the following materials from disposal:

- Mercury auto switches ([38 M.R.S. § 1665-A](#));
- Specific electronic devices ([38 M.R.S. § 1610](#));
- Cell phones ([38 M.R.S. § 2143](#));
- Mercury thermostats ([38 M.R.S. § 1665-B](#));
- Mercury-added lamps ([38 M.R.S. § 1672](#));
- Paint ([38 M.R.S. § 2144](#));
- Rechargeable batteries ([38 M.R.S. § 2165](#)); and
- Pharmaceuticals ([38 M.R.S. § 1612](#))

Maine is currently in the process of establishing an [Extended Producer Responsibility Program for Packaging](#) (“EPR Packaging Program”) to meet the requirements set forth in [38 M.R.S. § 2146](#). It is anticipated that this program will begin operation in 2026 with municipalities receiving reimbursements for some of the costs related to handling packaging materials in 2027.

ii. Beverage Redemption Container Program

Maine has a returnable beverage container program pursuant to [38 M.R.S. §§ 3101 – 3119](#), which is a type of product stewardship program as it places some responsibility on entities other than consumers and municipalities to recover materials. All material collected as part of the returnable beverage container program is required to be recycled.

iii. Household Hazardous Waste (“HHW”) and Waste Pesticides

In recent years, Department staff have noticed an increase in inquiries about Household Hazardous Waste (“HHW”) and Waste Pesticides. HHW is a term used to describe any hazardous waste material excluded from identification as a hazardous waste by [06-096 C.M.R. ch. 850, § 3\(A\)\(4\)\(vii\)](#) because it is generated by households, including single and multi-family residences, hotels and motels, bunkhouses, picnic grounds, and day-use recreational facilities. These materials are exempt from the precautionary handling requirements that apply to commercially generated hazardous waste. Many waste pesticides are banned from landfilling while some are not, meaning that some may be disposed of in a landfill.

Options to manage pesticides and other types of HHW are extremely limited in many regions of Maine. This results in more items being disposed of in Maine's landfills that could be diverted.

For waste pesticides, the Maine Board of Pesticides Control conducts a program each October to collect and properly dispose of banned and unusable pesticides from homeowners and farms. Pre-registration is required, registration numbers are limited, and collections are held at just four sites across the state one day per year, so the program, while important, is limited in scope and capacity.

For HHW, there are only two permanent collection sites open to all Maine residents; however, they are only open on a seasonal basis (not in winter) and are both located in the Southern part of the State (Lewiston and Portland). Disposal at these facilities is expensive and often inconvenient for many Maine residents.²⁰ While some municipalities provide one-day collection events for HHW, these are not consistent or routine, and due to the costs, many municipalities have ceased holding HHW collection events altogether.

iv. Consumer Electronic Products and Batteries

With the proliferation of consumer electronics, more electronic devices and batteries are making their way into the municipal waste stream, from laptop computers and tablets to vape pens. Many of these products are recycled through Maine's product stewardship program for electronic wastes. Non-covered products are likely to end up in the landfill or to be managed at a waste processing facility. The Department anticipates further information about these types of wastes in the upcoming WC Study and will also be addressing these wastes in the 2024 Product Stewardship Report.

III. Waste Reduction, Diversion, and Recycling Assessment

A. Laws Addressing Recycling and Diversion Goals

Maine has several relevant laws addressing recycling and waste diversion. [38 M.R.S. § 2101](#) establishes a Solid Waste Management Hierarchy to be used as guiding principles in decision-making for the management of solid waste. [38 M.R.S. § 2101](#) sets forth an integrated approach to solid waste management with waste reduction as the highest priority, followed by reuse, recycling, composting, waste processing to reduce waste volume including waste-to-energy, and landfilling as the management option of last resort. [38 M.R.S. § 2101-B](#), the Food Recovery Hierarchy, provides additional guidance on the management of food waste within the context of the Solid Waste Management Hierarchy. It prioritizes reducing surplus food generation at the source, donating surplus food to feed hungry people, diverting food scraps for use as animal

²⁰ Fee structures vary from \$3.50 per pound or \$6.50 per gallon to \$33-\$40 per unit, depending on the facility and whether the person dropping materials off is part of a municipality that has arranged for reduced fees.

feed, composting of food scraps and diversion to waste utilization technologies to create fuels and recover energy, and finally, incineration or land disposal.

Additionally, Maine's laws have established specific recycling and waste reduction goals including:

- [38 M.R.S. § 2132\(1\)](#) A goal to recycle or compost 50% of the MSW tonnage generated each year within the State by January 1, 2021.
- [38 M.R.S. § 2132\(1-B\)](#) A goal to reduce the statewide per capita disposal rate of MSW tonnage to 0.55 tons disposed per capita by January 1, 2019 and to further reduce the statewide per capita disposal rate by an additional 5% every 5 years thereafter. This incremental goal of reducing waste by 5% every 5 years provides a mechanism to measure progress at the municipal level.
- [38 M.R.S. § 2133\(1-A\)](#) Municipal responsibilities for meeting the goals above. Municipalities are not required to meet the state recycling goal in 38 M.R.S. § 2132, but they must *demonstrate* reasonable progress toward that goal, and the Department shall *determine* reasonable progress. While reasonable progress is not specifically defined in statute, the Department notes that the goals set in statute are used as criteria for determining progress.

It is important to clarify that composting, anaerobic digestion, and any waste reduction, reuse, or recovery of materials to prevent them from becoming waste is considered a municipal diversion effort. For example, communities hosting repair cafés or annual yard sales may use the estimated diversion amounts from such events to support their traditional recycling program or other established municipal programs to divert materials from disposal. This information may be reported by a municipality in their Municipal Recycling Report.

[38 M.R.S. § 2133\(7\)](#) outlines reporting requirements for municipalities to provide data to the State for evaluating progress toward the goals outlined above. Municipalities are required to report biennially on forms provided by the Department, on their solid waste management and recycling practices. The biennial report must identify the options available to residents and businesses within the municipality for managing solid waste, including any provisions for the separate management of reportable recyclable materials and organic waste and the disposal of other MSW, including CDD.

B. Reducing the Amount of Waste Generated

The Department's 2019 Plan identified that market conditions for solid waste management in Maine created significant drivers that worked against managing wastes higher up Maine's Solid Waste Management Hierarchy. Today this is still true. Simply put, it is expensive to start up a program where specific waste materials are separated out from other waste streams for recovery, even if such a program has the potential to save money and conserve disposal capacity in the long run. Additionally, given the constraints for the Department as discussed later, landfilling material is still currently the less expensive option. Table 5 below outlines Maine's progress toward waste reduction goals.

Table 5. Assessment of Progress Towards Per Capita Waste Reduction Goal

Maine MSW Disposal vs. Goal	2022
Tons MSW Generated and Disposed	952,520
Pounds MSW Generated and Disposed	1,905,039,782
Population	1,385,340
Tons per Capita	0.69
Pounds per capita	1,375
Tons per Capita Disposal Reduction Goal	0.55
Tons per Capita Short of Goal	(0.138)
Pounds per Capita Short of Goal	(275)
Per Capita Pounds Disposed per Week	26
Per Capita Pounds Disposed per Day	3.8

It is important to distinguish between waste generation and waste disposal. Waste generation includes the generation of all waste materials, even materials that are diverted from disposal and managed through an alternate pathway such as recycling or composting. These materials are still a waste that has been generated and requires management, but there is significant potential to improve processes and provide economic incentives to recover the resources in waste. Managing waste sustainably reduces the extraction of virgin natural resources, and often the energy use and other impacts related to extraction, processing, and transport of natural resources to produce new products.²¹

When we dispose of an item, we may not consider the waste that was generated in that item's production, or the resources that were consumed to produce the item. A way to better grasp the complete impacts of our waste is to consider the full lifecycle of goods, from resource extraction, processing and energy and water use to emissions. For example, disposing of food is a waste of the resources that go into producing food, including agricultural land, water, pesticides, fertilizers, and energy. The production, transport, storage, and other management of food generates significant greenhouse gas emissions that are wasted when the food goes uneaten. Surplus food or food scraps that end up in landfills generate methane, a potent greenhouse gas.

Capturing surplus food and food scraps prior to entry into the disposal pathway provides an opportunity to reduce reliance on disposal options while providing Maine's communities with an opportunity to prevent hunger or reuse these valuable nutrients to enrich soil while reducing greenhouse gas emissions.

EPA's Waste Reduction Model ("WARM")²² is a tool designed to compare waste management scenarios, such as landfill or incineration of materials versus recycling, composting, or anaerobic digestion, to determine the potential greenhouse gas emissions reductions, energy savings, and economic impacts from different waste management practices. The WARM tool can also be

²¹ <https://www.epa.gov/warm/basic-information-about-waste-reduction-model-warm>.

²² The WARM tool may be accessed online at <https://www.epa.gov/warm>.

used to compare diversion activities higher up the waste and food recovery hierarchies, including food rescue, reuse, and waste reduction. Using Maine-specific data and a high-level summary of 2022's diversion activities, Table 6 provides an estimate of the greenhouse gas emissions reductions related to Maine's statewide food rescue, recycling, composting, and anaerobic digestion activities.

The WARM tool provides the estimated greenhouse gas emissions reductions in Metric Tons of Carbon Dioxide Equivalents ("MTCO₂E"), along with a simple equivalent measure to understand the environmental impact by translating the metric tons of carbon dioxide into the equivalent avoided emissions of passenger vehicles²³ driven for a year.²⁴

Table 6. Estimated Greenhouse Gas Reductions Based on 2022 Diversion Activities

Diversion Pathway (Compared to Landfill Disposal)	Greenhouse Gas Emissions (MTCO₂E) Reduction²⁵	Equivalent Annual Passenger Vehicle Emissions	Tons of Material Diverted from Disposal	Greenhouse Gas Emissions (MTCO₂E) Reduction Per Ton Diverted
Food Rescue ²⁶	16,082.26	3,414.49	3,829.75	4.20
Traditional Recyclables	526,858.83	111,859.62	188,061.20	2.80
Scrap Metal Recycling	1,110,367.07	235,746.72	251,975.14	4.41
Compost (Food/Yard Waste)	2,742.26	582.22	7,663.77	0.36
Anaerobic Digestion	11,561.46	2,454.66	21,520.57	0.54
Total/Average (per Ton)	1,667,611.87	354,057.72	473,050.43	3.53

Traditional recyclables included in the scenario above include typical household packaging and paper, such as cardboard, paper, glass, beverage containers, plastic jugs, tubs, and film, and metal cans. The "food waste" and "yard trimmings" categories were used to calculate emissions reductions related to composting. The "food waste" category was also used to model food rescue, with a 1-3% (used 2% as the average) loss rate factored in, as per the EPA WARM tool guidance. The food rescue tonnage data sources are limited, and this tonnage data comes from just a few large chain retailers for which information was readily accessible by the Department. It is likely the actual food rescue quantities are significantly greater. The food wastes diverted via

²³ Passenger vehicles are defined as 2-axle 4-tire vehicles, including passenger cars, vans, pickup trucks, and sport/utility vehicles. The WARM tool is based on average U.S. vehicle mileage of 11,520 miles per year and a weighted average fuel economy of 22.9 across all vehicle types. See EPA's reference page for details: <https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#vehicles>.

²⁴ The WARM tool is not intended to be used as a Greenhouse Gas Emissions annual inventory tool as it reflects the full lifecycle of a waste. See the EPA Life-Cycle GHG Accounting Versus GHG Emissions Inventories fact sheet for details: <https://www.epa.gov/sites/default/files/2016-03/documents/life-cycle-ghg-accounting-versus-ghg-emission-inventories10-28-10.pdf>.

²⁵ Modeling in WARM is comparing diversion to landfill disposal.

²⁶ This includes food donation as well as animal feed donated to farms; uses that still resulted in the food being consumed rather than managed as waste.

anaerobic digestion include milk and brewery wastes, food waste, and other source-separated organics; the food waste category was also used to model their diversion in the WARM tool.

1. Recycling Assessment

Table 7 presents Maine's current recycling rate, including a breakdown of CDD and MSW disposition during 2022.

Table 7. MSW and CDD Disposition During 2022

Maine MSW Disposition	Tons
Maine MSW landfilled in state	515,474
Maine MSW disposed via waste-to-energy	382,609
Maine MSW disposed of out-of-state	54,437
Subtotal Maine MSW (exclusive of CDD) Disposed	952,520
Paper; cardboard; plastic, metal, and glass containers, textiles; and white goods recycled	188,061
Other MSW recycled (ferrous and non-ferrous scrap metal, and vehicle batteries)	255,142
Estimates for MSW reused (textiles, packaging, etc.)	9,523
Reported food rescue (food donation for human consumption)	3,565
Reported food rescue (animal feed)	1,223
Reported MSW composted (includes yard waste and food scraps, food processing waste; does not include backyard composting and <60 yds ³ /month)	7,664
Anaerobic digestion (not including non-food commercial wastes such as de-icer, distillate or fats, oils, and grease)	21,521
Subtotal Maine MSW Reused, Rescued, Recycled & Composted/Digested	486,698
Total Maine MSW (exclusive of CDD)	1,439,218
Maine's MSW Recycling Rate (exclusive of CDD)	33.8%
Maine CDD Disposition	Tons
Mixed CDD disposed of in-state	505,282
Mixed CDD disposed of out-of-state	13,128
Processed CDD sent to a landfill for daily cover, shaping, and grading	76,664
Processed CDD recycled into new wood products	7,589
Processed CDD beneficially used as fuel	6,842
Subtotal Maine CDD recycled & beneficially used as fuel	14,431
Total CDD generated	609,506
Maine's CDD Recycling Rate (all non-landfill uses)	2.37%
Total MSW & CDD generated	2,048,723
Total MSW & CDD disposed (includes materials used in landfill for cover, shaping, and grading)	1,547,594
Total MSW, CDD, and organics recycled and composted (including wood waste used as fuel chips)	501,129
Maine's Combined MSW, CDD & Organics Recycling Rate	24.46%

The global economic impacts from changes in recycling policies discussed in our 2019 Plan²⁷ continue to have a lingering effect on recycling in the United States and across the world. Generally, recycling outlets continue to require higher quality bale specifications than in years past, which results in materials recovery facilities needing to invest more time and labor in sorting single-stream recycling to create bales of materials acceptable to available markets.²⁸

The changed economics of recycling have caused many municipalities in Maine to consider curtailing or eliminating their programs. Some communities have faced steep increases in costs for recycling services from private sector companies. When these costs are greater than the cost of disposal some are opting to suspend recycling services, at least until recycling is less costly than disposal. As shown in Table 8 below, there is much greater variability and higher costs associated with recycling than with disposal fees for MSW or CDD.

Decreased market values have caused some towns that operate facilities which collect source-separated materials to stop collecting mixed plastics, redirecting this recycling stream to disposal. For example, in 2022 only 176 municipalities out of nearly 500 submitted recycling progress reports. Approximately 130 indicated that they offer some form of recycling program, but these vary greatly in terms of what materials can be recycled from a cardboard-only drop-off program to curbside recycling for commingled materials.

Table 8. Municipal Costs Reported for Recycling and Disposal

Cost Comparison Per Ton - Recycling vs. Disposal ²⁹				
	Recycling (Hauling)	Recycling (Processing)	Disposal (MSW)	Disposal (CDD)
Min	\$55.00	\$ -	\$0.50	\$17.00
Max	\$900.00	\$384.00	\$225.00	\$225.00
Median	\$391.43	\$85.00	\$82.70	\$95.86
Average	\$440.80	\$99.25	\$86.90	\$96.64

2. Current Diversion Programs

Maine has two programs that are specifically designed to assist with waste diversion; the [Solid Waste Diversion Grant Program](#) (“Waste Diversion Grant Program”), and the recently enacted EPR Packaging Program.

The Waste Diversion Grant Program provides grants to public and private entities to assist in the development, implementation or improvement of programs, projects, initiatives or activities designed to increase the diversion of solid waste from disposal in the State. The

²⁷ See the 2019 Plan update for additional information: <https://www.maine.gov/dep/publications/reports/index.html>.

²⁸ See: <https://resource-recycling.com/plastics/2022/04/06/study-national-sword-increased-us-landfilled-plastic/>.

²⁹ The majority of municipalities specified the tip fee per ton. For municipalities that did not specify, it is assumed that the amount they provided is the tip fee rather than the total cost.

Department offers these grants twice annually. The Department seeks proposals that will take advantage of regional economies of scale to increase organics management and recycling infrastructure in underserved areas of the state; promote waste reduction through reuse, repair and sharing economy initiatives (i.e., tool lending libraries or other equipment sharing programs); reduce wasted food through donation or other sharing initiatives; expand the types of materials managed through composting, recycling, and reuse; and address a statewide need.

The EPR Packaging Program's goal is to divert packaging material from disposal towards recycling and reuse. Producers of products will pay into a fund based on the amount and recyclability of packaging associated with their products. These funds will be used to reimburse municipalities for eligible recycling and waste management costs, make investments in recycling infrastructure, and help Maine citizens understand how to recycle. This program is currently in development and is expected to be operational in 2026 with the first payments to municipalities anticipated in 2027.

Aside from Maine's new EPR Packaging Program, most of the other product stewardship programs the Department administers handle waste materials that pose challenges for disposal rather than materials that make up a large portion of the waste stream. Not counting the EPR Packaging Program, there are currently eight active product stewardship programs administered by the Department.

Generally, the Department would benefit from a better understanding of municipal roadblocks to diversion programs and welcomes public feedback on the items below, which include comments received during the course of stakeholder meetings and written comments received for consideration in this Plan.

3. Steps to Assist with Waste Reduction and Increase Recycling Opportunities

The Department currently lacks in-depth knowledge about precisely what is in Maine's municipal solid waste stream, which makes it challenging to come up with an effective and comprehensive plan to divert waste materials by type. The statewide WC Study and FLWG Study will provide a great level of detail regarding what materials are being managed as waste, which will in turn allow the Department to prioritize materials for diversion.

IV. Determination of Existing and Potential Disposal Capacity

A. Increasing Need for Disposal Capacity

Over the past five years since the previous Plan update, Maine residents, businesses, and institutions have generated roughly 1,700,000 to nearly 1,900,000 total tons of waste per year, averaging approximately 1,790,000 tons for the five-year period. This accounts for all types of waste generated within the state, such as MSW, CDD, SPW, and cover materials that are often comprised of processed waste materials, and while necessary, still take up valuable landfill space (see Table 9). This total also includes waste generated within the state that was exported outside of Maine for disposal.

Table 9. Maine Generated Wastes

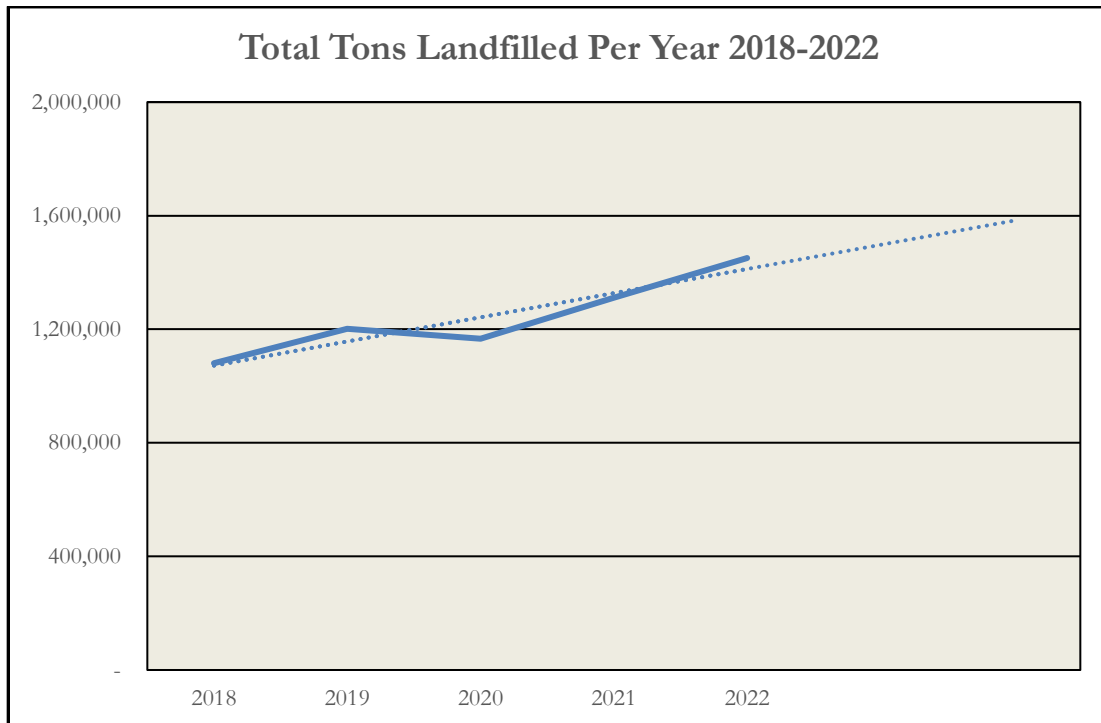
Year	MSW Landfilled³⁰	MSW Incinerated	CDD Landfilled	SPW Landfilled	Cover Landfilled	Total Disposed
2018	388,629	434,652	485,362	244,706	145,128	1,698,477
2019	423,408	420,687	446,135	257,216	217,679	1,765,126
2020	498,013	441,804	461,299	308,309	153,665	1,863,089
2021	535,648	365,941	474,805	284,866	161,113	1,822,373
2022	569,911	382,609	518,410	262,646	213,458	1,785,505

The annual amount of waste generated within the state has increased by an average rate of 1.3% per year in the past five years, with a change of 5.1% when comparing 2018 to 2022. Using the year with the highest amount of waste generated during the past five years (2020) and the current rate of increase in waste generation (5.1%), the Department estimates that Maine will generate approximately 1,960,000 tons of waste in 2029, 2,060,000 tons in 2034, 2,160,000 tons in 2039, and 2,270,000 tons in 2049.

Since 2018, the total amount of waste landfilled, including the minimal amount of waste shipped to out-of-state landfills, has grown even more significantly by 34.28%. When comparing 2018 to 2022, the rate of increase was 7.8% annually. This is most likely due to several factors including: the idling of the waste-to-energy facility in Orrington; the idling of the Hampden waste processing facility, and the resultant shift of waste and recycling from those communities (as is discussed later in the report); the increase in WWTP sludge being landfilled due to the sludge land application ban; and the increase in CDD and other similar wastes being generated. Figure 4 reflects Maine-generated waste disposed in Maine landfills only.³¹

³⁰ This total includes Maine-generated MSW exported to landfills located in other states or Canada.

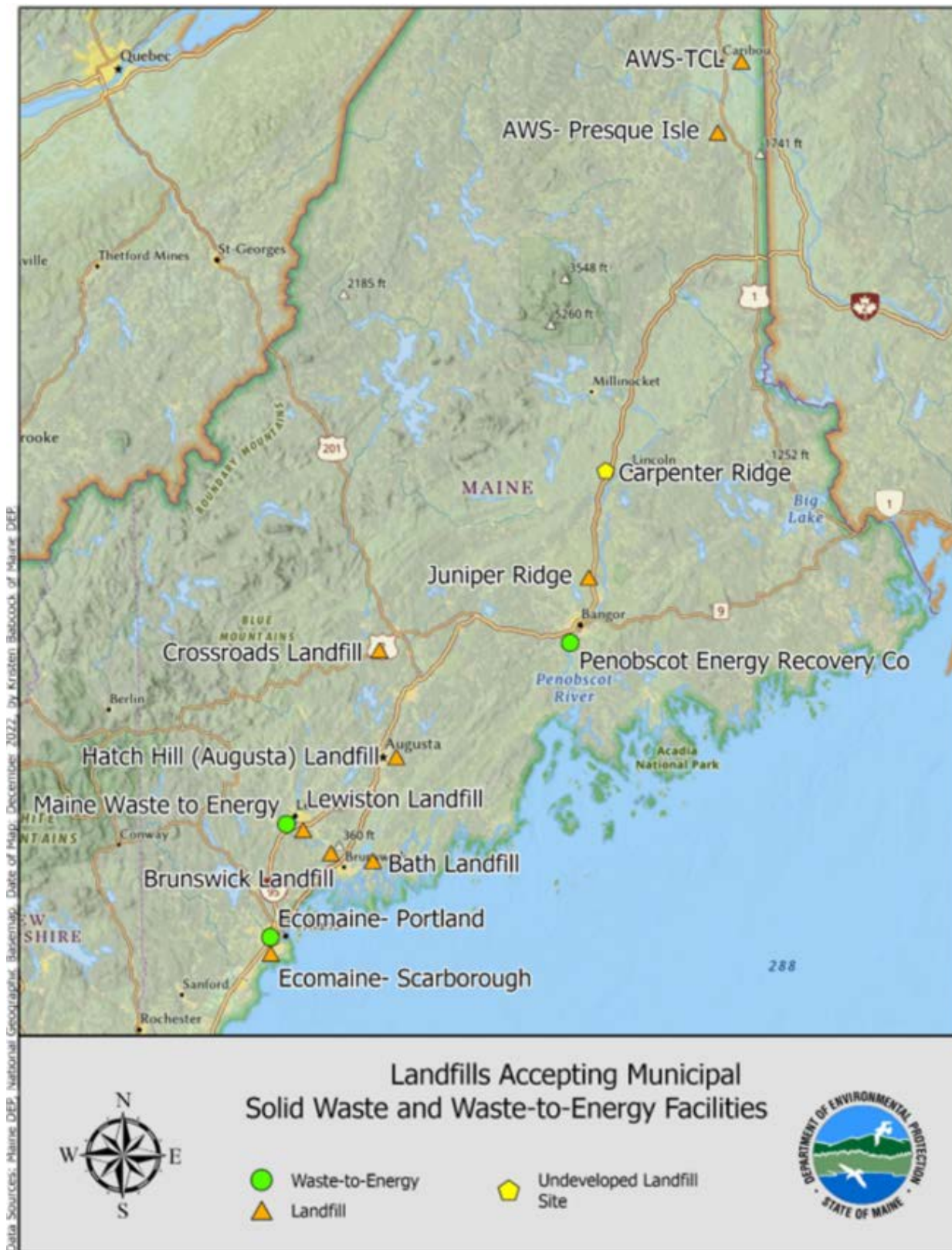
³¹ This figure does not include out-of-state waste accepted at the Crossroads Landfill.

Figure 4. Total Tons of Material Landfilled in Maine from 2018-2022

Maine has eight landfills currently accepting MSW, three waste-to-energy incinerators, and one MSW waste processing facility (now called Municipal Waste Solutions). These facilities are briefly described below, including the average amount of waste received over the five-year period since the previous Plan was published.

Since generators and haulers will seek to find the most cost-effective disposal facility for their material, MSW is treated as a commodity by waste disposal facilities (including landfills and incinerators). Landfill operators will take into account market conditions for various wastes and their ability to use waste as cover material. Therefore, estimates of capacity or life beyond 5 to 10 years may not be accurate, as the volume of material accepted at a given facility can vary significantly from year to year as generators and haulers seek more cost-effective facilities and landfills change their operations. As transportation of waste is a significant factor in the overall cost of waste management, the locations and size of waste management facilities should be considered as a part of statewide waste management decision making. Figure 5 provides the location of these waste disposal facilities.

Figure 5. Landfills and Waste-to-Energy Facilities Accepting MSW in Maine



B. Current Waste Disposal and MSW Processing Facilities

1. Waste-to-Energy Facilities

There are three waste-to-energy incinerators in Maine: ecomaine in Portland, Mid-Maine Waste Action Corporation (“MMWAC”) in Auburn, and the Garbage Recycling and Clean Energy facility (“GRACE”)³² in Orrington. However, the Orrington waste-to-energy facility hasn’t incinerated waste since May 2023 and has bypassed significant amounts of waste due to maintenance issues over the past several years. It has instead been sending its waste for landfilling or storing it on-site. The GRACE facility will likely require significant investment to restart operations. All three waste-to-energy incinerators are licensed to accept both in-state and out-of-state waste. The total amount of waste accepted by these facilities in 2022 is shown in Table 10, and their annual licensed capacity in Table 11. The two operational waste-to-energy facilities are currently meeting their air quality emission standards and are being operated and maintained in accordance with applicable State laws, rules and Department licenses. Future capacity of these facilities is expected to remain stable, as currently licensed and constructed. As can be seen when comparing the charts, the two currently operating waste-to-energy facilities are operating at levels near their licensed capacity.

Table 10. 2022 Solid Wastes Managed by Maine's Waste-to-Energy Facilities by Origin

Facility	Maine MSW	Recycling Residue	Other Waste	Total Maine Tons	Out-of-State Waste (NH & MA)	Total Tons
ecomaine	183,654	3,2789	4,962	191,894	1,879	193,774
MMWAC	83,603	-	4,004	87,607	-	87,607
GRACE	98,162	-	4,946	103,108	547	103,655
Totals	365,419	3,2789	13,912	382,609	2,426	385,035

³² GRACE purchased the Orrington Waste-to-Energy facility (formerly called Penobscot Energy Recycling Corporation) in November 2023.

Table 11. Available Licensed MSW Disposal Capacity at Maine’s Waste-to-Energy Facilities

Waste-to-Energy Facilities	Annual Capacity	2020	2025	2030	2035
Tons/year					
MMWAC	70,000	70,000	70,000	70,000	70,000
ecomaine	170,000	170,000	170,000	170,000	170,000
GRACE ³³	310,000	210,000	210,000	210,000	210,000
Total Capacity	550,000	450,000	450,000	450,000	450,000

With the waste-to-energy facility in Orrington not currently operating, approximately 210,000 tons of capacity has been lost. The majority of this material has been diverted to the JRL. As will be discussed in more detail further in this Plan, efforts to restart the Orrington waste-to-energy facility are currently underway, which would reduce the volume of waste going to Maine landfills.

2. Landfills

There are eight landfills that are licensed and currently operating that accept MSW or “MSW bypass,” which is defined as MSW originally destined for a facility but diverted due to temporary capacity issues (i.e., during maintenance activities). Of these eight, six are municipally owned, one is owned by the State but managed by a contracted operator, and one is commercially owned and operated (Waste Management Disposal Services of Maine, or “Crossroads Landfill”). Also, there are 19 smaller landfills operated by municipalities that accept wood waste and CDD, and a small secure landfill that in addition to wood waste and CDD accepts WWTP sludge and other special wastes. Additionally, two municipal landfills (Rockland and Mid-Coast Solid Waste Corporation landfill in Rockport) accepted MSW during their operational history but now only accept nominal amounts of CDD, and one (Rockland) is in the process of closing and will soon no longer accept any material.

There are approximately eight generator-owned landfills that are associated with a specific manufacturing facility which are licensed to take waste only from that facility. Since the wastes disposed at these generator-owned landfills are specific to those facilities, they are not discussed in the Plan.

The amount of material each landfill accepted annually since the previous Plan was published is detailed in Table 12. The eight landfills that accept MSW or MSW bypass are

³³ GRACE’s original design capacity was 310,000 tons per year which is the capacity of its two boilers operating full time. In 2020, GRACE changed its boilers’ operating time, resulting in an operational reduction in waste incineration capacity to 210,000 tons annually. It is unknown whether the new owners will operate at the design capacity of 310,000 tons/year once the facility is restarted and fully operational.

discussed below, with an average amount of material the landfill received annually during the last five years. It should be noted that of the eight landfills, two, JRL and Crossroads Landfill, receive the majority of material, JRL accepting 52% and Crossroads Landfill accepting 27% of the total amount of waste landfilled in Maine. Additionally, Crossroads Landfill, as a privately owned and operated commercial landfill, can and does accept waste from out of state. The total amount of waste managed at Maine's landfills for the past five years is shown in Table 12 and illustrated in the pie chart that is Figure 5. The amount of material disposed in these landfills since the 2018 report has grown by 34.28%.

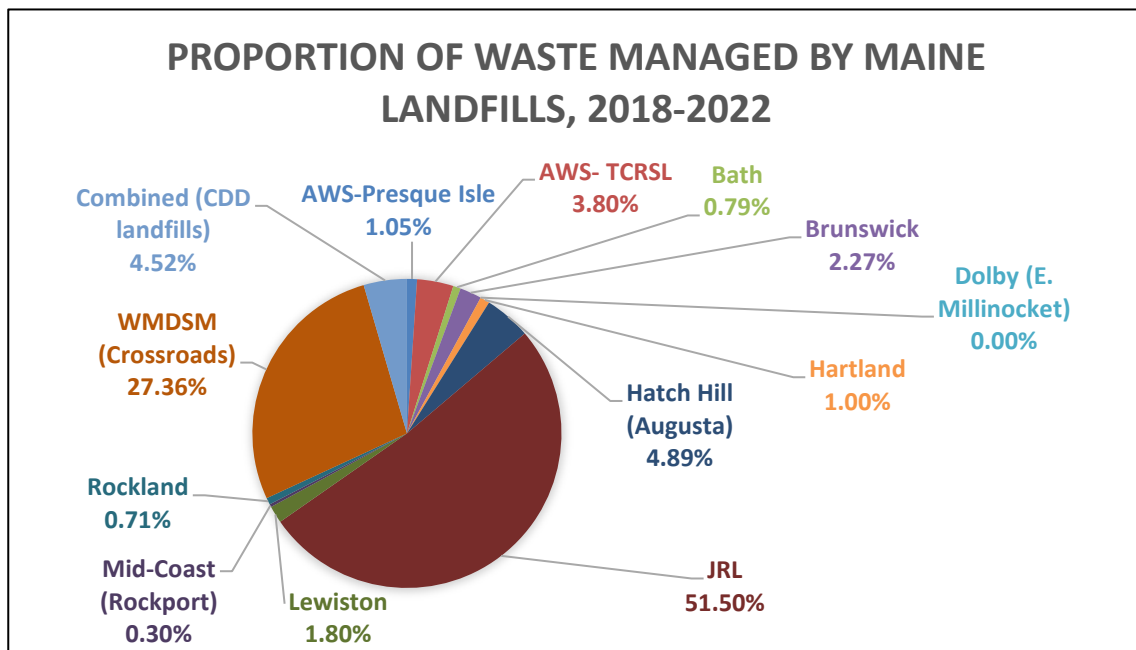
In most cases, the landfill capacity used and capacity remaining is calculated by the facility from annual physical surveys of the landfill. Therefore, capacity estimates include capacity that may have been gained by the landfill through settlement of previously disposed waste as well as capacity used by waste that was utilized as daily cover.

Landfills are frequently licensed to use a specific waste material as alternative daily cover ("ADC"). As examples, in 2020, 2021, and 2022, Crossroads Landfill used the following wastes as ADC: processed utility poles, crushed glass, CDD wood chips, ashes, contaminated soil, WWTP sludge, auto shredder fluff and some other special wastes. During the same three-year period, JRL used CDD fines and processing residues and wood as ADC. JRL is also licensed to use other wastes as ADC including ashes and contaminated soils. Some of the wastes suitable for cover, and other types of waste such as bulky wastes, are also utilized for stabilizing material like sludge. Table 12 outlines the total amount of all material that was received by these landfills for either disposal, use as ADC, or other useful purpose by the landfill. However, the ability to use material for landfill operations and for stabilizing sludge does require a more nuanced view of waste disposal. Since JRL received over 50% of material landfilled in Maine, JRL will be discussed later in more detail.

Table 12. Total Amount of Material Landfilled

Total Amount of Material Landfilled in Tons at Municipal, Commercial and State-Owned Landfills Includes MSW, CDD, and SPW (and ADC)					
	2018	2019	2020	2021	2022
AWS - Presque Isle	11,320	23,604	25,699	32,111	15,502
AWS - Fort Fairfield	41,087	29,139	37,080	31,079	47,381
Bath	8,585	7,578	5,389	15,859	23,412
Brunswick	24,580	25,062	3,966	458	-
Dolby (East Millinocket) ³⁴	-	-	-	416	-
Hartland	10,797	12,166	17,622	10,861	4,336
Hatch Hill (Augusta)	52,819	51,211	53,745	52,289	53,723
JRL (Old Town)	556,446	624,121	672,570	726,192	933,653
Lewiston	19,419	559	17,419	17,000	17,445
Mid-Coast (Rockport)	3,283	2,910	4,694	2,006	2,629
Rockland	7,642	1,712	6,069	18,260	1,288
WM Crossroads (Norridgewock)	295,621	370,203	263,265	332,038	301,175
Combined (CDD Landfills)	48,856	52,922	59,508	72,450	50,307
TOTAL	1,080,456	1,201,187	1,167,026	1,311,015	1,450,850

Figure 6. Maine Landfill Tonnage by Percent Managed



³⁴ Dolby is a state acquired landfill that served the papermills in Millinocket and East Millinocket that stopped accepting waste in 2021.

a. Hatch Hill, Augusta

The Hatch Hill Landfill is owned and operated by the City of Augusta. In addition to the landfill, the City of Augusta also operates a transfer station at the facility and operates as a regional solid waste facility for eight other communities. Over the past five years, Hatch Hill has received an average of approximately 52,757 tons of waste per year and is expected to reach its currently licensed capacity in approximately four to five years at current fill rates. The City of Augusta plans to apply for a vertical increase, which, at current fill rates, would provide an additional 12 to 15 years of capacity for approximately 500,000 tons of material. The City plans to submit this application to the Department in 2024 and hopes to begin construction in 2026. The City has also discussed the possibility of putting a cap on how much waste is landfilled annually if the vertical increase is constructed.

b. Presque Isle and Fort Fairfield Landfills

The Presque Isle and Fort Fairfield (formerly called Tri-Community Recycling & Sanitary Landfill) Landfills are both owned and operated by Aroostook Waste Solutions (“AWS”). AWS is operating the landfills in a manner that will reduce redundancy and provide AWS with waste disposal options for the next 40 years. Over the past five years, both landfills have received an average of approximately 29,400 tons of waste per year. The Presque Isle Landfill stopped receiving waste in 2023 and will be temporarily closed with an interim cover while AWS diverts all waste intended for landfilling to Fort Fairfield. At current waste generation rates, the Fort Fairfield Landfill is expected to provide AWS with disposal capacity until approximately 2041. After the Fort Fairfield Landfill reaches capacity, it will be permanently closed and AWS will reopen the Presque Isle Landfill, which is expected to provide an additional 17 years of disposal capacity.

c. Bath Landfill

The Bath Landfill is owned and operated by the City of Bath. It receives waste from Bath and 15 to 20 surrounding municipalities. It has received an average of 12,165 tons of material annually over the past five years, and at current fill rates is expected to reach capacity in approximately 21 years.

d. Lewiston Landfill

The Lewiston Landfill is owned and operated by the City of Lewiston. Although licensed to accept MSW, currently the Lewiston Landfill has chosen to only accept ash from the MMWAC in Auburn and smaller amounts of special waste such as grit and screenings from various sewage treatment facilities, crushed glass, and CDD. It has received an average of 14,368 tons of material annually over the past five years, and at current fill rates is expected to reach capacity in 33 years. The City of Lewiston has recently approached the Department to discuss the potential landfilling of sludge from

the Lewiston-Auburn Water Pollution Control Authority. The City intends this to be a contingency plan in case other disposal outlets are not available or feasible.

e. Crossroads Landfill, Norridgewock

The Crossroads Landfill in Norridgewock is owned and operated by Waste Management, a private company. As a privately owned and operated commercial landfill, it receives waste from outside Maine in addition to in-state waste. Over the past five years, Crossroads has received an average of approximately 312,460 tons of waste per year and was previously expected to reach constructed capacity in 2024. However, an expansion has recently been approved and Waste Management began using the expanded area in 2023. This expansion is expected to add approximately 7,757,000 cubic yards of additional capacity and expand the life of the landfill by 17 years.

f. Juniper Ridge Landfill, Old Town

The Juniper Ridge Landfill (“JRL”) is owned by the State’s Department of Administrative and Financial Services Bureau of General Services (“BGS”) and is operated by Casella Waste Systems, a private company. JRL is licensed to accept MSW when it is bypassed (“MSW bypass”) from the three Maine waste-to-energy incinerators and the Municipal Waste Solutions MSW waste processing facility in Hampden (discussed later in this report) and front-end processing waste generated by a waste-to-energy incinerator. It also accepts a variety of special wastes such as sludge, CDD and CDD processing residue, some of which it utilizes as daily cover and as a bulking agent for other wastes as discussed later in the report. It has received an average of 702,597 tons of material annually over the past five years. JRL has approximately five years of remaining capacity and has just initiated the licensing process for a proposed future expansion by submitting a Preliminary Information Report (“PIR”)³⁵. JRL’s history and waste disposal trends will be discussed in greater detail in [Section IV\(C\)](#) of this report.

g. ecomaine Landfill, Portland

In addition to its waste-to-energy incinerator, ecomaine operates a landfill for disposal of its incinerator ash. It previously received baled MSW before the incinerator began operation. A small portion of the landfill is used to temporarily store MSW during summer periods of higher waste generation, and the stockpiled MSW is then incinerated during periods of lower incoming waste volume. ecomaine occasionally sends MSW bypass to Crossroads or to JRL. The ash landfill has received an average of 46,832 tons of material over the past five years and is estimated to have over 50 years of capacity at current disposal rates.

³⁵ Required under 06-096 C.M.R. ch. 401, § 1(E).

3. MSW Processing Facility

Municipal Waste Solutions, LLC (“MWS”) and the Municipal Review Committee, Inc. (“MRC”) own an MSW processing facility in Hampden which is designed to process 650 tons per day of MSW from 115 municipalities that are part of the MRC. However, due to financial and technical issues that developed during construction and start-up, the facility only operated for a short period of time and has been idle since May of 2020, requiring the waste to be bypassed.

Until April 2018, MSW from the MRC municipalities was disposed at the waste-to-energy incinerator in Orrington. When construction of the waste processing facility was not completed by April 2018, MRC redirected the MSW from its member communities to the privately-owned Crossroads Landfill. MRC had negotiated an exclusive contract with Crossroads Landfill for the disposal of “bridge capacity” and bypass waste during construction, start-up, and initial operation of the facility, as applicable. Through a waste swap agreement that addressed logistical waste handling constraints to minimize waste transportation distances, some waste from the MRC communities was also diverted to JRL. Subsequent to this, some of this waste destined to be landfilled was also diverted to the waste-to-energy facility in Orrington to promote higher priority uses on the state’s waste management hierarchy.

The waste from the MRC communities is still being bypassed to Crossroads Landfill or to JRL. Since April 2019 when the processing facility began accepting waste, some of the municipalities contracted to deliver their MSW to the Hampden waste processing facility began altering their recycling methods to utilize the Hampden facility’s sorting process, reducing or eliminating recycling programs that separated out recyclable material from household trash. Since the recyclable portion of the waste was not collected separately or sorted out from the trash, it has been landfilled, although a small portion of recyclable material delivered to the Orrington waste-to-energy facility was pulled out from the mixed MSW before incineration.

The MRC formed Municipal Waste Solutions, LLC (“MWS”) in 2022 for the purpose of purchasing the processing facility. It purchased the processing facility in 2022, and in 2023, sold 90% of the membership interest in MWS to Innovative Resource Recovery. MWS has been working on a plan for facility improvements and currently expects to restart the facility by early 2025. Until the MWS facility is fully operational for a complete calendar year, it will not be possible to assess whether the amount of bypass and processing residue resulting from its operations will significantly alter the amounts of solid waste destined for landfilling.

4. Materials Recovery Facilities

It should be noted that two materials recovery facilities (“MRFs”) operate in Maine. A MRF is a facility that processes single stream recycling materials to be sold to end buyers. ecomaine operates a MRF in Portland, and Casella operates a MRF in Lewiston. These facilities are also an integral part of Maine’s solid waste infrastructure.

C. Juniper Ridge Landfill's Role in Maine's Waste Disposal Arena

As shown in Figure 5 above, the State-owned Juniper Ridge Landfill has received slightly over 50% of all waste material landfilled in Maine since 2018. Given its significant role in waste management in Maine and the fact that it is a State-owned resource, the Department has provided the following information regarding its history and role in waste management for the State to assist with decision making.

[P.L. 1989, Chapter 585, *An Act to Promote Reduction, Recycling and Integrated Management of Solid Waste and Sound Environmental Regulation*](#) established a comprehensive framework for solid waste management in Maine. Included were provisions that established the Solid Waste Management Hierarchy, a ban on new commercial disposal facilities, public sector responsibility for ensuring disposal capacity for MSW, and state authority to develop and operate state-owned solid waste disposal facilities. These provisions were intended to provide the State with tools to encourage diversion of solid waste from landfilling and minimize the need for the development of additional landfill capacity.

Since the enactment of this law, the State has established ownership of three licensed landfills: the yet-to-be-developed Carpenter Ridge Landfill with a design capacity of 1.8 million cubic yards, the inactive Dolby Landfill in East Millinocket which is in the process of final closure, and JRL in Old Town. When obtained by the State, the licenses for each of these landfills were focused on providing disposal capacity for special wastes associated with the paper mills that operated them at the time. In April 2004, the State, acting through the State Planning Office, received a license amendment (Department License #S-020700-WD-N-A) that provided for the acceptance of additional waste types at JRL (then known as the “West Old Town Landfill” or “WOTL”), including: front-end process residue (“FEPR”) from the then-owned PERC and the Maine Energy Recovery Company (“MERC”) waste-to-energy incinerator in Biddeford (now closed); oversized bulky wastes (“OBW”); MSW bypass from any waste-to-energy incinerator located in Maine; CDD; ash from any waste-to-energy incinerator located in Maine; and water/wastewater treatment sludge. Finding of Fact 13 in that license states that “[t]he yearly quantity of solid waste to be accepted at the landfill is not expected to exceed 540,000 tons per year.” This amount is inclusive of up to 50,000 tons per year of mill wastes from the Old Town papermill, 120,000 tons of FEPR and 70,000 tons of ash from two waste-to-energy incinerators (then operating PERC and MERC), and 190,000 tons of CDD. In December 2013, WOTL (now known as JRL) was licensed (Department License #S-020700-WD-BC-A) to accept up to 81,800 tons of non-bypass MSW generated in Maine into its existing permitted landfill area. This amendment was sought to provide a temporary alternative (through March 31, 2018) for disposal of MSW generated in municipalities that had been sending their MSW to the MERC facility in Biddeford prior to it ceasing operations in December 2012. In June 2017, the State, acting through BGS received approval for a 9.35-million-cubic-yard expansion. In 2018, the approval to accept up to 81,000 tons of non-bypass, in-state MSW was extended through March 31, 2020, to account for the near-term uncertainty in disposal capacity due to operational adjustments at the Orrington waste-to-energy facility and the delay of operations of the MSW waste processing facility in Hampden.

The data show significant changes in the types of waste being landfilled at JRL in 2022 compared with 2012. There has been a substantial drop in FEPR and MSW incinerator ash due

to the closure of the MERC facility and the curtailing of operation at the Orrington Waste-to-Energy facility, as well as industrial WWTP sludges and papermill wastes due to the closure of the papermills in Old Town and Lincoln. However, the fill rate at JRL has climbed due to significant increases in the disposal of MSW and more recently municipal WWTP sludge. For example, MSW increased from 729 tons in 2012 to 283,683 tons in 2022 and CDD³⁶ increased from 369,069 tons in 2012 to 485,298 tons in 2022. Likewise, the disposal of municipal WWTP sludge from 53,023 tons in 2018 to 94,271 tons in 2022 has also increased the fill rate at JRL. Although waste volumes fluctuate year-by-year, the overall trend is a marked increase in material accepted for disposal.

Much of the large volume of CDD landfilled at JRL comes from processing facilities located in Maine. Although [38 M.R.S. § 1310-N\(11\)](#) prohibits the disposal of waste generated from out of state directly into state-owned waste disposal facilities, it allows "waste generated within the State" to include "residue and bypass generated by incineration, processing and recycling facilities within the State," all of which may include waste originating from locations out of state before it gets to the processing/recycling/incineration facilities. Notably a significant amount of Maine's CDD originates in Massachusetts due to a ban on the disposal of CDD in Massachusetts.³⁴ This has resulted in a large volume of out-of-state CDD being processed by waste processing facilities in Maine with the processed fines being placed in the landfill as shaping, grading or alternative daily cover materials, and residual CDD being disposed of into JRL as in-state waste.

To better address the issue of JRL using up capacity to accept wastes that are not originally generated in Maine, the legislature enacted several requirements for processing facilities. First, the definition of "waste generated within the state" under [38 MRS 1303-C\(40-A\)](#) was modified. Under this definition, the total weight of residue generated in a calendar year by a solid waste processing facility that is disposed of or otherwise placed in a solid waste landfill in that calendar year cannot exceed the total weight of the solid waste initially generated in state for processing at the facility. Any excess residue generated by that facility is not considered waste generated within the State. In addition, [38 M.R.S. § 1310-N\(5-A\)\(B\)\(2\)](#) requires that all processing facilities that generate residue for disposal must recycle at least 50% of the CDD they accept. In doing so these facilities are allowed to count the following toward recycling: "reuse of waste as shaping, grading or alternative daily cover materials at landfills; aggregate material in construction; and boiler fuel substitutes." Once this 50% goal is met, the processing facility is then required to demonstrate that of the material characterized as recycled, at least 50% of it must have been recycled or reused "other than being placed in a solid waste landfill," unless the processing facility qualifies for specialized criteria allowing for alternative percentages under [38 M.R.S. § 1310-N\(5-A\)\(B\)\(2\)\(a-e\)](#).

The discovery of PFAS in municipal WWTP sludges and other sludge-derived products banned from land application in Maine have made JRL the landfill of choice for final disposition of this material, which has had a significant impact in recent years on its capacity. Beginning in August

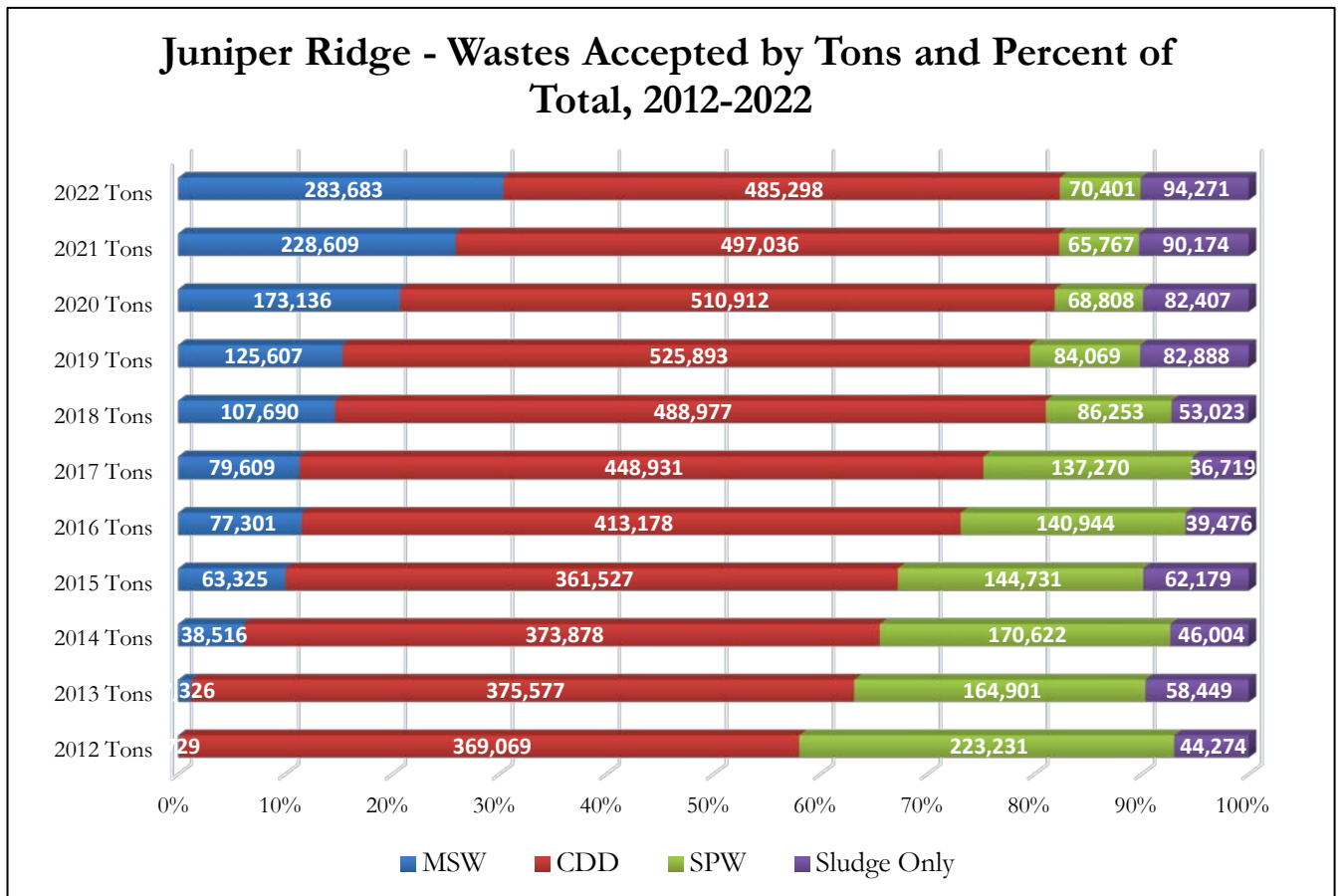
³⁶ These numbers may be higher than those reported in the past as they include a more complete array of construction and demolition debris and processing residues: OBW, wood, mixed CDD, CDD processing residue and fines, mixed MSW/CDD processing residue, and crushed glass.

2022, most municipal WWTP sludge generated in Maine was disposed of at JRL. The physical nature of sludge makes landfill disposal challenging and can affect both the short-term and long-term stability of a landfill. Stabilizing materials need to be mixed with the sludge, adding an additional volume of material for disposal and taking up valuable landfill space. CDD, CDD residue and other similar material, and OBW have been utilized as bulking material for stabilization. These additional bulking materials compounded by sludge volumes have shortened the timeframe by which JRL is expected to reach its maximum capacity.

While Crossroads Landfill also takes sludge from Maine's WWTPs (albeit a smaller volume), it also has concerns about the quantity of sludge it takes in relation to moisture and the need for operational stability. As a result, Crossroads Landfill has determined the best path forward to maximizing capacity is to invest in sludge drying. Sludge can be dried to reduce its volume and its need for bulking agents for stability. On September 15, 2023, Crossroads Landfill submitted an application to the Department for a waste processing (sludge drying) facility which, if approved, will be licensed to receive approximately 200 tons of municipal WWTP sludge daily, greatly reducing the overall volume of this waste stream for disposal down to roughly 50 tons. The dried material will then be landfilled without the need for significant bulking materials. The proposed new facility is planned to run on heat pump technology and utilize the biogas generated at the nearby landfill, reducing the energy demand needed for processing sludge. This model, if successful could serve as a model or prototype for other facilities accepting WWTP sludge including other landfills. Investing in sludge dewatering facilities and/or focusing on PFAS treatment and destruction technology as identified in the [Bureau of General Service's Study to Assess Treatment Alternatives for Reducing PFAS in Leachate from State Owned Landfills](#) may be a far more sustainable option in the long run than continuing to landfill larger amounts of CDD in order to accommodate landfilling of sludge. The current trajectory of sludge and CDD disposal encourages the expansion and use of landfilling, and without alternative options, Maine's landfills will likely fill up more quickly than originally planned for.

The following figures provide an overview of waste material types received at JRL and how they have changed over the past 10 years. Figure 7 provides an outline of waste material types as a percentage of total waste received per year since 2012, Figure 8 provides an outline by tonnage received per year since 2012 and Figure 9 provides an overview of total amount of waste received by tonnage and percentage since 2012.

Figure 7 – Wastes Accepted at Juniper Ridge Landfill by Percent of the Total Accepted³⁷



³⁷ While sludge is a special waste, this graph depicts it as its own category pulled out from the rest of the special waste (SPW) to show the sludge as a percent of the incoming wastes over time.

Figure 8. Wastes Accepted at Juniper Ridge by Tons and Type

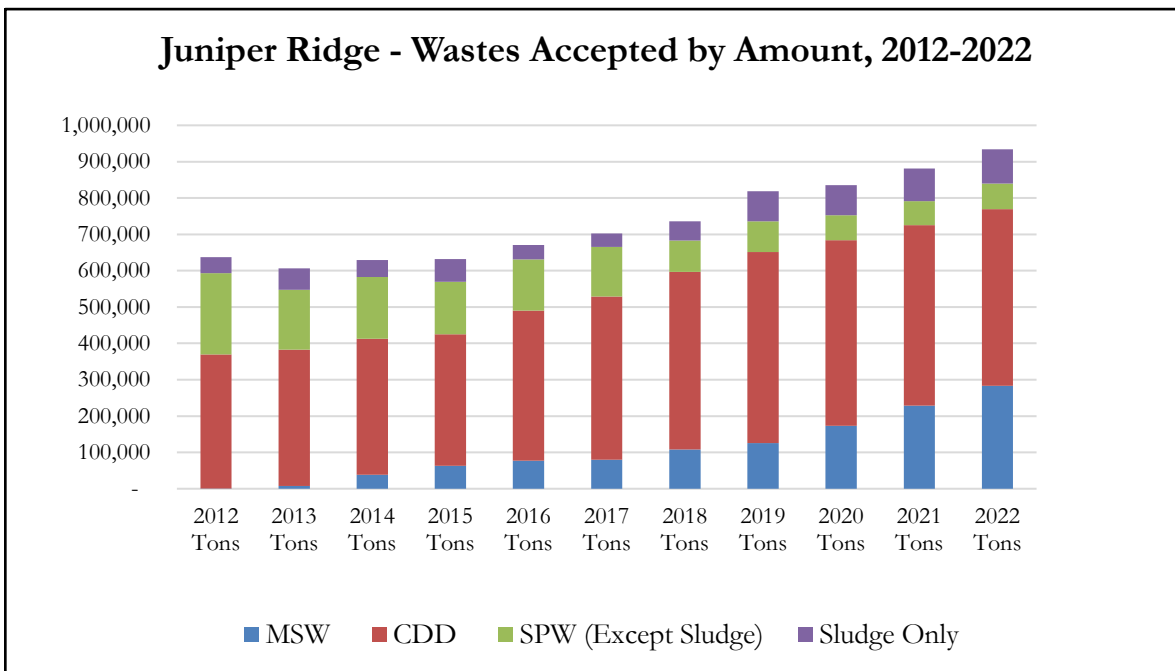
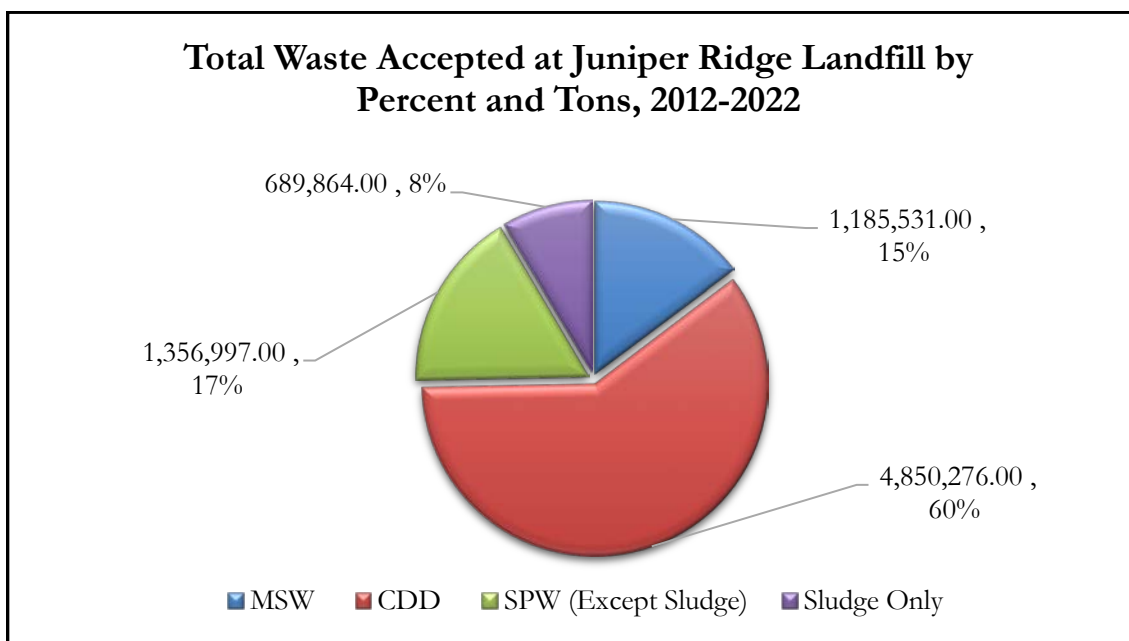


Figure 9. Total Tons Accepted at Juniper Ridge by Percent 2012-2022



While not intentional, JRL has in effect become Maine's fastest and most economical solution for handling emerging solid waste issues. Given the increasing quantities of wastes being landfilled at JRL, expansion of this landfill is a critical solution that will be necessary in addition to proactive steps to increase waste infrastructure options as well as enhancing efforts toward meeting statutory waste reduction, diversion, and recycling goals. Difficult decisions will need to be made about the overall purpose and use of this state-owned landfill, how to maximize its capacity and lifespan, whether to invest in alternative infrastructure for waste disposal at other locations, and how market pressures can be modified to encourage waste diversion programs.

D. Projected Demand for Capacity

Currently, there are significant gaps in Maine's Eastern Maine region for managing MSW. Investment activity³⁸ focused on restarting both the idled Orrington waste-to-energy incinerator and the Hampden solid waste processing facility are underway, but uncertainties remain with regard to, operating timeframes, financial barriers, and long-term capacity. Should either of these facilities begin operations, the concerns about how to cost effectively manage MSW in the region should ease. However, at the current time MSW is bypassing from both facilities going directly to landfills. JRL will likely continue to be the recipient of most of this MSW stream over the next few years as it is closest in proximity to the region impacted (logistics and transportation make this more cost effective). It should be mentioned that both of these facilities while currently operating do fall higher up on Maine's solid waste management hierarchy.

Statewide, other than the issue specific to Maine's Eastern Maine region, Maine appears to have adequate capacity for at least 10 years before several landfill facilities reach their capacity. This assumes however that an expansion license application is both received by and approved by the Department for the JRL facility. As of the date of this report, the Department has received a PIR from JRL for a future expansion.³⁹ The loss of JRL as a disposal facility would create catastrophic capacity issues as it receives over 50% of all material landfilled in Maine annually. If JRL moves forward with its application for an expansion, the projected capacity at current fill rates would most likely add an additional 15 to 20 years, which at the earliest brings it to being at capacity once again in 2042.

Even with capacity available statewide for the next 10 years, unless significant progress is made in ensuring that the state has existing or new infrastructure for waste processing and disposal, as well as enhancing waste diversion programs, landfill capacity will become an even more pressing issue in 15 years. For example:

³⁸ The new operators taking over the Orrington waste-to-energy incinerator have renamed the facility, "Garbage Recycling and Clean Energy" or "GRACE" and plan to resume full operation of the facility. See: <https://www.bangordailynews.com/2023/11/27/news/bangor/orrington-trash-incinerator-restart-operations-joam40zk0w/>

³⁹ In the past licensing for the JRL facility from start to finish has taken approximately six years.

- If the application for expansion for the Hatch Hill Landfill is approved, Hatch Hill will reach its estimated capacity in 12 to 15 years. This means that as early as 2035, Maine will lose approximately 50,000 tons of waste disposal capacity.
- Crossroads Landfill is expected to reach the capacity of its recent expansion in 17 years, putting its operations until about 2040. This will substantially impact Maine's waste disposal capacity as this landfill accepts on average about 300,000 tons annually (although some of this comes from out-of-state).
- Bath Landfill is expected to reach capacity in 21 years, allowing its operations until 2044. The loss of the Bath Landfill will have a relatively minor impact to Maine's overall waste disposal capacity, as that landfill receives only approximately 12,000 tons of material annually.
- The loss of the Hatch Hill and Bath landfills, in particular, will impact disposal options for the Central Maine region in about 15-20 years.

As with all of these landfills, landfill operators can extend the life span of their landfill by turning away or not accepting wastes. This will pose additional challenges to generators of solid waste who may need to seek alternative disposal outlets which may be farther away and cost more to access. These costs likely will be passed on to municipalities in most cases, which in turn will pass costs on to Maine residents.

To extend operating time to Maine's existing landfills, it is important not just to evaluate landfill expansions, but also to consider how to bring new or licensed but non-operating facilities online more quickly. This is a critical need as it currently takes several years from the beginning of the licensing process to the end when construction and operation are allowed to take place.

Long-term disposal capacity is a significant and valid concern. With the exception of Aroostook County, which appears to have landfill capacity for a minimum of 40 years, it is clear that if considerable reduction in the amount of material going to landfills is not achieved, or unless new technology and infrastructure is brought online in multiple locations in Maine, a sizeable portion of Maine's landfill capacity will be gone within 20 years. Maine's increases in waste generation as discussed in Sections III and IV above, indicate that this timeframe could be even shorter. Costs related to hauling MSW, CDD, recycling material, salvageable material, compostable food waste, and other waste streams are a significant portion of the overall cost for the management of this material, in addition to its greenhouse gas emissions impacts. These costs will likely be passed on to Maine residents and communities.

As Maine evaluates adding new infrastructure and enhancing existing waste diversion programs, it is important to consider locating facilities near areas where waste material is generated, utilizing regionalization, and implementing "hub and spoke" models for transferring waste material to make hauling more efficient and cost effective. In addition to practical issues associated with managing an increased amount of waste over time and maximizing existing and new infrastructure, it is important to recognize that many waste streams that could be diverted

are being disposed of because disposal is often the lowest cost option. There is a clear need for a market readjustment to incentivize more sustainable materials management to maximize long-term disposal capacity and increase efficiencies in our management of materials.

V. Stakeholder Input Summary

The Department has encouraged public input on the contents of this Plan update as well as the direction of future materials management efforts by holding five public meetings across the State in Aroostook, Washington, Penobscot, Kennebec, and Cumberland counties. The meetings were held both in person and online to encourage participation. Meeting recordings were posted on the Department's website and written comments were accepted by email. Attendance at each of the meetings ranged from five to approximately twenty participants. The Department received nine written comments submitted through email.

Discussion was encouraged by a series of prepared questions specific to current materials management practices as well as broadly scoped questions regarding desired improvements. Not surprisingly, discussion ranged from logistical issues of a more local or regional nature to issues common to the State at large. Issues identified as common across the State included lack of drop-off locations for materials covered by current producer responsibility programs, lack of feedback on municipal reporting, and inconsistent availability of public information regarding programs and best practices to manage various discarded materials. Reliance of the state on meeting waste capacity needs through disposal rather than diversion efforts was a common concern. Additionally, participants discussed a desire for the Department to increase its efforts in communication in many of the aspects of waste management, from increasing information availability on individual facilities to providing information on recycling opportunities and handling problematic materials.

A. General Concerns of Maine's Waste Management System

Overall, a consensus emerged supporting greater effort in the top two tiers of Maine's Solid Waste Management Hierarchy; reduce and reuse. While waste reduction may be the hardest to measure, it remains the highest priority. Reuse is more tangible and yields a myriad of positive impacts. Examples of reuse candidates mentioned by attendees included pellet bags (deposit), refillable beverage containers, water dispensers in lieu of bottled water, 1-lb. propane canisters (refillable in CA, MA, RI), repair cafés (already emerging around the state), tool libraries (sharing), and reuse stores.

In each of the five public forums held, the Maine Waste Management Agency (and after 1995, the State Planning Office) ("MWMA/SPO") were both mentioned for the fact that they no longer exist, and the bulk of their tasks were not picked up by the Department or other agencies. Attendees discussed how the MWMA/SPO was a driving force in bringing "reduce, reuse and recycle" into common parlance throughout the state from the late 1980s on. It not only administered a robust grant funding program for waste infrastructure throughout the state, but it also tracked progress toward overall waste reduction goals set by the Legislature through staff providing a high level of assistance to municipalities in filing annual reports to MWMA/SPO. Staff were tasked with not only seeing that each individual facility's recordkeeping was adequate and reports were filed on time but, perhaps most importantly, providing feedback to the facility managers regarding shortfalls and best management practices.

A significant number of those attending stakeholder meetings expressed a degree of angst regarding the future of JRL, the incinerator in Orrington, and the long-delayed waste processing facility in Hampden. It was recognized that currently, landfilling and waste-to-energy incinerators are the foundation on which all else in waste management rests. A concern was expressed that materials diverted from landfilling by successful recycling and other diversion efforts will be replaced at JRL with wastes sourced from out-of-state.

The different levels of waste management services provided by the municipalities throughout the State was another topic of concern. Rural Maine has become a mosaic of differing collection programs from one town to the next. While all municipalities and unorganized areas have some sort of household waste disposal option, not all municipalities have a robust recycling program, and some offer no recycling at all. As a result, many communities do not have the necessary infrastructure to participate in longstanding producer responsibility programs to allow for free or reduced-cost collection of e-waste, mercury-containing light bulbs and thermostats, architectural paint and rechargeable batteries. Further, some rural communities have signed onto expensive curbside collection programs with little consideration for collaboration with neighboring towns. Without collaboration, duplicative efforts within a region lead to less-than-optimal costs and greater vulnerability to market changes. It also makes determining whether a program is successful in terms of recycling and waste diversion difficult.

Concern was expressed that vertically integrated private companies have gained disproportionate control of waste management and recycling services, particularly in rural areas. This appears to be a common issue when municipalities approach such services on an individual rather than a regional manner, as there is less leverage to negotiate contract terms and prices. When opting out of collaborative regional transfer stations, municipal flexibility, control, and choice are more limited. Attendees also expressed concerns that small, independent towns are forced into restrictive or predatory-appearing contracts for transport, recycling, processing, and disposal due to lack of true competition for such services.

B. Solutions Suggested to Maine's Waste Management System

Attendees at the public meetings proposed several recommendations for addressing waste management issues, as discussed below.

1. Promote regionalization for new, more efficient waste transfer and recycling facilities.

Whether at the county level or as a result of nearby municipalities working together, it was discussed that regional facilities could provide more sophisticated governance over service contracts as well as offering expanded services to residents that curbside programs cannot manage and small municipalities may struggle to offer on their own.

2. Facilitate universal waste and other problematic waste collection in new regions.

E-waste, mercury-containing items, paint, and rechargeable batteries have long been collected in some areas of the State, but due to lack of collection locations, these programs are not readily available to all. Municipalities could be collection points, but many choose not to. In place of

developing a collection facility in each rural municipality, a central collection facility for neighboring rural communities would be more efficient and could be as simple as placing one or more properly sized shipping containers (or a similarly sized storage container) in a host community, with oversight and controlled access to ensure the site is used for its intended purpose. Oversight of a collection location could be under a fire department, town office, or public works department. Such programs could be developed with funds dispersed through the State's Waste Diversion Grant Program. Program creativity could expand such a collection system to include other recyclables or organics, as well as offering information kiosks regarding programs and opportunities for sustainably managing wastes.

3. Clearly prioritize regionalization and boost funding for Maine's Waste Diversion Grant Program.

While the current grant program has been quite successful at awarding organics diversion grants up to \$40,000 per grantee, there was a concern expressed that there have been few proposals to fund regional solutions in rural areas. It was also suggested to consider streamlining grant applications for regional organizations, which, along with municipalities, are designated as the highest priority in the awarding of funds under [38 M.R.S. § 2201-B](#).

4. Phase in mandatory food waste recycling with incremental requirements.

A strong desire was expressed to start phasing in a mandatory food waste recycling program. While sufficient infrastructure is not currently in place for collection, transportation, and processing of organics, a phased approach to preventing wasted food and recycling food scraps will allow for planning, investment, and implementation over a period of time that would allow successful regional programs to develop. Attendees noted that participation in such diversion programs needs encouragement beyond simply being informed of its benefits. It was also noted that Vermont, New Hampshire, Massachusetts, Rhode Island, and Connecticut all have some sort of mandatory organics recycling or food waste disposal bans in place.

5. Broaden battery collection to include a larger array of batteries.

Attendees pointed out that the market is moving towards electric powered tools and yard equipment, reducing use of fuel and the related GHG emissions from combustion-powered tools. However, lower quality tools may be treated as "disposable" (rather than repairable) and often end up, batteries attached, in landfills or at recycling facilities where they can cause fires, endanger workers, and waste valuable resources. Attendees suggested that a deposit at the point of purchase or an expansion of the current rechargeable battery stewardship program would be a reasonable starting point to address this important safety risk and improve the recovery of critical minerals contained within batteries and the devices and tools they power.

6. Promote deconstruction of buildings over demolition.

To address the concern regarding the amount of CDD being placed in landfills, attendees discussed incentivizing salvaging and reuse. Attendees noted that CDD consumes a lot of landfill space. Utilizing salvageable materials from construction and demolition sites has the potential to lower demand for virgin materials, conserve higher quality materials, make

affordable recovered materials available for reuse, and create local jobs. Deconstruction provides a significant tax benefit when a property is correctly appraised,⁴⁰ and could be further encouraged through educational material for property owners, local ordinances, municipal tax credit programs, or the establishment of a directory for services and purchasable salvaged materials.

7. Discourage single-use food service ware and promote reusable alternatives.

Attendees discussed a desire to develop a grant program or a revolving loan fund specific for commercial and institutional reuse programs, such as washing equipment to scale up reuse programs on a regional basis. Restaurants and schools utilize large quantities of single-use food service ware, mostly made of plastics, for takeout and cafeterias. The useful lifespan of single-use plastic items averages just 15 minutes,⁴¹ and its carbon footprint is significant for such a limited use item. If a school with 500 students (the average school size in the U.S.) replaced what is perceived to be a more sustainable option, such as compostable food containers with reusable food service ware, it would prevent 6,786 pounds of waste annually and the corresponding reduction in carbon dioxide emissions would be equivalent to taking nearly 800 cars off the road.⁴²

8. Develop a field task force for materials management.

It was noted that the former MWMA/SPO employed a trained team that would review commercial and industrial facilities and institutions to make informed, situation-specific recommendations on waste reduction, reuse, and recycling. Attendees expressed interest in rekindling a similar program that would also train any interested and qualified parties to conduct such reviews. The data collected by this team could be used to develop a directory to post no longer needed materials generated in northern New England that could add value to another process, identifying and expanding the potential for industrial symbiosis.⁴³

9. Right to Repair to encourage industry to produce repairable, durable goods.

Many attendees lamented that durable goods are not so durable anymore, and that greater public education focused on purchasing repairable, durable goods has significant potential to reduce how much waste is generated through the consumption and disposal of poor-quality goods. Possible steps identified to tackle this issue included use of a repair rating for durable products, or the development of an income-based rebate system for purchases of long-lasting, durable goods that are repairable. Such an index exists in France⁴⁴ and provides an existing baseline,

⁴⁰ See: <https://www.thegreenmissioninc.com/assets/deconstruction-material-and-property-appraisal-issues-in-22.pdf> and <https://www.thegreenmissioninc.com/assets/appraiser-appraisal%20updated-article.pdf>.

⁴¹ See: <https://www.qld.gov.au/environment/circular-economy-waste-reduction/reduction/plastic-pollution/single-use-plastics-guide#:~:text=Single%2Duse%20plastics%20have%20helped,usable%20lifespan%20of%2015%20minutes>.

⁴² Vanderlip, C. (2023, January 3). School cafeterias use tons of single-use containers that go to landfill. Here's how to change that. *Fast Company*. <https://www.fastcompany.com/90828505/school-cafeterias-single-use-packaging-waste-circular-economy-reuse>.

⁴³ See: <https://nordregio.org/nordregio-magazine/issues/industrial-symbiosis/what-is-industrial-symbiosis/>.

⁴⁴ See: <https://www.indicereparabilite.fr/>.

although certain products available in the U.S. may not be rated by the French repairability index.

10. Education of youth to instill environmental awareness around waste management, recycling, and reuse.

It was discussed that many people do not understand how the waste management system works, even though everyone contributes waste to it. Education in schools about such systems and the environmental impacts of materials management would be useful. The Maine Climate Hub already provides multiple relevant lessons.⁴⁵ To help support further development and inclusion of materials management curriculum for K through 12, attendees suggested providing funding or grants for continued development of grade-appropriate environmental science material related to waste management.

11. Improve collection of household hazardous waste statewide.

Lack of HHW collection was a major concern and attendees would like to see permanent collection points in each county for HHW. It was mentioned that Vermont recently passed a stewardship program for household hazardous waste and suggested that Maine should consider a similar program.

12. Streamline municipal reporting.

Several attendees discussed that, from the municipal perspective, the current transfer station and municipal recycling progress reports and reporting systems are repetitive and inefficient. Streamlining reporting will allow for more efficient data collection, management and analyses and streamline the process of making data available to the public to aid in decision making for waste management.

13. Citizen input and participation.

Several attendees articulated a desire for the State to create and fund staff for a Citizens Advisory Group to act as a review and information outlet for waste management issues.

VI. Future Strategies

The Department is looking forward to evaluating data once its comprehensive assessments are completed. The Department anticipates these studies will provide the data necessary to target the components of the waste stream that will be most impactful toward reaching Maine's recycling and waste diversion goals. The Department will then be able to make recommendations regarding Maine's infrastructure for recycling, composting, diversion efforts, processing and disposal, and also for appropriately managing municipal WWTP sludge.

⁴⁵ See: <https://maineclimatehub.org/>.

The strategies below are based on the information available at the time of the publication of this Plan and include input from the public. While the Department does not have enough information at this time to provide recommendations, the Department has observed some strategies that are worth considering right away. These include:

1. Evaluating the concept of subsidies for waste-to-energy incinerators, anaerobic digestion facilities, or other facilities/processes that can reduce the volume of waste requiring landfilling. Subsidies could be structured either to incentivize construction or expansion of facilities or to subsidize the cost of managing materials/processes other than landfill disposal.
2. Coordinating or partnering with the Finance Authority of Maine for tax incentives or low-interest loans, as available, to develop infrastructure for waste diversion.
3. Considering statewide unit-based pricing, also known as “pay as you throw” to make disposal costs more equitable and provide a financial incentive to reduce waste and increase recycling.
4. Creating subsidies or assistance for food rescue for businesses and other generators or food scrap collection for municipalities.
5. Strengthening participation in existing product stewardship programs for safer, more affordable materials management across the state.

Maine-specific concepts identified by the Department during the stakeholder meetings:

1. Provide additional assistance to municipalities in meeting recycling and waste diversion goals by highlighting reimbursement to municipalities and funding for infrastructure development through the EPR Packaging Program as well as existing opportunities through the Waste Diversion Grant Program.
2. Incentivize reuse, repair, refill, in reducing overall waste generation and the need for prioritizing these actions to conserve resources and reduce emissions while acknowledging the need for and importance of continuing to support and build out infrastructure for recycling and composting.
3. Increase education efforts and cooperative work on reuse, refill, waste reduction, recycling, organics management.
4. Encourage regionalization between municipalities and counties through subsidies. Regional systems could form a “hub and spoke” model for more efficient handling and transportation. Regional facilities could receive subsidies to accept all recyclables, universal waste, and take responsibility for one collection event for HHW, electronics, and other problematic material.
5. Encourage or make requirements for lessors of multifamily housing to provide for the collection of recyclable waste and not force renters to just dispose of wastes.
6. Encourage expansion of “right to repair” to increase the life span of consumer products. Since December 2022, New York, Minnesota, Colorado, and California have passed right to repair bills covering electronics, appliances, and agricultural equipment.

Future planning must also take into account the rural nature of much of Maine. Waste management costs are dependent on economies of scale, whether it be hauling material, processing, or disposal. The more material collected, and the more people serviced, the lower per capita costs will be. The relatively low population density of portions of the state generally drives up the per capita costs for providing services to those areas. The State may need to provide incentives in order to entice waste facilities and operators to locate in and provide services to portions of the state with lower population densities. Not doing so will create underserved areas of the state compared to more populous areas.

VII. Conclusions

As shown by the data presented in this report and in the Waste Generation and Disposal Capacity Reports published by the Department since the previous Plan update in 2019, Maine has not been making progress towards reaching its waste diversion and recycling goals. The amount of MSW and CDD Maine generates annually has increased, the amount of waste material Maine is landfilling has increased, and the rates of recycling and waste diversion has remained, at best, stagnant in some areas of the state and has decreased in others.

Additionally, Maine has lost capacity in regard to waste-to-energy options due to the idling of one of its three waste-to-energy incinerators. If the facility is not successfully restarted, the permanent loss of that facility would further limit disposal options in Maine. Although Maine's landfill capacity appears adequate for the next 15 years (assuming that the JRL facility is licensed for expansion), after that time period landfill capacity will be quite limited. The only secure spot in Maine's waste arena in terms of capacity is the Northern Maine area, in which AWS appears to have adequate landfill capacity for its regional population for at least 40 years.

The Department anticipates a significantly improved understanding of Maine's waste stream once the aforementioned WC Study, FLWG Study, and Biosolids Study are completed and evaluated. As an example, the Department anticipates that textiles, which have been identified as the fastest growing waste stream in the country,⁴⁶ will also be noted as a material of concern in the composition of Maine's MSW stream. The WC Study will provide clear data regarding how much of Maine's waste stream is comprised of such material currently, and target diversion efforts. While it is clear that further action is needed to ensure that Maine's waste reduction and recycling goals are met, and that Maine maintains long-term disposal capacity for waste that needs to be disposed, gathering and analyzing the data being generated by these studies is imperative for sound and economically driven decision making moving forward.

One issue that is apparent from the currently available data is that approximately one-third of the volume of material landfilled in Maine is CDD, CDD residue, wood waste, and other similar material. While some of this material is utilized by the landfill as cover material and other uses such as bulking material for municipal WWTP sludge, much is also being landfilled. Steps should be taken to further reduce the amount of CDD being generated, increase diversion and recycling, and assure when landfilling is necessary that advantageous use of this material at the facility is maximized

⁴⁶ See: <https://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1500-207.pdf>.

(i.e., as cover and bulking), minimizing the amount placed in landfills merely as waste. Repurposing of CDD also holds significant economic opportunity, with the potential to support new education pathways, as well as job growth and a new avenue for small businesses.

The cost of transportation has been mentioned in stakeholder meetings as a major factor in materials management around the state for both waste disposal and diversion programs such as recycling and organics management. It is clear that more regionalization is needed and determining how to best foster such regional partnerships is an ongoing process for the Department.

APPENDICES

Appendix A: Maine's Solid Waste Management and Food Recovery Hierarchies

§ 2101. Solid Waste Management Hierarchy

1. Priorities. It is the policy of the State to plan for and implement an integrated approach to solid waste management for solid waste generated in this State and solid waste imported into this State, which must be based on the following order of priority:
 - A. Reduction of waste generated at the source, including both amount and toxicity of the waste;
 - B. Reuse of waste;
 - C. Recycling of waste;
 - D. Composting of biodegradable waste;
 - E. Waste processing that reduces the volume of waste needing land disposal, including incineration; and
 - F. Land disposal of waste.

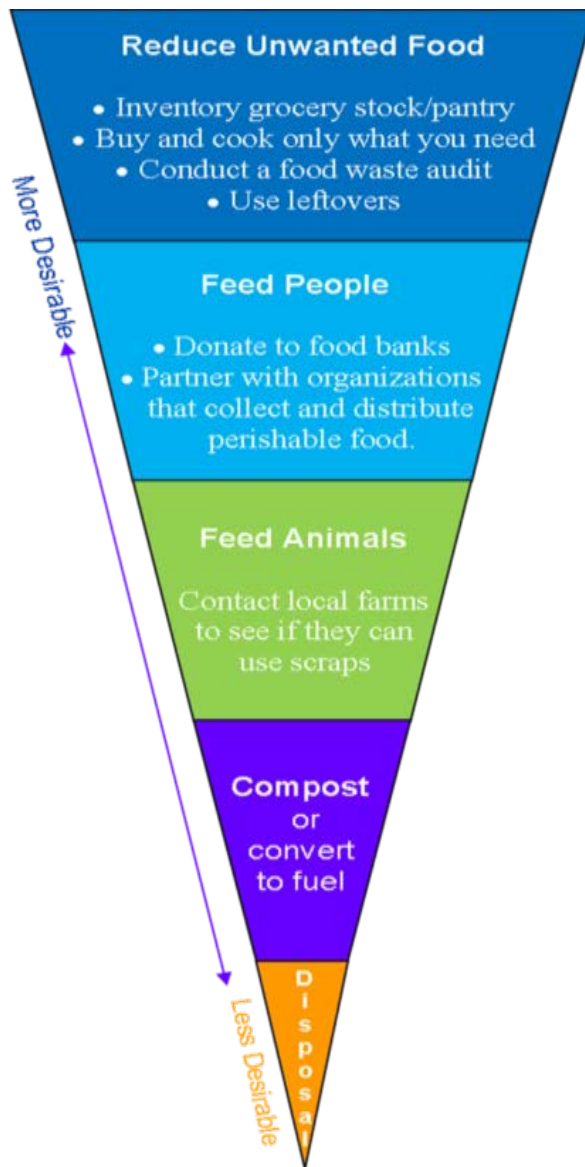


It is the policy of the State to use the order of priority in this subsection as a guiding principle in making decisions related to solid waste management.

2. Waste reduction and diversion. It is the policy of the State to actively promote and encourage waste reduction measures from all sources and maximize waste diversion efforts by encouraging new and expanded uses of solid waste generated in this State as a resource.

§ 2101-B. Food Recovery Hierarchy

1. **Priorities.** It is the policy of the State to support the solid waste management hierarchy in [section 2101](#) by preventing and diverting surplus food and food scraps from land disposal or incineration in accordance with the following order of priority:



A. Reduction of the volume of surplus food generated at the source;

B. Donation of surplus food to food banks, soup kitchens, shelters and other entities that will use surplus food to feed hungry people;

C. Diversion of food scraps for use as animal feed;

D. Utilization of waste oils for rendering and fuel conversion, utilization of food scraps for digestion to recover energy, other waste utilization technologies and creation of nutrient-rich soil amendments through the composting of food scraps; and

E. Land disposal or incineration of food scraps.

2. **Guiding principle.** It is the policy of the State to use the order of priority in this section, in conjunction with the order of priority in [section 2101](#), as a guiding principle in making decisions related to solid waste and organic materials management.

Appendix B: List of MSW and CDD Categories and Sub-sorts for a Statewide Waste Audit

Category	Sub-sorts	Category	Sub-sorts
Paper	1 Books	Electronics	41 Clean Wood
	2 Boxboard (chipboard)		42 Other Organics
	3 Compostable Paper		43 Pet Waste
	4 High Grade Office Paper		45 Non-CED Electronics
	5 Magazines/Catalogs		46 CEDs - CRTs
	6 Mixed Recyclable Paper		47 CEDs - Desktop Computers
	7 Newsprint		48 CEDs - Laptops and Tablets
	8 Non-Recyclable R/C Paper		49 CEDs - Printers
	9 OCC (Old Corrugated Containers)		50 CEDs - Television and Monitors (non-CRT)
	10 Polycoated/Aseptic/Multi-Material Containers		51 CEDs - Other
Glass	11 Glass Beverage Bottles - BB	52 Computer Peripherals	
	12 Glass Beverage or Food Containers - NBB	53 Products with Embedded Batteries	
	13 Other Glass (Non-Container)	54 Small Appliances	
Metal	14 Aluminum Cans - BB	55 White Goods	
	15 Aluminum Foil, Pans, and Containers - NBB	56 Solar/PV Panels/Components	
	16 Ferrous Containers	CDD	57 Asphalt Brick and Concrete (ABC)
	17 Other Ferrous		58 Asphalt Shingles
	18 Other Non-Ferrous		59 CDD Metal
Plastic	19 #1 PET Bottles - BB	60 Ceramic Fixtures	
	20 #1 PET Food and Dairy Bottles and Jars -NBB	61 Drywall/Gypsum Board	
	21 #2 HDPE Bottles - BB	62 Oriented Strand Board (OSB)/Plywood	
	22 #2 HDPE Food, Dairy & Other NBB	63 Other/Residual CDD	
	23 #3-7 Bottles - BB	64 Painted/Treated Wood	
	24 #3-7 Bottles, Non-BB	Batteries	65 Batteries - Primary
	25 #5 PP Food Containers		66 Batteries – Rechargeable, Li-ion
	26 #6 PS Rigid Food and Beverage Containers		67 Batteries – Rechargeable, Other
	27 #6 EPS Foam Food and Beverage Containers	UW/HHW	68 Mercury-Containing Products - Lamps
	28 Bulky Rigids >1 Gallons		69 Mercury-Containing Products - Thermostats
	29 Film, Agricultural and Marine Shrink Wrap		70 Mercury-Containing Products - Other
	30 Film, Garbage Bags		71 Architectural Paint
	31 Film, Other Bags or Non-Bags	72 Non-Architectural Paint	
	32 Film, Retail Bags	73 Household Hazardous Waste	
	33 Thermoforms	All	74 Carpet/Padding

Category	Sub-sorts	Category	Sub-sorts
	34 Remainder/Other Plastic	Other	75 Diapers/Sanitary Products
Ceramics	35 Ceramic Bottles - BB	Wastes	76 Furniture/Bulky Items
	36 Other Ceramics		77 Supplements/Pharmaceuticals/Medicines
Organics	37 Food Waste - Packaged		78 Textiles/Leather
	38 Food Waste - Unpackaged		79 Rubber/Tires
	39 Branches and Stumps >1" Diameter		80 Mattresses
	40 Mixed Yard Waste		81 Miscellaneous Household Waste

CDD Categories and Sub-sorts

Category	Sub-Sorts	Category	Sub-Sorts
Paper	1 OCC Cardboard/Kraft Paper	Special/Other	40 Solar/PV Panels/Components
	2 Other/Composite Paper		41 White Goods
Plastic	3 Clean Film		42 Mattresses
	4 HDPE Buckets		43 Furniture/Other Bulky Items
	5 Other Plastic		44 Tires
Metal	6 Ferrous		45 Soil/Sand/Gravel
	7 Non-Ferrous		46 Fines/Mixed Residue
Glass	8 Glass	47 All Other Waste	
CDD	9 Asphalt Paving		
	10 Asphalt Shingles		
	11 Concrete/Brick/Masonry		
	12 Insulation		
	13 Carpet/Padding		
	14 Ceiling Tiles		
	15 Ceramic Fixtures		
	16 Gypsum Wall Board		
	17 Pallets & Crates		
	18 Oriented Strand Board (OSB)		
	19 Plywood		
	20 Other Engineered Wood		
	21 Clean Wood		
	22 Painted/Treated Wood		
	23 Other CDD		
Organics	24 Mixed Yard Waste		
	25 Branches and Stumps >1" Diameter		
	26 Other Organics		
Batteries	27 Batteries - Primary		
	28 Batteries – Wet-Cell		
	29 Batteries – Rechargeable, Li-ion		
	30 Batteries – Rechargeable, Other		
UW/Haz Waste	31 Mercury-Containing Products - Lamps		
	32 Mercury-Containing Products - Thermostats		
	33 Mercury-Containing Products - Other		
	34 Architectural Paint		
	35 Non-Architectural Paint		
	36 Other Hazardous Waste		
Electronics	37 CED Electronics		
	38 Non-CED Electronics		
	39 Products with Embedded Batteries		

APPENDIX B

BIOSOLIDS REPORT

An Evaluation of Biosolids Management in Maine and Recommendations for the Future

PREPARED FOR THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION



December 15, 2023 // FINAL REPORT

PREPARED BY:



IN COLLABORATION WITH:





Technical Memorandum

200 Brickstone Square
Suite 403
Andover, MA 01810
T: 978.794.0336

Prepared for: Maine Department of Environmental Protection (DEP)
Project Title: Study for Sustainable Management of Wastewater Solids, Septage & Leachate in the State of Maine
Project No.: 169895

Final Report

Subject: **An Evaluation of Biosolids Management in Maine and Recommendations for the Future**

Date: December 15, 2023

To: Commissioner Melanie Loyzim, DEP

From: Bill Brower, P.E., Brown and Caldwell (BC)

Copy to: Maine Department of Environmental Protection:

Brian W. Kavanah, Director, Bureau of Water Quality

Susanne Miller, Director, Bureau of Remediation and Waste Management

Victoria Eleftheriou, P.E., Deputy Director, Bureau of Remediation and Waste Management

Carla J. Hopkins, Director, Division of Materials Management


Tim A. MacMillan, P.E., Environmental Engineering Services Manager

Maine Water Environment Association representatives:


Travis Peaslee, P. E., General Manager, Lewiston Auburn Water Pollution Control Authority

Emily Cole-Prescott, City Planner, City of Saco

André Brousseau, Superintendent, Sanford Sewerage District

Prepared by: 
Bill Brower, P.E., Northeast Practice Leader for Solids and Energy, BC

Prepared by: 
Persephone Ma, Senior Staff, BC

Prepared by: 
Jessica Nekowitsch, EIT, Staff Environmental Engineer, BC

Reviewed by: 
Natalie Sierra, P.E., National Practice Leader for Solids and Energy, BC

Limitations:

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Abbreviation List

AACE	Association for the Advancement of Cost Engineering International
BC	Brown and Caldwell
CDD	construction and demolition debris
CFR	Code of Federal Regulations
DEP	Department of Environmental Protection
EGLE	Environmental, Great Lakes, and Energy
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gas
JRL	Juniper Ridge Landfill
L.D.	Legislative Document
MAD	mesophilic anaerobic digestion
mgd	million gallons per day
NEBRA	North East Biosolids and Residuals Association
NG	natural gas
NPC	net present cost
O&M	operations and maintenance
PBD	Public Benefit Determination
PFAS	per- and polyfluorinated substances
PFBS	perfluorobutane sulfonic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
P.L.	Public Law
POTW	publicly owned treatment works
ppb	parts per billion
R&R	repair and rehabilitation
RFP	request for proposal
SCWO	supercritical water oxidation
SWEET	Solids-Water-Energy Evaluation Tool
THP	thermal hydrolysis process
TS	total solids



Executive Summary

Several factors have made the current situation for managing biosolids very challenging and uncertain for the Publicly Owned Treatment Works (POTW) who treat municipal wastewater and generate biosolids in Maine. Effective August 8, 2022, 38 M.R.S. §1306(7) banned the land application, sale, and distribution of “sludge and sludge-derived products” in Maine. POTWs were left with one option within the state to manage biosolids: disposal at landfills. Three landfills have provided for nearly all the biosolids disposal in the state, with the state-owned Juniper Ridge Landfill (JRL) in Old Town handling the vast majority. Not long after the ban took effect (February 2023), 38 M.R.S. §1310-N(5-A)(B) (Public Law 2021, Chapter 626) also went into effect, which set recycling deadlines that further exacerbated impacts to the overall management of sludge generated in Maine. Specifically, the operator of JRL asserted that there was consequently an insufficient amount of bulking agents—bulky materials that landfills mix with biosolids to achieve needed landfill stability—available to manage biosolids being added to the landfill and began turning away municipal biosolids. This left POTWs in a challenging situation in which they struggled to find a cost-effective outlet to remove and manage the biosolids generated from the continued treatment of incoming wastewater flows. In some cases, this led to sludge piling up on site, which in turn placed some of the POTWs at risk of being out of compliance with their wastewater discharge permits.

Due to swift action from the POTW community, the Department of Environmental Protection (DEP), and Hawk Ridge Composting Facility, emergency measures were put in place to store and transport sludge to a vendor in Canada. While this was intended as an emergency operation, it should be noted that hauling biosolids hundreds of miles out of the country resulted in greatly increased costs to POTWs (and ultimately ratepayers), and also increased greenhouse gas emissions. Virtually overnight, biosolids management costs for many POTWs doubled, which caused severe and unexpected strains on public utility budgets.

Definition of terms as used in this document:

Biosolids: While neither Maine law nor DEP rule defines the term “biosolids”, it is a commonly understood term. Here it is used to refer generally to the treated or untreated solids residual resulting from wastewater treatment at publicly owned treatment works (POTWs).

Septage: The residual removed from septic tanks, cesspools, portable toilets, and similar facilities. When septage is managed at POTWs, much of it is converted via treatment to biosolids.

The root cause of this challenge was, at its heart, a solid waste management issue—having too much biosolids and too few outlets. **The following table shows suggested “levers”—tangible actions to address the underlying issues— available to Maine government to address the key challenges impacting biosolids management in Maine and help avoid similar situations in the future.** In particular, DEP, which oversees both wastewater treatment and sludge management, and the Bureau of General Services within the Department of Administrative and Financial Services, which is charged with administering state-owned landfills, will be integral in developing solutions.

Following the table is a graphic showing the projected biosolids management capacity in the state compared with the amount of biosolids currently generated. The graphic discusses the impact of key regulations, estimated landfill closures and regional biosolids facilities. **The key takeaway from this graphic is that as soon as 5 years from now there could be a drastic shortfall in capacity to accept biosolids in the state unless some of the actions in the table are implemented.**

Table ES-1. Levers Available to Maine State Government to Address Biosolids Challenges		
Issue	Details	Lever to Address
SHORT TERM (2024-2025)		
Landfill Capacity	<p>The state-owned Juniper Ridge Landfill (JRL) in Old Town was the outlet for nearly 90% of biosolids generated in Maine in 2022. The current permitted capacity of this facility is estimated to be fully used by 2028. The last time JRL was expanded it took nearly 6 years between submittal of the Public Benefit Determination and final approval, with additional time then needed to construct the new area. If JRL is not expanded, the state faces a dire situation for solid waste generally in the state. For biosolids, there is no current or proposed alternative outlet in the state that would be able to accept the tonnage currently handled at JRL (see the following figure). Out-of-state options would be very costly—with POTWs likely facing significantly higher costs than even those seen during 2022.</p>	<p>It is Brown and Caldwell’s understanding that the next step in the process to expand JRL is for the current operator to submit a Public Benefit Determination application to DEP for approval (38 M.R.S. §1310-AA). Given the severity of the implications if the facility is not expanded, it is recommended that the State work with the current operator to ensure that an application is submitted as soon as possible to ensure sufficient time to pursue alternatives if the expansion is not pursued by the current operator.</p> <p>In a questionnaire sent to landfill operators in the state as part of this project, four facilities expressed interest in discussing with DEP the possibility of starting to accept biosolids (see Section 3.1). While smaller than JRL, DEP should coordinate discussions with these regulated facilities to provide supplemental or contingency capacity.</p>
Bulking Agents	<p>Biosolids are typically mixed with bulking agents when landfilled to ensure slope stability. Much of the bulking agent that was used at JRL originated from a single solid waste processing facility that handled a large amount of waste that originated from out of state. P.L. 2021, ch. 626 limited the ability of this facility to process out-of-state wastes as it prevented the facility from meeting its mandated recycling goals (which prioritized in-state waste generation over out-of-state waste generation).</p> <p>When the provisions of this law went into effect in February 2023, the operator of JRL claimed this resulted in insufficient availability of bulking agent necessary to manage the increased tonnages of biosolids being brought to the landfill, and JRL stopped accepting some biosolids. With very few other options available, biosolids management costs for many POTWs doubled virtually overnight, which caused severe strains on public utility budgets.</p> <p>During the 131st legislature, P.L. 2023, ch. 283 (codified at 38 M.R.S. §1310-N(5-A)(B)) delayed the recycling deadlines that the facility needed to meet and also allowed the facility to increase the overall quantity of out-of-state oversized bulky wastes until July 2025. The practical effect of this change provided some temporary relief in that a larger quantity of bulking agents would be able to come from out of state for 2 additional years; however, this change did not address the longer-term availability of bulking agents.</p> <p>From legislative testimony in 2023, it appeared that part of the challenge was not only a lack of bulking agents from out of state, but also that construction and demolition debris—the source of much of the bulking agent—is generally at a low generation rate during certain times of year, notably late spring, which coincides with spring runoff and increased precipitation, when bulking agent is needed most at a landfill.</p> <p>In a questionnaire sent to landfill operators in the state as part of this project, several landfills listed the lack of bulking agents as a limitation to accepting more biosolids.</p>	<p>Fund an independent study evaluating the availability of bulking agents. Restrictions impacting the availability of bulking agents go into effect in 2024 and 2025, so this study should be completed as soon as possible. If the study finds that insufficient quantities of bulking agents are available, then the extension on the restrictions in P.L. 2021, ch. 626 may need to be extended (see Sections 2.1.2, 2.1.3 and 7.3).</p>



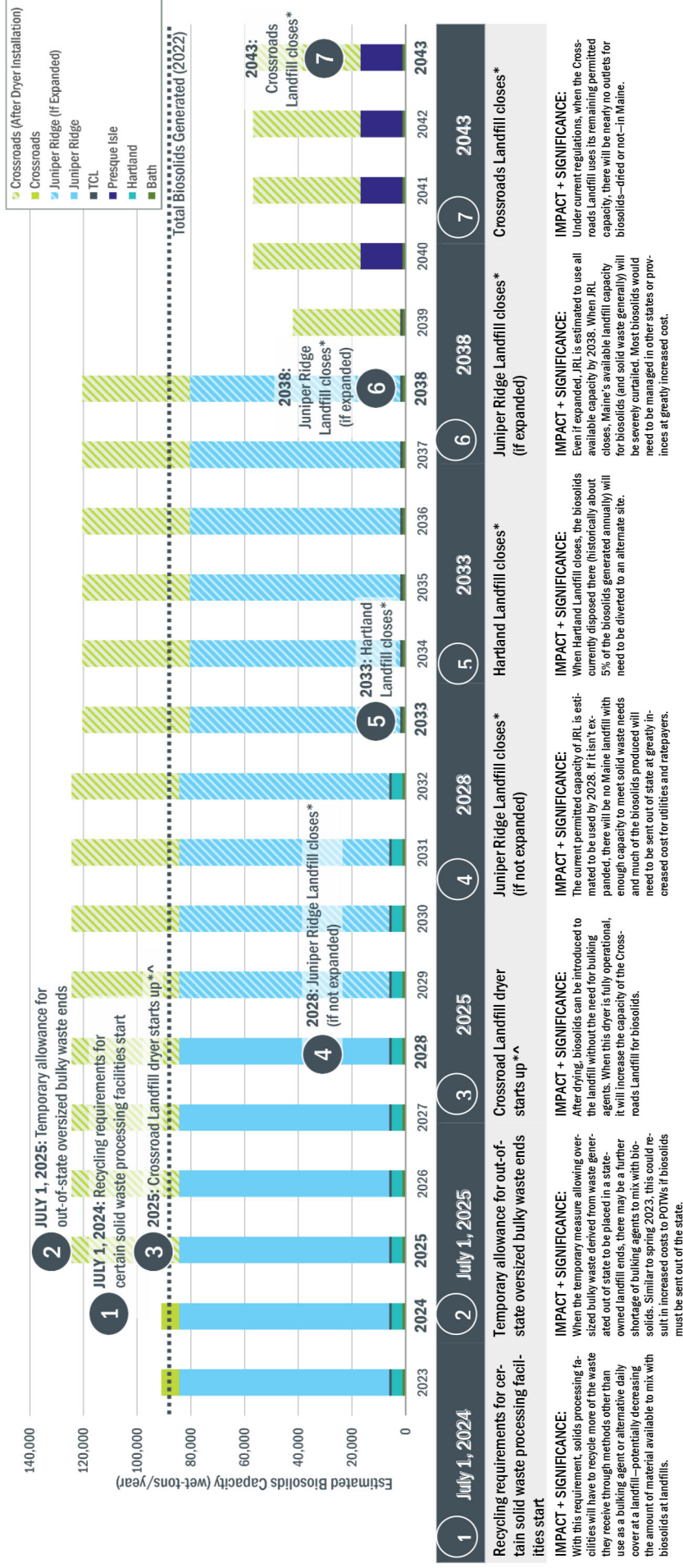
Table ES-1. Levers Available to Maine State Government to Address Biosolids Challenges		
Issue	Details	Lever to Address
Pilot Treatment Technologies for Per- and Polyfluorinated Substances (PFAS)	The full fate of PFAS through biosolids treatment technologies is not known. By funding pilots, Maine can advance the understanding of the potential for cost-effective destruction of PFAS in biosolids and inform future permitting.	Issue a Request for Proposals to select pilots of these technologies for the state to fund. Within this request, identify necessary data collection to facilitate future permitting of full-scale facilities (see Section 6).
MEDIUM TERM (2024-2034)		
Support Volume Reduction and Dryer Projects	Current drivers in Maine lead to the need for fewer biosolids and/or biosolids dried to no longer fall under wet waste restrictions at landfills.	As Clean Water State Revolving Funds are already stretched, it is recommended to issue a bond to provide state grants for volume reduction and drying projects (similar to the Wastewater Treatment Facility Planning and Construction Grants Program the state undertook in 2019-2020) (see Section 7.5). This should include promising regional projects (see Section 4). The economic analysis in Section 5 shows the value in economies of scale.
Biosolids Beneficial Use Screening Levels	The current lack of management options for biosolids in Maine is not sustainable. Leaving landfill disposal as the sole outlet for biosolids in the state exacerbates landfill capacity issues, runs counter to the state’s waste management hierarchy and climate goals, and leaves POTWs (and ultimately ratepayers) at the risk of drastic and sudden increases in biosolids management costs. The three landfills currently handling nearly all the biosolids generated in the state are all estimated to close in the next 20 years. There are several proposals being developed to install biosolids dryers or thermal treatment technologies in the state (Section 4.4), but under the ban on land application of sludge and sludge-derived products pursuant to 38 M.R.S. § 1306(7), the resulting products—even those that have been treated to reduce PFAS—would have essentially no outlet in the state once the major landfills are closed. This would leave POTWs with only options in other states or provinces—and beholden to their tightening regulations.	Maine should consider establishing revised screening levels to allow for a return to land application, provided that levels are consistent with U.S. Environmental Protection Agency (EPA) goals of being protective of human health and the environment. It may be determined that some land application is safe for both human health and the environment, and as such may provide an additional outlet for some of the biosolids generated in Maine. The EPA is conducting a very thorough risk assessment of PFAS in biosolids, scheduled to be completed in late 2024. It is recommended that the State Legislature consider reevaluating the ban on land application to determine if DEP ought to adopt the federal biosolids PFAS limits once established.
LONG TERM (2035 and beyond)		
Support PFAS Treatment Projects	Build on the results of the pilot and other research efforts to support the deployment of technologies that have been proven to provide cost-effective PFAS destruction.	Issue a bond to provide state grants for PFAS treatment projects.

An Overview of the Uncertain Future for Biosolids Management in Maine

To illustrate the urgency to implement effective solutions, the figure below shows the projected capacity to manage biosolids in Maine in the coming years—compared with the amount of biosolids generated in 2022 (horizontal dotted line)—and key events impacting that capacity.

Maine is facing a biosolids management challenge with too much biosolids and too few outlets.

The next two years present complications with bulking agent availability, which could limit the use of in-state landfills for biosolids. Looking towards the next twenty years, landfill closures will severely reduce outlets for biosolids. The challenge ahead is implementing a sustainable and functioning solution to manage biosolids while continuing to protect the environment.



*Estimated dates

**While other biosolids facilities have been proposed in Maine, including those discussed in Section 3.2, this is the only facility for which permit applications have been formally submitted to DEP and so is the only one included in this graphic.

IMPACT + SIGNIFICANCE:
 With this requirement, solids processing facilities will have to recycle more of the waste they receive through methods other than use as a bulking agent or alternative daily cover at a landfill—potentially decreasing the amount of material available to mix with biosolids at landfills.

IMPACT + SIGNIFICANCE:
 After drying, biosolids can be introduced to the landfill without the need for bulking agents. When this dryer is fully operational, it will increase the capacity of the Crossroads Landfill for biosolids.

IMPACT + SIGNIFICANCE:
 The current permitted capacity of JRL is estimated to be used by 2028. If it isn't expanded, there will be no Maine landfill with enough capacity to meet solid waste needs and much of the biosolids produced will need to be sent out of state at greatly increased cost for utilities and ratepayers.

IMPACT + SIGNIFICANCE:
 When Hartland Landfill closes, the biosolids currently disposed there (historically about 5% of the biosolids generated annually) will need to be diverted to an alternate site.

IMPACT + SIGNIFICANCE:
 Even if expanded, JRL is estimated to use all available capacity by 2038. When JRL closes, Maine's available landfill capacity for biosolids (and solid waste generally) will be severely curtailed. Most biosolids would need to be managed in other states or provinces at greatly increased cost.

IMPACT + SIGNIFICANCE:
 Under current regulations, when the Crossroads Landfill uses its remaining permitted capacity, there will be nearly no outlets for biosolids—dired or not—in Maine.

Section 1: Project Introduction and Background

The generation of biosolids is an unavoidable part of treating and cleaning wastewater before it is reintroduced into the environment. Biosolids management is covered under the discharge permit for Publicly Owned Treatment Works (POTWs), as well as state and federal laws specifically pertaining to biosolids management in landfills and beneficial use on land (Section 2.1).

POTWs are not active producers or users of per- and polyfluoroalkyl substances (PFAS) but are passive receivers of products containing these materials that are used by homeowners, businesses, and industry and find their way into public sewers. Biosolids represent a small fraction of the PFAS cycling in the environment but have generated concerns in Maine as a potential source of PFAS to soils, surface water, and groundwater (Maine PFAS Task Force, 2020).

This report looks at current and future issues impacting biosolids in Maine (Sections 2 and 3). Section 4 looks at the impact that regional facilities could have on the capacity within the state to manage biosolids. Current Maine regulations leave landfilling as essentially the only management option for biosolids, which exacerbates the need for fewer, drier biosolids. Section 5 provides a general economic analysis of installing anaerobic digestion and thermal dryers at various scales—two proven technologies for volume reduction and producing dryer material. Technologies for treating PFAS in biosolids are not yet ready for statewide adoption, and the research on the extent of destruction is still developing. Section 6 details the suggested approach to supporting pilots of PFAS treatment technologies in the state to further the research, inform the permitting approach for these technologies, and determine which would be worthwhile to fund at full scale. Sections 7 and 8 provide recommendations for concrete actions that Maine state government can take to help address the challenges for biosolids management in the state, and provides conclusions.

1.1 Biosolids Generation in Maine

Brown and Caldwell (BC) estimated that the State of Maine currently manages a total of 88,500 wet-tons of biosolids per year, or approximately 19,600 dry-tons of biosolids at 22 percent total solids (%TS). To estimate the total, tonnage values were pulled from multiple data sources, including Maine Department of Environmental Protection’s (DEP) compiled data for generators permitted for agronomic utilization and composting, survey data compiled by the North East Biosolids and Residuals Association (NEBRA), and hauling data from biosolids management companies, as well as a compilation of data BC has from previous work for biosolids production at POTWs in southern Maine. For any facility for which data was not available, estimates for solids production were calculated based on estimated average wastewater flow.

This estimate was also verified by comparing it against the amount of biosolids accepted at landfills. In a technical memorandum produced as part of another part of this project (Batiste, 2023), it was shown that around 87,000 wet-tons of biosolids were landfilled in 2021 and 2022. Nearly all biosolids were landfilled in these years, so the estimated production correlates well with the known landfill acceptance data.

Biosolids managed out of state were primarily sent to a compost facility in Canada. Quantities of biosolids sent out of state are presented in Table 1-1. Note that this only includes tonnage from facilities with an Agronomic Utilization Program License.

2017	2018	2019	2020	2021	2022	2023 (through July)
0	500	708	155	275	230	4,145



1.2 Biosolids PFAS Sampling Results

In March 2019, DEP issued a memorandum requiring all agronomic utilization licensees and biosolids compost facilities to test for three PFAS compounds. DEP has subsequently obtained additional PFAS sampling data for biosolids in the state. Data from the DEP Environmental and Geographic Analysis Database (EGAD) for the three PFAS compounds in the Screening Levels for Beneficial Use (06-096 C.M.R. Chapter 418, Appendix A, *Solid Waste Management Rules: Beneficial Use of Solid Wastes*) are presented in Table 1-2 as minimum, average, and maximum concentrations by year. It is anticipated that additional PFAS compounds will be added to the screening levels list, but these updates have not been published at the time of the report’s drafting.

Compound	Acronym	Value	2019	2020	2021	2022
Perfluorooctanoic Acid	PFOA	Minimum	Non-detect	0.6	0.3	0.8
		Average	9.4	8.2	5.3	6.6
		Maximum	46	63	25	38.9
Perfluorooctane Sulfonate	PFOS	Minimum	2.2	2.5	2.1	1.2
		Average	27.2	16.6	22.7	19.3
		Maximum	120	51.9	111	66
Perfluorobutane Sulfonic Acid	PFBS	Minimum	0.8	0.2	0.5	0.4
		Average	3.3	1.4	2.7	21.7
		Maximum	10	3.9	7.3	86

^a Data available in EGAD at time of analysis only. Excludes biosolids compost.

As of this report’s drafting, Maine’s soil beneficial use screening levels—which were applied to biosolids destined for agronomic utilization prior to the 2022 prohibition on the land application of biosolids and biosolids-derived products—were 5.2 parts per billion (ppb) for PFOS, 2.5 ppb for PFOA and 1,900 ppb for PFBS.

For reference, regulatory limits from other states are shown in Table 1-3. In 2022, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) updated the threshold value, defining “industrially impacted” biosolids as those with PFOS levels greater than 125 ppb. The average PFOS and PFOA concentrations for Maine biosolids in 2022 are at levels that would be allowed to be land applied without remedial action (e.g., source control to reduce concentrations) under the interim guidelines finalized by New York in 2023—the most stringent numerical standards specifically for biosolids in the country.

State	Limit Requiring Remedial Action	Limit Prohibiting Beneficial Reuse
Michigan (Interim Strategy)	PFOS: 50 ppb	PFOS: 125 ppb
New York (Interim Guidelines)	PFOS: 20 ppb PFOA: 20 ppb	PFOS: 50 ppb PFOA: 50 ppb



Section 2: Current Issues Impacting Biosolids Management

The following sections discuss the legislation and regulations in Maine and elsewhere that impact biosolids management in the state, as well as other factors that limit the ability of landfills to accept biosolids.

2.1 State Legislation and Regulations

Modern biosolids management authority in Maine was established in 1973 by the Maine Hazardous Waste, Septage, and Solid Waste Management Act, 38 M.R.S. 13. These statutes establish the authority of the state and Maine DEP to regulate waste management to protect the health and safety of its citizens and the environment. Residuals management in Maine is managed by the Material Management Program Division in the Bureau of Remediation and Waste Management of DEP. Biosolids are also regulated under Chapter 40 Part 503 of the Code of Federal Regulations (40 CFR 503); within this regulation is embedded the right for states to pass regulations more stringent than 40 CFR 503.

In 2016, milk from a Maine dairy farm was found to have high levels of PFOS, one of the more prevalent PFAS compounds, which led to a statewide effort to test and monitor PFAS concentrations in the environment. After investigation by multiple state agencies, two additional dairy farms were identified to have high levels of PFOS in milk, which supported a link between land application of municipal and industrial sludge and agricultural impacts from PFAS. To address concerns about food supply and drinking water, the state established a task force in March 2019 to develop a path forward for tackling PFAS contamination. The top two task force recommendations were to ensure provision of safe drinking water and to protect the food supply from PFAS contamination.

Also in March 2019, DEP issued a memorandum stating that biosolids agronomic utilization licensees and licensed sludge composters must first sample for three PFAS compounds (those identified in the recently updated 06-096 C.M.R. Chapter 418, Appendix A, *Solid Waste Management Rules: Beneficial Use of Solid Wastes*) prior to conducting any land application activity. Any PFAS samples above the screening concentrations and/or site-specific soil loading rate calculations would then result in restricted or no land application. In 2019, biosolids from only one POTW met the screening limits for all three PFAS compounds (without consideration of loading rate calculations), which either severely restricted the land application rate or, more commonly, pushed biosolids into landfill (see Figure 2-1).



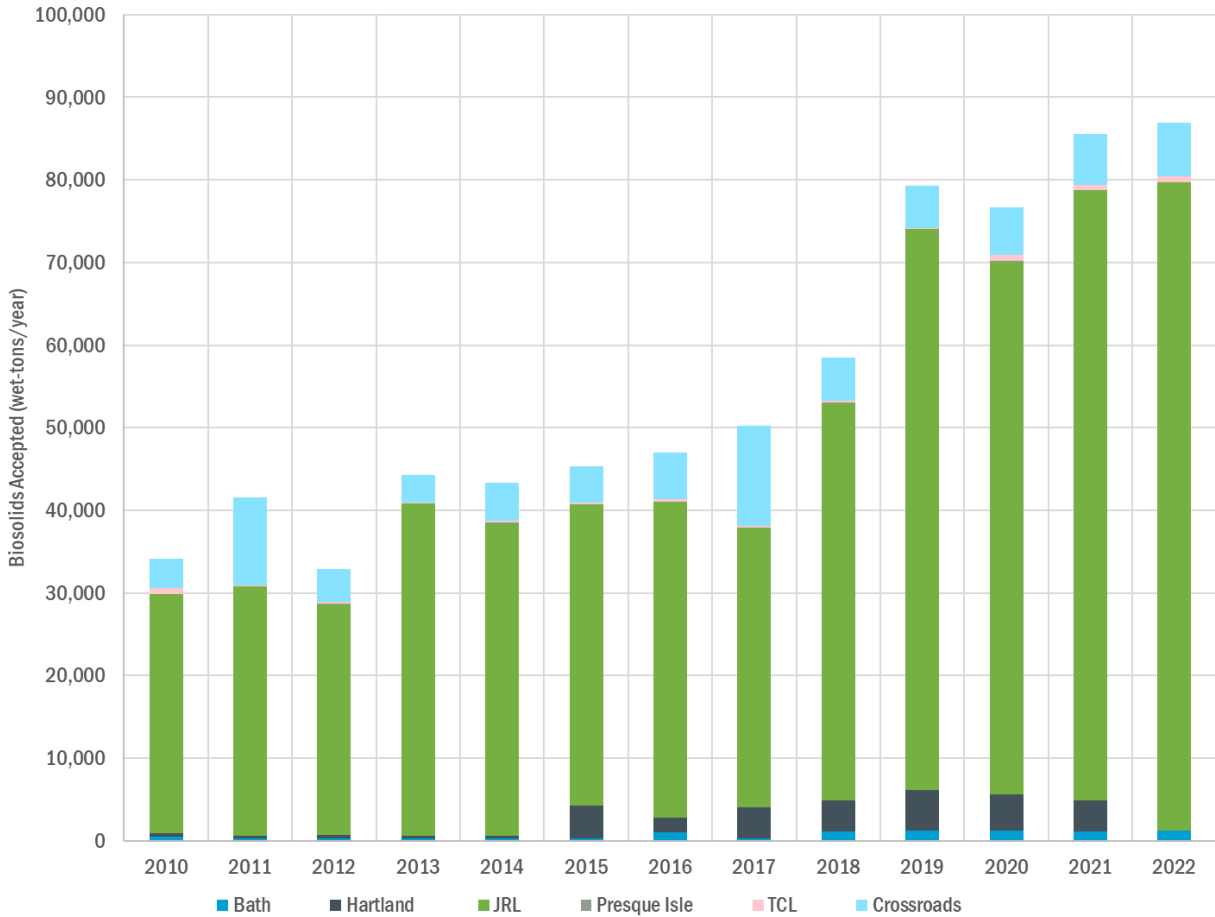


Figure 2-1. Historical biosolids disposal at Maine landfills

2.1.1 Ban on Sludge and Sludge-derived Products Land Application, Sale, and Distribution

In April 2022, the 130th Maine legislature passed Public Law (P.L.) 2021, ch. 641, “An Act to Prevent the Further Contamination of the Soils and Waters of the State with So-called Forever Chemicals” (often referred to by the name of the original bill, Legislative Document (L.D.) 1911, and codified at 38 M.R.S. § 1306 (7)). This legislation banned the land application, sales, and distribution of any products made with or mixed with biosolids and commercial and industrial sludges.

This legislation drove the little remaining agronomic utilization in the state (via land application and distribution as compost) to landfill disposal. In 2022, nearly all biosolids generated in the state were sent to in-state landfills, primarily the state-owned Juniper Ridge Landfill (JRL), which is operated by NEWSME Landfill Operations LLC, a wholly owned subsidiary of Casella Waste Systems, Inc. This was the culmination of a trend toward landfilling over the past few years as concerns about PFAS grew in the state (as shown previously on Figure 2-1).

2.1.2 Out-of-State Waste and Recycling Targets

At the same time as the biosolids land application, sale, and distribution ban the legislature passed P.L. 2021, ch. 626 (L.D. 1639), “An Act to Protect the Health and Welfare of Maine Communities and Reduce Harmful Solid Waste.” This law became effective in February 2023 and limited the tonnage that solid waste

processing facilities could send to landfills in Maine to no more than what the facility accepted from in-state sources, with the goal of preserving landfill space for waste generated in Maine. The law also required that at least 50% of the material that certain solid waste processing facilities (those that accepted more than 200,000 tons in 2018) accepted be reused or recycled through methods other than placement in a landfill, with a gradually increasing percentage of the recycled amount going to outlets other than landfills (as a bulking agent or alternate daily cover).

As is discussed in further detail in Section 2.3.2, biosolids are typically mixed with bulking agents when landfilled to ensure slope stability. Much of the bulking agent that was used at JRL (construction and demolition debris (CDD), including oversized bulky waste) originated from a processing facility that handled a large amount of waste that originated from out of state. When the provisions of P.L. 2021, ch. 626 restricting out-of-state waste went into effect in February 2023, the operator of JRL claimed that there was insufficient bulking agent available, particularly with the increased tonnages of biosolids being landfilled due to the ban, and began turning away trucks with municipal biosolids.

As a result of the confluence of these events, POTWs were left with little to no outlets for the biosolids that are a byproduct of wastewater treatment. On-site sludge storage at POTWs filled up quickly, and several utilities were at risk of being out of compliance with their wastewater discharge permits. In March 2023, Casella sought temporary approval from the Maine DEP to use a backup alternative to manage the increasing need to store biosolids by collecting and sending the material for temporary storage at the Hawk Ridge Compost Facility, and within a prescribed turnaround, sending these materials to a compost facility in New Brunswick, Canada. This was all done at a significantly increased cost. Virtually overnight, biosolids management costs for many POTWs doubled, which caused severe strains on public utility budgets.

Historically, around 150 to 700 wet-tons per year of biosolids were managed out of state (see Section 1.1). During the March to early July 2023 timeframe, approximately 4,100 wet-tons of biosolids were sent to Canada for management—equivalent to approximately 14% of the biosolids generated in the state in a typical four-month period.

2.1.3 Temporary Revision of Out-of-State Waste and Recycling Targets

In June 2023, the Maine legislature passed P.L. 2023, ch. 283 (codified at 38 M.R.S. §1310-N(5-A)(B)), which allows solid waste processing facilities to continue sending up to 25,000 tons per 12-month period of oversized bulky waste that was originally generated out of state to state-owned landfills (i.e., JRL) until July 1, 2025. This was to ensure that enough bulky waste could be obtained throughout the year until better solutions were available for managing biosolids in Maine. The law also delays until July 1, 2024, the start date for when certain large solid waste processing facilities are required to ensure a portion of recycled material goes to an outlet other than landfills. These temporary measures helped alleviate the immediate challenge, but the underlying issues still need to be addressed.

2.1.4 Air Quality Statutes, Regulation, and Permitting

POTWs, project developers, and technology vendors have reported a lack of clarity in the requirements for air permitting for biosolids technologies in Maine, including thermal dryers and potential PFAS treatment technologies. There are no current PFAS limits for air emissions in Maine, though DEP anticipates there very likely will be in the future, likely based on federal guidance when it becomes available. In the interim, DEP has provided guidance that it will require a Best Available Control Technology analysis for new sources or major or minor modifications to existing licenses (as defined in 06-096 C.M.R. Chapter 115, “*Major and Minor Source Air Emission License Regulations*”). License renewals of minor sources will require Best Practical Treatment analysis.



2.2 Other Relevant Regulations

Separate and apart from Maine’s actions, the federal government, Canadian provincial and federal governments, and other states within the region have been pursuing regulatory actions around PFAS and biosolids management that are distinct from Maine’s approach.

2.2.1 Federal PFAS Regulations

In October 2021, U.S. Environmental Protection Agency (EPA) Administrator Michael S. Regan announced the agency’s PFAS Strategic Roadmap, which lays out a whole-of-agency approach to addressing PFAS. The roadmap sets timelines by which EPA plans to take specific actions and commit to new policies. For wastewater, the Roadmap emphasizes the role of source control—keeping PFAS from entering sewer systems in the first place. For example, EPA plans to issue updated effluent limitation guidelines for several key industrial categories in the coming years. This pretreatment-based approach was further expanded in a December 2022 memorandum from EPA Assistant Administrator Radhika Fox, which emphasized the importance of industrial pretreatment for utilities land applying biosolids.

In 2020, the EPA began its risk assessment process to evaluate the need for PFOA and PFOS limits in biosolids under 40 CFR 503, the federal regulatory mechanism for biosolids management oversight. The results of this risk assessment are expected to be published in late 2024 and could result in regulatory limits for PFOA and PFOS in land-applied biosolids. Other PFAS compounds have been identified for further study, including potential future risk assessment.

2.2.2 Regulations in Nearby States

In general, biosolids management has been challenging in New England in recent years, particularly in Massachusetts, where the largest volumes of biosolids are generated due to higher population density. These management constraints mean there is limited opportunity to manage Maine biosolids in nearby states, primarily due to:

- Limited sites for Class B land application: Relative to the volumes generated, there is insufficient acreage for management of Class B biosolids on land. Short growing seasons in New England, as compared to other parts of the country, exacerbate this constraint.
- PFAS concerns and regulations under development: While Maine was the first New England state to regulate PFAS in biosolids, New Hampshire, Massachusetts, and Vermont have all begun the process of developing regulations related to PFAS in land-applied biosolids. New Hampshire, in coordination with the U.S. Geological Survey, is conducting a scientifically rigorous process for establishing biosolids screening standards, which could be informative for Maine.
- Limited landfill capacity.
- Vermont and New Hampshire have regulations stating that biosolids brought into those states for certain uses must meet the pollutant limits or chemical contaminant concentrations of that state or the state in which they were generated, whichever is more stringent.
- Exhausted regional incineration capacity: In southern New England, regional incinerators provide additional biosolids management capacity. The facilities are largely at capacity, with some older facilities experiencing higher downtime for maintenance. Many sewage sludge incinerators in the region have closed and new ones are difficult to develop due to more stringent air emissions controls necessary per new source performance standards and emission guidelines rules finalized by the EPA in 2016. Incinerators are also facing scrutiny as potential sources of PFAS air emissions. Connecticut, a state in

which incineration dominates as a biosolids management option, has begun a PFAS monitoring program with the potential for future regulation.

These constraints are a key reason why biosolids management companies have sought to manage Maine biosolids elsewhere, particularly in Canada.

Biosolids dried to U.S. EPA Class A standards (meaning they can be used in a wide variety of horticultural applications, as well as agricultural) would be easier to manage outside of Maine, as would the biochar produced by pyrolysis or partial gasification units.

2.2.3 Regulations in Canada

In Canada, biosolids are generally regulated at the provincial level; there is no federal equivalent to 40 CFR 503. Previously, biosolids from New England had been hauled to Canada, specifically Quebec and New Brunswick, for reuse. However, on March 2, 2023, the Quebec provincial government issued a temporary moratorium on the importation of land-applied biosolids from the U.S. while the Ministry of the Environment of Quebec works to develop PFAS standards in biosolids. The provincial government of Quebec is expected to issue a regulation on the land application of biosolids, including limits for certain PFAS compounds, in 2024. While biosolids are still accepted in New Brunswick, the Canadian Food Inspection Agency is expected in early 2024 to implement a PFOS limit (purported to be around 50 ppb) for biosolids that would impact beneficial use across all provinces.

Agronomically utilizing biosolids in Canada had been crucial in managing biosolids in New England for some time. Quebec and New Brunswick have historically been routine outlets for biosolids in northern Maine. The New Brunswick facility is often the backup option listed on many Casella contracts. In 2023, when biosolids land application in Maine was banned and landfills had insufficient bulking agent to accept biosolids, a facility in New Brunswick was an essential alternative outlet. The movement of biosolids to Canada has garnered significant negative press in the past year; thus, even biosolids that could be managed under the new federal and provincial laws may be challenged to find receivers.

2.3 Limiting Factors at Landfills

While landfills have generally had the capacity to manage nearly all biosolids generated in the state in recent years (see Figure 2-1), landfill capacity to receive biosolids is constrained by several key factors pertinent to this study. The importance of these factors was reinforced in a survey of landfills conducted as part of this project.

2.3.1 Limits on Wet Wastes

While landfills are currently managing essentially all of the biosolids produced in the state, the events of spring 2023 highlighted how dependent biosolids management is on a handful of landfill operations in Maine and in particular to Maine's state-owned landfill, JRL. A separate report published as part of this project (Batiste, 2023) examined the potential for landfills currently permitted to accept biosolids to accept additional tonnage. A main limiting factor to biosolids acceptance is the proportion of "high-moisture content waste" or "wet waste" that landfill owners are permitted or willing to accept per internal operating guidelines. Wet waste is typically defined as materials having a moisture content greater than 60% (Georgia Department of Natural Resources, 2021); most biosolids have a moisture content of 75% or higher and thus fall into this category. If added in too great a proportion, wet wastes can affect the stability of landfill side slopes, leading to unsafe operating conditions, including slope failures. The maximum amount of wet waste

accepted is typically no more than 10% of the total amount of waste accepted, and all other wet wastes (e.g., industrial sludges, industrial wastes) accepted at the landfill count toward this overall limit.

Based on historical data and the responses to a questionnaire sent to landfill operators in the state as part of this project (Batiste, 2023), there appears to be limited ability of landfills currently accepting biosolids to accept more due to limits on the acceptance of wet wastes.

It is important to note that biosolids that have been dried to a moisture content below 60% would no longer fall under this limitation. There are multiple POTWs in other states sending dried biosolids to landfill, either as a component of alternative daily cover or for direct burial, without issue. As with many materials, consideration would need to be given to how dried biosolids are placed in a landfill to avoid stability or heating issues.

2.3.2 Bulking Agents

As the challenges in finding outlets for biosolids in the spring of 2023 made clear, the acceptance of biosolids at landfills is heavily reliant on the availability of bulking agents to mix with the biosolids to provide needed stability (see Sections 2.1.2 and 2.1.3). The ratio of bulking agent to biosolids is typically 4:1 or more, depending on the moisture content of the biosolids, the bulking agent properties, and the workability goals of the landfill operator. Some bulking agents require a higher ratio, which reduces the number of biosolids trucks that can be accepted per hour.

From legislative testimony in 2023, it appeared that part of the challenge was not only a lack of bulking agents from out of state, but also that CDD—the source of much of the bulking agent—is generally at a low generation rate during certain times of year, notably late spring, which coincides with spring runoff and increased precipitation, when bulking agent is needed most at a landfill.

2.3.3 Other Issues

In addition to limits on the proportion of wet waste and the need for sufficient quantities of bulking agents (see Section 2.3.2), there are several other logistical factors that in practice limit the amount of biosolids that can or will be accepted at a landfill, including:

- Biosolids arriving for disposal at a landfill need to be promptly mixed with other solid waste and covered to minimize the potential for odors. Operators try to coordinate biosolids acceptance with the availability of sufficient waste available for mixing so trucks are able to enter and exit the facility as quickly as possible.
- Landfill gas and leachate production both have the potential to increase with the addition of biosolids to a landfill; therefore, additional attention to these systems is generally needed.
- Landfilling of biosolids has the potential to impact leachate quality, which may affect options for treating and managing the leachate.
- Landfills may at times be undergoing restrictions due to inclement weather (such as the heavy precipitation of summer 2023) or operational issues such as location and size of the working face that reduce the volume of biosolids that can be accepted.
- The potential requirement for PFAS treatment in leachate has made some landfill operators reluctant to accept biosolids.

Finally, a nationwide shortage of truck drivers and volatile fuel prices add uncertainty to the process of transporting biosolids to the landfill in the first place.

Section 3: Future Drivers for Biosolids Management

While biosolids management in Maine remains precarious today, uncertainty around future landfill capacity, the development of alternative management outlets, and competing state goals all impact available management options in the future.

3.1 Uncertain Future Landfill Capacity

Another report published as part of this project (Batiste, 2023) estimated when the permitted capacity at landfills accepting biosolids would be completely used (see Figure 3-1). At current consumption rates, it is estimated that the current permitted capacity for the two facilities accepting the vast majority of biosolids in the state, JRL and Crossroads, would be exhausted in 2028 and 2043, respectively. A proposed expansion at JRL, the permitting process for which has just formally begun, is estimated to extend the operating life by an estimated 10 years to 2038 (see Figure 3-1). Figure 3-1 additionally shows the potential impact of a planned thermal dryer for biosolids at the Crossroads Landfill.

This obviously presents a solid waste management challenge in the state well beyond biosolids, but after 2043, given the current legislation and these anticipated landfill closures, POTWs in Maine will be left with no in-state (and likely few out-of-state) options for managing biosolids. As will be discussed in Section 4.4, there are several proposals being developed to install biosolids dryers or thermal treatment technologies in the state so that the resulting material is no longer subject to wet waste restrictions. However, these options are only a near-term fix, as the two landfills will not be able to accept biosolids of any kind when they have reached capacity. Given the restrictions of Maine’s biosolids land application ban, once landfills reach maximum capacity, there will be no outlet in the state even for dried material.

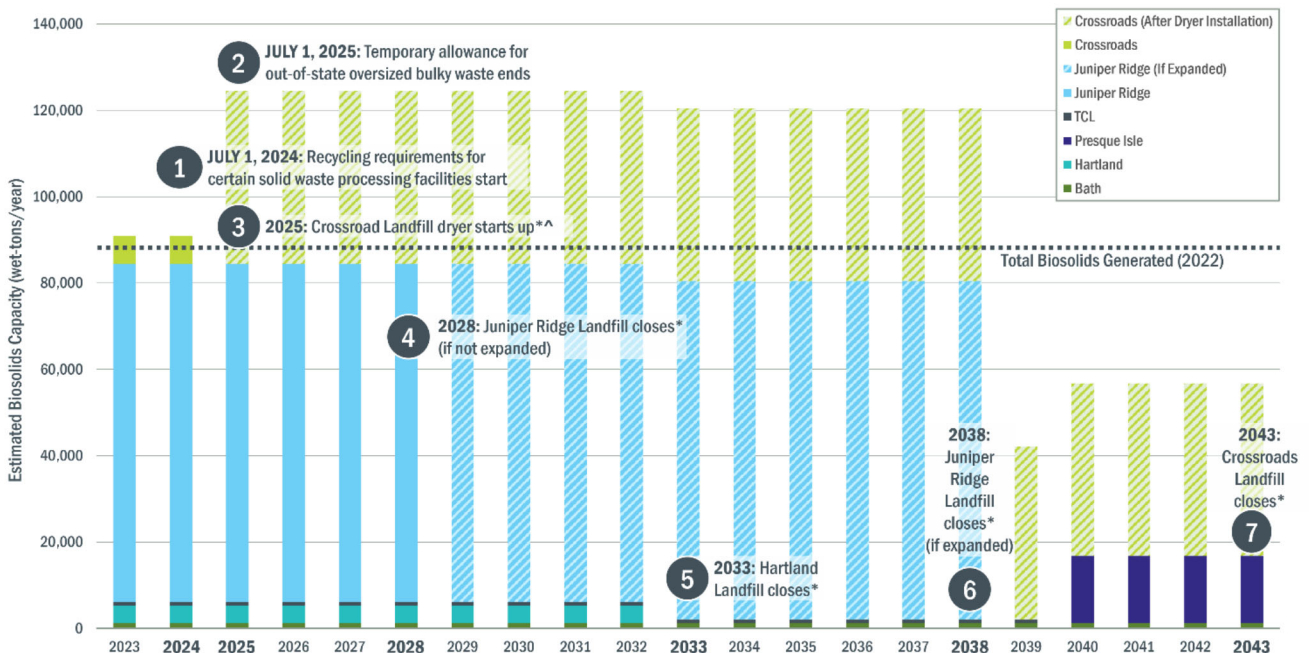


Figure 3-1. Estimated biosolids management capacity in Maine (wet-tons/year)



In the questionnaire responses, a few landfill owners not currently permitted to accept biosolids (City of Augusta, City of Lewiston, and Twin Rivers Paper Company LLC) expressed interest in discussing with DEP the possibility of accepting biosolids in the future. In addition, the Pixelle Androscoggin facility, which includes a landfill, is in the process of being sold. While the proposed plan for the facility is to close the landfill, the possibility of using the remaining permitted capacity at the site for biosolids disposal could be explored with the new owners as an alternative action if the proposed activity complies with state statutes and rules.

While additional restrictions on the amount of biosolids that could be accepted at these “additional” facilities are likely, an approximate maximum tonnage that each facility could accept was calculated based on questionnaire responses and annual reports (Table 3-1). Collectively it is estimated that these facilities could accept a maximum of almost 10,000 wet-tons/year, or around 11% of all the biosolids currently generated in the state. These facilities could provide another outlet for biosolids, particularly for POTWs located nearby. They could also provide contingency backup in the event issues arise at the landfills currently accepting biosolids.

Table 3-1. Landfill Owners Indicating a Willingness to Discuss Starting to Accept Biosolids^a

Owner	Landfill	Public/Private	Location (city/town)	Typical Waste Acceptance Rate (wet-tons/year)	Estimated Maximum Biosolids Acceptance ^b (wet-tons/year)
City of Augusta	Hatch Hill Landfill	Public	Augusta	71,000	7,100
City of Lewiston	Lewiston Landfill	Public	Lewiston	11,000	1,100
Pixelle Androscoggin LLC	Pixelle Androscoggin Landfill	Private	Jay	7,000	700
Twin Rivers Paper Company LLC	Frenchville Landfill	Private	Madawaska	8,600	860
TOTAL:					9,760

^a In study questionnaire response

^b 10% of total waste accepted based on questionnaire responses or annual reports

It is not anticipated that new landfills will be constructed in Maine over the planning period of this study (20 years). Maine has had a moratorium on new commercial landfills since 1989, and BC was not made aware of any plans for new or expanded state landfills (with the exception of the possible JRL expansion).

3.2 Septage Land Application Restrictions

P.L. 2021, ch. 641 suspended issuance of new septage land application licenses, restricted land application of septage at existing sites based on whether groundwater concentrations exceeded the state’s interim drinking water standards for PFAS, and tasked DEP with evaluating alternatives to the land application of septage. Maine DEP submitted the “Report on the Land Application of Septage” to the legislature on January 13, 2023, to provide information to the legislature on whether it was advisable to enact a similar ban on the land application of septage.

Another, separate, report produced as part of this project (Rebodos, 2023) provided further evaluation on management options other than land application of septage. That report estimated that if a septage land application ban were to be enacted in Maine and most of the septage currently land applied in the state were to be transferred to POTWs for treatment, an additional 3,000 wet-tons per year of biosolids (as



dewatered cake) would be produced in the state, roughly a 3% increase. This additional material would require increased bulking agent at the landfill. At a biosolids management cost of \$140/wet-ton, this represents an annual cost of \$420,000 to the POTWs accepting this septage, a cost likely to be passed along to septage haulers and ultimately septage system owners. POTWs are not required to accept septage and may choose not to do so if management costs increase and as POTWs come under increasing PFAS regulation—leaving septage system owners with few management options.

3.3 Effluent PFAS Limits at Publicly Owned Treatment Works

According to a DEP presentation (Crowley, 2023), it is likely that the state will regulate PFAS concentrations in POTW effluent in the future. The intent would be to regulate PFAS compounds in Maine Pollutant Discharge Elimination System (MEPDES) permits (also known as Waste Discharge Licenses) held by the POTWs in the same manner as other regulated compounds.

This focus on PFAS in effluent will likely cause POTWs to work with industrial sewer users, through Industrial Pretreatment Programs or other means, to reduce PFAS entering the wastewater collection system. As discussed in Section 2.2.1, source control is one of the primary recommendations from the EPA for reducing PFAS at POTWs. Other states, including Michigan (EGLE, 2022), have had great success using pretreatment programs to reduce PFAS in POTW effluent and biosolids. Therefore, effluent PFAS limits will likely lead to reduced PFAS concentrations in biosolids.

Note that POTW effluent limits will be a disincentive for these facilities to accept materials such as landfill leachate and septage, which have few other outlets.

3.4 Climate Action

Maine has adopted ambitious climate goals:

- Decrease greenhouse gas (GHG) emissions by 45% by 2030 and 80% by 2050
- Achieve carbon neutrality by 2045

Disposing of organics in landfills generates a significant amount of methane, a potent GHG, a large percentage of which is released to the atmosphere in even modern landfills with methane capture systems. Most organics diversion legislation in the U.S. has focused on food waste; however, any organics degrading in anaerobic conditions like those of a landfill will emit methane—including biosolids. California has implemented a comprehensive organics recycling plan in an effort to reduce methane emissions, including a severe reduction in the amount of biosolids that can be landfilled.

Maine does not currently have an organic waste landfill ban or food waste recycling law; however, in recent years, several proposed legislative bills have been introduced to address concerns about GHGs and landfill capacity. In 2023, L.D. 1009 (“An Act Regarding the Reduction and Recycling of Food Waste”) was introduced and carried over to the next legislative session for further discussion by the Environment and Natural Resources Committee. Moreover, the Governor’s Office of Policy Innovation and the Future is embarking on a statewide study of food waste generation as part of its overall climate and waste management activity toward mitigating climate change.

Should Maine decide to adopt food waste recycling and reduction programming (including a landfill ban), it should be noted that the practical impact of continuing to enforce the sludge land application ban will run contrary to this movement toward reducing GHGs at landfills. As climate action goals get greater traction, the state may decide to reevaluate the ban on biosolids land application as a means of reducing methane emissions and preserving landfill capacity.

3.5 PFAS Source Control Laws

In 2021, Maine was the first state to pass a sweeping law to monitor and ultimately eliminate products that contain PFAS: P.L. 2021, ch. 477, “An Act To Stop Perfluoroalkyl and Polyfluoroalkyl Substances Pollution.” The timeframes for this law were amended in 2023 by P.L. 2023, ch. 138, “An Act to Support Manufacturers Whose Products Contain Perfluoroalkyl and Polyfluoroalkyl Substances.” Starting in 2025, this legislation requires any manufacturer who intentionally adds PFAS to a product for sale in Maine to submit a description of the product, its use, and its PFAS concentration. There are exemptions for businesses smaller than 25 people and for products regulated at the federal level.

Starting at the beginning of 2023, carpets, rugs, and fabric treatments with intentionally added PFAS were banned from sale in Maine. The legislation allows DEP to add additional categories or product uses to this list and calls on the department to prioritize products that are most likely to cause environmental contamination. In 2030, this measure expands to all products not specifically designated as a “currently unavoidable use” by DEP.

This is similar to the approach used in addressing lead contamination in drinking water. The current focus is on removing lead service lines so lead is not in drinking water in the first place, rather than trying to remove lead after contamination.

This type of source control—reducing concentrations of a pollutant in the environment by avoiding its production in the first place—has shown to be very effective. In the U.S., PFOS was voluntarily phased out of production in 2002, and most uses of PFOA were phased out by the mid-2000s, completing the phase out in 2015. Figure 3-1 shows the results of the National Health and Nutrition Examination Survey blood PFAS sampling results in people in the U.S. The correlation between the phase outs and the blood serum levels is apparent in the graph, with PFOS and PFOA concentrations falling nearly an order of magnitude in a decade. PFAS source control laws should be expected to reduce the concentration of PFAS in the environment, in soils, and in biosolids.

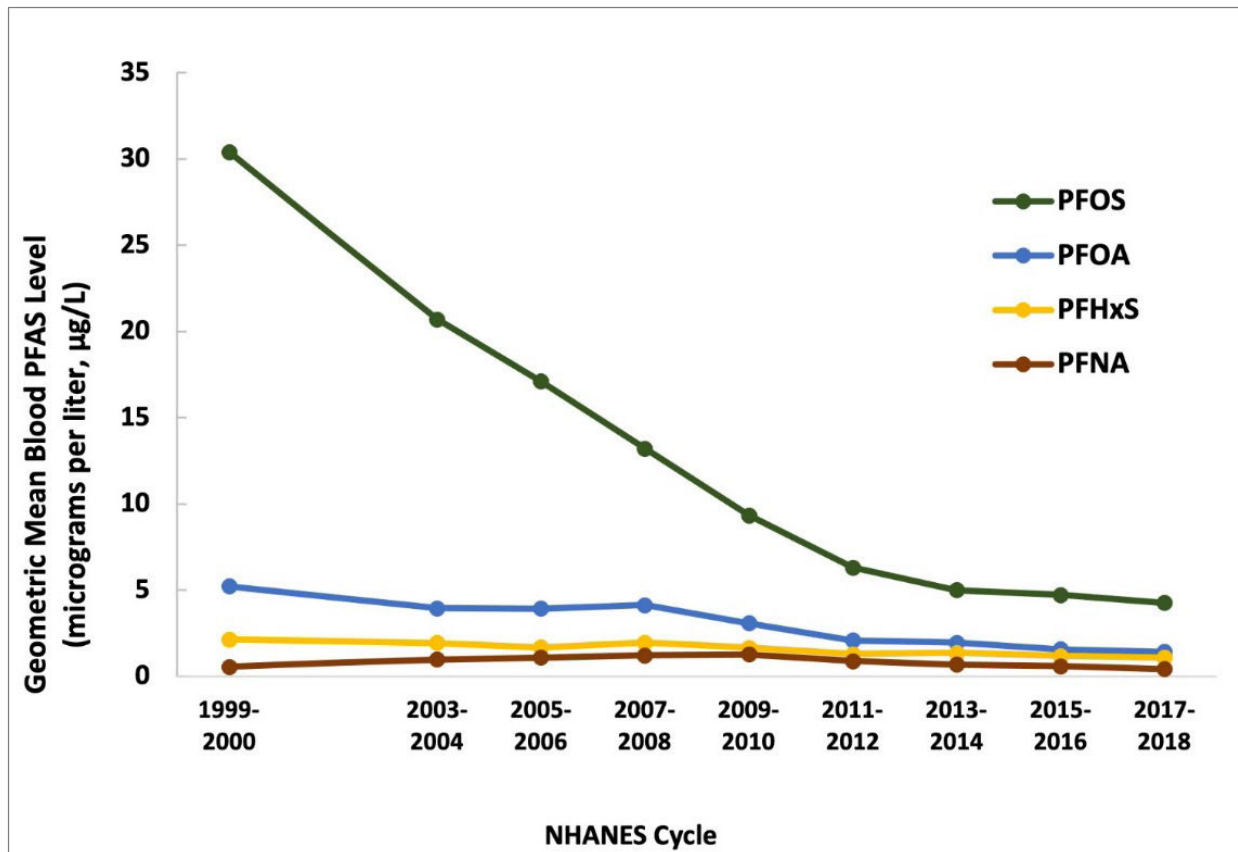


Figure 3-2. Blood levels of the most common PFAS in people in the U.S. over time

Source: Agency for Toxic Substances and Disease Registry, 2022

Section 4: Regional Facilities

As is discussed in the economic analysis in Section 5, regional facilities for biosolids treatment are able to benefit from economies of scale. While an appealing approach in theory, there are governance, finance, and basic materials handling challenges that need to be thoroughly addressed for such a facility to be successful.

4.1 Governance Structures

There are generally four options for a governance structure to undertake a regional biosolids project. Two options have two levels of participation, depending on the desires of the individual agencies regarding their method of participation. The selection of a governance option may limit the delivery method or process selection for the project.

- **Private Entity Contracts:** Each individual alliance member contracts directly with a company(s) that owns, designs, builds, and/or operates the biosolids facility.
- **Lead Agency Contract:** One agency takes the lead to deliver the project, and each individual alliance member contracts with the lead agency for use of the facility.
- **Joint Powers Agreement:** Alliance members enter into a joint agreement to deliver the project within the power and authority of one identified alliance member agency. A core of alliance members could enter into the joint contract, and the remaining alliance members would contract with the core group for use of the facility.
- **Joint Powers Agency:** Alliance members form a new joint powers agency that functions independently with the power and authority required. A core of alliance members could form the joint powers agency, and the remaining alliance members would contract with the core group for use of the facility.

One important aspect in choosing the right governance structure will involve determining which structure helps to best define, communicate, and agree upon expectations of and between all parties. Understanding what each agency seeks to achieve and is willing to contribute will shape the relationships between agencies, the relationship between the alliance and a merchant, and whether a lead agency or core leadership structure is necessary.

4.2 Financing

There are several factors agencies may be able to leverage that have the potential to reduce the capital expenditures and operating costs of the biosolids facility, and thereby reduce associated tipping fees. However, it is worth bearing in mind that while these factors may reduce the cost of processing biosolids at a regional facility, agencies may incur increased internal costs. The primary factor to consider is whether an agency within the alliance has available land or space within its existing plants or has abandoned or underused buildings or existing infrastructure.

Considerations in determining a member agency's appropriateness to serve as a host facility include:

- Existing transportation corridors.
- Physical boundaries with an existing level of staff presence or oversight.
- On-site or nearby utilities.
- Available heat, energy, steam, and process water.

Additional cost savings may be achieved by:



- Operational know-how and other existing skills agency staff possess, such as communications, finance, and legal or business skills.
- The ability to secure capital at a fraction of the cost to the private sector.
- Traditionally strong creditworthiness.
- Homogeneity of material delivered to the regional plant.

4.3 Materials Handling

Some regional biosolids facilities that have been constructed in other parts of the country have failed or been significantly challenged by seemingly straightforward solids handling issues. The methods for accepting biosolids with varying characteristics coming at an unsteady rate and conveying the material in and out of various treatment steps must be carefully designed. For instance, an inability by the facility to accept hauled material at a rate at least as fast as the rate at which haulers are accustomed to at landfills has the potential to strain agency relationships with their haulers. When used as a conditioning step ahead of pyrolysis or gasification, a thermal dryer must be selected that is able to handle the characteristics of the incoming biosolids and is well matched to the needs of the thermal treatment step.

4.4 Proposed Regional Facilities

There are several entities considering or actively pursuing projects that would serve as a regional biosolids processing facility. To understand these efforts, BC developed an 11-question survey that included questions regarding planned location, volume, design and permitting progress, and partnerships. This survey was not comprehensive, but rather was designed to illuminate the high-level landscape of PFAS solutions under discussion. DEP sent the survey to 16 contacts, and eight companies responded. A summary of the responses is shown in Table 4-1.

Company Name	Planned Location	Estimated/Planned Capacity (dry tons/day)	Design Phase	Permitting Status	Technology	Confirmed Partners
ecomaine	Scarborough	Unknown	Exploration	None	Unknown	None
Heartland Water Technology	Various	>1	Preliminary Planning	None	Dewatering, Drying, Gasification, Pyrolysis	Confidential
Synagro	Portland	40	Preliminary Planning	In discussion with DEP	Digestion, Dewatering, Drying, Pyrolysis	Andritz, CHAR
374Water	Various	2-25	Preliminary Planning	None	Supercritical Water Oxidation	In discussion
Waste Management (WM)	Norridgewock	44	30% Design	Permit applications submitted	Drying	None
Kiewit	Various	Unknown	Preliminary Planning	None	Digestion, Dewatering, Drying, others	None



Table 4-1. Regional Facility Survey Results

Company Name	Planned Location	Estimated/Planned Capacity (dry tons/ day)	Design Phase	Permitting Status	Technology	Confirmed Partners
Viridi RNG	Brunswick	46	60% Design	Existing permit; updates will be required	Digestion, Dewatering, Drying, Pyrolysis	None
NORESCO	Sanford	22	Preliminary Planning	None	Drying, potentially pyrolysis/gasification	None

The facility that is furthest along in the permitting process is for a thermal dryer at the Waste Management Crossroads Landfill in Norridgewock. Waste Management is at the preliminary design stage (30%) for a 200-wet-tons/day belt dryer. Accounting for the operating schedule and planned and unplanned outages, the annual throughput is estimated to be approximately 40,000 wet-tons per year of biosolids—equivalent to around 45% of the total biosolids generated in the state. Their proposal includes using existing landfill biogas power generation to power three heat pump belt dryers. A permit application for this facility has been submitted to, and approved by, the Town of Norridgewock Planning Board; the permit application has been submitted to DEP and is being reviewed.

Viridi RNG reports that it is at the intermediate design stage (60%) of its to upgrade the digestion facility in Brunswick that was previously operated by Village Green Ventures but is not currently operating. Viridi RNG reports that the upgraded facility—which is permitted to accept septage, food waste, and biosolids—could process up to 46 dry-tons per day. The facility would include digestion, dewatering, drying, and pyrolysis. DEP is in receipt of an application for the transfer of licenses from the current owner. Updates would be required for the new facilities. As of the writing of this report, DEP has not been contacted about permitting the additional equipment. When the facility was in operation, there were reportedly issues with off-site odors, ability to accept hauled material, and nutrient loading to the Brunswick Sewer District Wastewater Treatment Facility. These issues would need to be addressed to ensure this was a consistent outlet for biosolids in southern Maine.

While the Crossroads dryer will provide a welcome alternative in the state if completed and be able to handle a significant portion of the biosolids generated, other options need to be developed to ensure reliable and redundant biosolids management options in the state.

4.5 Proposed BioHub

In 2022, NEIWPC, NEBRA, and the Maine Water Environment Association led a group of Northeast stakeholders proposing the long-term placement of a PFAS/Biosolids Bio-Technology Hub (BioHub) in Maine. The BioHub concept started as a research facility to prove destruction technologies' effectiveness for emerging contaminants for fast-paced deployment throughout the U.S. The BioHub concept was developed to address the current lack of approved, proven, or established methods to treat PFAS in biosolids on a large scale.

On behalf of the stakeholders from Northeast states' health and environment departments, numerous POTWs, environmental consulting and law firms, E2Tech, universities, and national environmental organizations, NEIWPC submitted a Congressionally Directed Spending Request through Senator Angus King's office for the BioHub project. With much demand for funding in this highly competitive process, the BioHub project was not selected for inclusion in the Senate's appropriations bill for Fiscal Year 2024.

Unfortunately, seeking and securing funding and then studying, locating, permitting, and constructing the BioHub project would take many years, possibly a decade. And as each year passes, information has become more critical for POTW financial budgeting, planning, and assessment to support their fiscal



responsibility to ratepayers. Therefore, the stakeholders pivoted from a physical facility to an information clearinghouse concept. The BioHub clearinghouse's goal is to serve as a resource of information on research and funding for piloting, planning, and permitting treatment of PFAS in municipal biosolids. This information will be available publicly for other entities to inform proof of concept, demonstration, testing, design and construction at physical facilities. Once available, this will be a valuable resource for those wishing to pursue regional facilities.



Section 5: Technology Alternatives Analysis

Current drivers in Maine lead to the need for less material and/or material dried to no longer fall under wet waste restrictions at landfills. There are mature technologies for these purposes: anaerobic digestion and drying. This section provides a generalized economic analysis of a series of alternatives employing these technologies at different scales of POTWs. While the exact economics of a project are site-specific, this analysis is provided to give POTWs across the state an idea of the level of capital and annual costs associated with reasonable approaches to reducing biosolids generation.

PFAS treatment technologies have gotten a lot of attention in the past few years and the market offerings are maturing; however, there are only a handful of current installations running at commercial scale, most for less than a year. The long-term reliability and operations and maintenance (O&M) costs associated with these technologies is not yet known. An estimate from Minnesota put the total cost to install PFAS treatment at POTWs around that state at \$1.6 billion to \$3.3 billion (Barr, 2023). These technologies are not yet ready for statewide adoption. It is also not fully known what the full PFAS destruction potential is through these units, although data to support such claims is being collected at the few operational facilities. Section 6 lays out a piloting effort that Maine could fund to help answer these questions.

5.1 Overview of Selected Technologies

5.1.1 Dewatering

Dewatering technologies are often used at wastewater treatment facilities to separate solids and water to make processing and hauling more efficient. For the alternatives used in this analysis, centrifuge dewatering technologies were used. In addition to centrifuge dewatering, belt filter presses and screw presses are often used and have been installed throughout New England. Centrifuge dewatering is a process that uses centrifugal forces to separate water from sludge particles conditioned with polymer. These forces are generated by rapidly rotating a cylindrical bowl, which causes suspended solids to move outward, away from the rotation axis and towards the bowl's walls. As the sludge enters the centrifuge, a scroll conveyor inside the cylinder continuously conveys it from the inlet to the outlet, while simultaneously liquid drains out from the opposite end of the centrifuge. The resulting "dewatered cake" typically has a total solids content of 15% to 30% (the remaining 70% to 85% being water).

POTWs that do not have dewatering are typically unable to send their (thickened) liquid sludge to a landfill as it will not pass the required paint filter liquids test. The crucial role dewatering can play in biosolids management was highlighted in 2019 when some smaller POTWs in the state that did not have on-site dewatering were left with no options for biosolids management when restrictions on land application due to PFAS concerns went into effect. The state supported a number of these facilities with Emergency Sludge Dewatering State Wastewater Infrastructure Planning and Construction Grants to offset the cost of one-time contracted dewatering.

5.1.2 Anaerobic Digestion

Mesophilic anaerobic digestion (MAD) is the most common solids stabilization technology in the U.S. Digestion breaks down a significant portion of the organic matter in the biosolids into biogas, thereby reducing the amount of solids to manage and producing a valuable fuel source. Digesters operate continuously and result in fewer solids downstream, which opens the possibility for smaller dewatering and drying equipment and storage. When coupled with drying, the biogas produced from digestion can be used to offset some of the dryer's fuel requirements.

MAD employs operating temperatures of 35° to 39° Celsius (95° to 102° Fahrenheit) and solids are digested under anaerobic conditions. This stabilization process has the longest operational history of all the processes under consideration, with the most supporting operational data to date. Digestion reduces odors and pathogens but has the most significant benefit in plants that produce primary solids, which degrade more readily in anaerobic digesters. MAD is relatively easy to operate and maintain, but it is capital intensive and requires significant ancillary equipment and instrumentation.

5.1.2.1 Pre-digestion Thermal Hydrolysis

The thermal hydrolysis process (THP) is an anaerobic digestion pretreatment system that enhances wastewater solids processing and energy production, even achieving Class A biosolids standards in certain configurations. THP is generating interest for regional digestion facilities because the process typically requires feed solids at 15% to 18%TS, which is similar to the solids concentration of typical dewatered cake produced by most POTWs. THP ahead of digestion at regional facilities facilitates the acceptance of biosolids hauled to the facility for processing from POTWs. It is therefore included in one of the regional alternatives (see Section 5.7).

THP is a mature technology in Europe, dating back to 1995, and has been adopted in the U.S. since late 2014. THP uses medium-pressure steam to create high-temperature and high-pressure conditions that break down bacterial cells and solubilize organic material in wastewater solids, thus making them more digestible. This process accelerates digestion, reduces digester residence time, increases gas production by 10% to 20%, lowers sludge viscosity, allows for higher solids concentrations to digestion (9% to 12%), and improves dewaterability and odor control in the digested solids.

5.1.3 Thermal Drying

For traditional thermal dryers, there are three main types used for biosolids applications in the U.S.: belt, indirect, and rotary drum. Belt and rotary drum technologies advance product through the dryer vessel via a rotating belt or drum, respectively, while hot gases are passed through the product to facilitate evaporation. Indirect dryers use metal discs or paddles to advance product while transferring heat to the product through the disc or paddle surface using thermal oil or steam to heat the metal surfaces. Each dryer technology has unique operational characteristics.

A primary differentiator between technologies is product throughput. Rotary drum dryers have a substantially higher throughput than the other two technologies, which makes them most efficient at large facilities and limits their applications at small- to medium-sized facilities. For this reason, rotary drum dryers were only considered for regional alternatives, and not at smaller scales.

Because belt and indirect dryers are both commonly installed at POTWs of a range of sizes at least one was included for further analysis at all scales. Thin film dryers are indirect dryers that are widely used internationally and in a variety of industries but have not been used as frequently in the U.S. for wastewater solids. Thin film dryers have fewer issues with processing undigested solids and so were included in this analysis as a representative technology for indirect dryers. Thermal dryers work best when paired with anaerobic digestion. The anaerobic digestion process produces a stabilized sludge, which is less likely to cause mechanical issues in dryers and results in a better-quality solids product. In Maine, most biosolids will be sent to landfill, so a 90% TS end product, as could be achieved with the highest quality of drying in order to meet EPA Class A pathogen reduction requirements, will not be necessary. A lesser percentage of total solids will significantly reduce the risk of dust and dust-related issues. Paddle dryers, another type of indirect dryer, were not considered in this analysis because the sole current paddle dryer vendor will not supply a unit for un-stabilized solids because paddle dryers have a more turbulent dryer chamber, which leads to more dust generation, particularly with un-stabilized primary sludge. There are a limited number of dryer

installations in the U.S. processing un-stabilized primary sludge, which may pose a challenge for use of dryers on un-stabilized sludge in Maine.

5.1.3.1 Belt Dryer

Belt dryer installations are common in both in the U.S. and Europe. They can be either direct or indirect. Indirect and direct thermal dryers are established technologies. Heat is typically supplied by a fuel-burning furnace that serves to heat a thermal fluid, water, or flue gas. Belt dryers can be fueled by natural gas (NG), biogas, propane, thermal oil, or electricity. Because of the lower temperature operation, (lower grade, i.e., lower temperature) waste heat from other POTW processes can be used. Dewatered biosolids are distributed via nozzles or perforated plates onto a slow-moving porous belt that provides a large surface area exposed to the hot heat exchanger fluid or process air. Belt dryers shape and distribute dewatered solids into noodle or granule shaped particles onto a slow-moving porous belt. Warm process gases are circulated through the belt chamber to evaporate the water content in the feed solids. The material's shape provides a large surface for exposure to the warm process gas, and the slow-moving belt provides contact time and generates minimal dust and fines. Belt dryers without further processing generate a product with irregular size distribution and low density. The resulting TS concentration after belt drying is typically higher than 90%. This product typically has a limited market but is acceptable for landfilling purposes. The low density can mean more trucking as well, since vehicles that are full of product are below the truck's weight limit. Pelletizers can be added following the dryer to obtain a more dense and uniform product, but these systems are typically expensive to buy and operate, and the added complexity may not be balanced by additional sales revenue.

Wastewater solids with high amounts of fibrous and stringy materials can plug some types of extruders and may need to be screened for use with these types of extrusion systems. The slow-moving belts provide contact time and generate minimal dust and fines in the dryer cabinet. Belt dryer exhaust is commonly dehumidified with a condenser, then reheated and mixed with incoming air to minimize exhaust volume and reuse waste heat. Alternatively, some belt dryers use an air-to-water heat exchanger in the exhaust to capture waste heat and return it to the dryer inlet to heat the incoming process gas stream. Most belt dryers are operated automatically and only require roughly half a full-time employee for the first shift. To maintain this equipment, weekly and quarterly cleaning is recommended, as is replacing limited-wear items every 1 to 5 years. The footprint required for belt dryers is relatively large and operating complexity is moderate. Additionally, the end product is dependent on the belt dryer manufacturer.

5.1.3.2 Thin Film Dryer

Thin film dryers are indirect dryers that are widely used internationally and in a variety of industries but are not yet established in the U.S. for biosolids. These dryers can be used with a wide variety of sludge, including digested or undigested, high-strength waste, fibrous, and blended sludges. The thin film dryer allows partial to full drying operations for TS concentrations between 30% and 95%. Typical operation of a thin film dryer pumps sludge into the rotating blades within the dryer where the sludge is pressed into a thin film across the dryer's outer heating surface. Thin film dryers evenly distribute the solids above the heated zone and over the unit's inner surface. The material is then transferred to the thermal surface. The solids are pushed by the dryer blades to the discharge section. The resulting dried biosolids can be Class A, used for landfilling, or be processed further through incineration, gasification, and pyrolysis. Moisture released from the sludge flows out of the dryer to a condenser where an exhaust fan extracts the moisture. Thin film dryers generate a particle that is more uniform and dense than a belt-dried product, but not as high quality as a rotary drum dryer.



These dryers can be heated by steam, hot water, or thermal oil that flows on the outside of the heating surface. The thermal efficiency of thin film dryers depends on the heating fuel and is typically higher than 85%. Approximately half of the installations in Europe run unattended because the controls are set up with interlocks that can shut down the equipment if there is an issue with the system.

5.1.3.3 Rotary Drum Dryer

Rotary drum dryers are an established technology in the U.S. and internationally, particularly at large-scale facilities. Drum dryers operate by heating sludge using process air at roughly 1,100° Fahrenheit in a large drum. This is the highest temperature drying equipment; therefore, these dryers have the highest throughput compared to other drying technologies, which makes them the most efficient for large-scale facilities. In addition, they have a moderately sized footprint for their capacity, and relatively high operations and maintenance complexity. They typically require 1 to 2 full-time employees on all three shifts with hourly sampling and checks while the equipment is running to ensure smooth execution.

5.2 Selection of Representative POTW Sizes

To determine the four facility sizes to be evaluated as representative POTWs in this study, the total number of facilities in the state was determined, and sizing categories were developed based on Maine POTW Waste Discharge License Type codes, as shown in Table 5-1. In addition to this analysis, a map of the POTW sizes in the state of Maine was developed to gain a better understanding of where these facilities are located in relation to one another, as well as their potential hauling and disposal routes. The map of POTWs is shown in Figure 5-1.

Size of POTW (gpd)	Type Code	Number of POTWs
More than 5 million	5M ^a	13
1 to 5 million	6D	35
100,000 to 1 million	6C	62
10,000 to 100,000	6B	32
Less than 10,000	6A	10

^a Or any size with significant industrial waste

mgd = million gallons per day



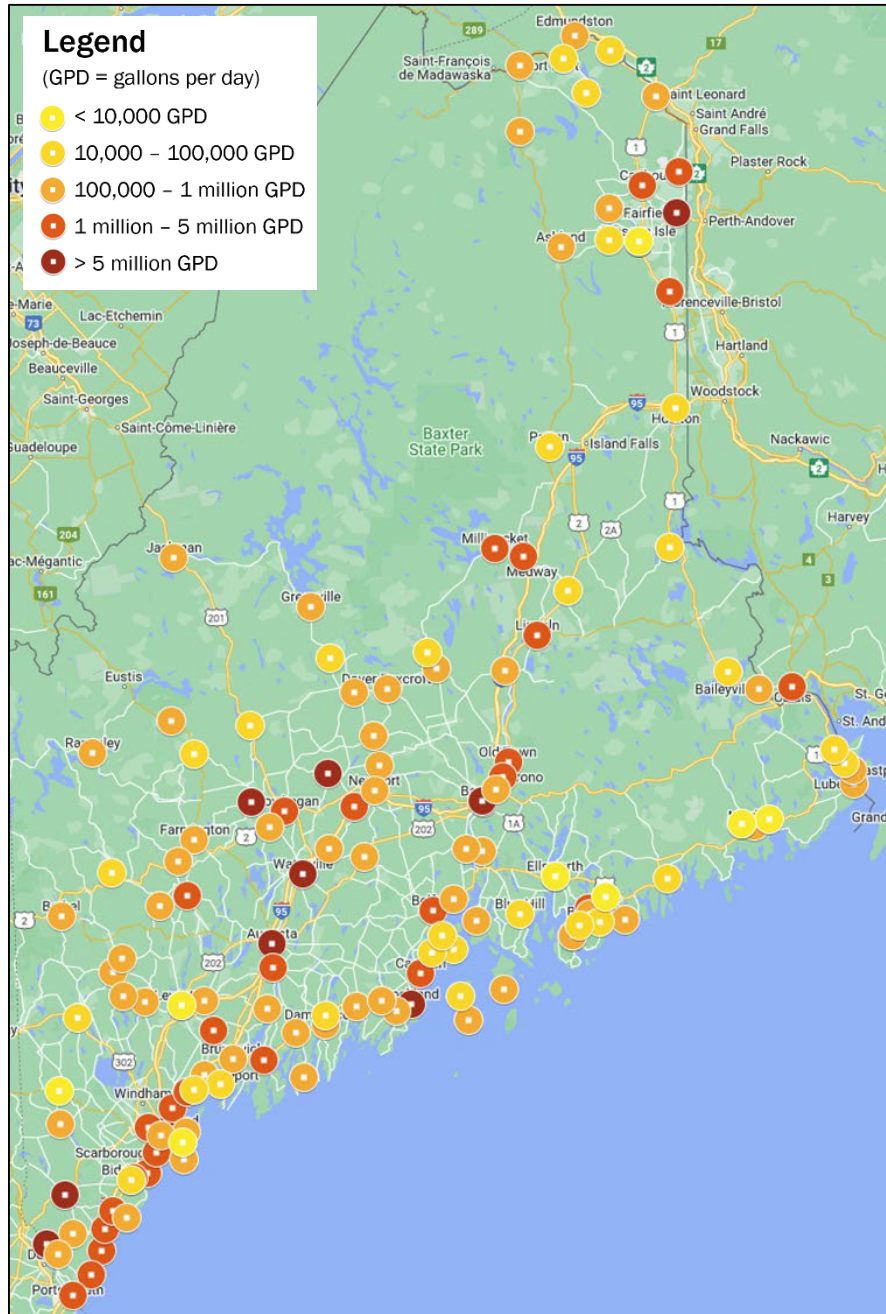


Figure 5-1. Distribution of POTWs by size

Based on the distribution of POTW sizes in Maine, the following were chosen as the conceptual facility sizes (in million gallons per day, [mgd]) for the alternatives analysis portion of this study:

- Small: 0.5 mgd
- Medium: 2.5 mgd
- Large: 7.0 mgd
- Regional: 20 mgd

5.3 Cost Evaluation Methodology

5.3.1 Operations and Maintenance Costs

Annual O&M costs were estimated for each alternative. General assumptions, along with their reasoning, are shown in Table 5-2; assumptions specific to each alternative are shown in tables in the following sections. Costs in the following sections are shown for the estimated solids production and costs in 2026, which is assumed to be the earliest year by which a project of this sort could be implemented. All operating costs are escalated annually by 4.2% for the life-cycle cost analysis (see Section 5.3.3).

Table 5-2. General Operation and Maintenance Cost Assumptions (2023)

Cost	Units	Value in Model	Basis
Electricity	\$/kWh	\$0.14	maine.gov
Natural gas	\$/mmBtu	\$14.78	maine.gov
Polymer	\$/lb	\$1.25	Typical value
Labor	\$/hour	\$36.53	ziprecruiter.com
Major equipment repair and rehabilitation (R&R)	%	2% of capital cost	Cost factor based on similar projects
Dewatered biosolids hauling and landfilling	\$/wet-ton	\$140	Typical current rate
Dried product hauling and management	\$/wet-ton	\$100	Assumption based on discussion with biosolids management companies
Hauling cost to regional facility	\$/wet-ton	\$15	Typical value

kWh = kilowatt hour

mmBtu = million British thermal units

It was assumed that biogas generated was used only for digester heating and offsetting energy needs for the dryer (if applicable). No additional value was assumed for the gas. There are incentive programs for renewable power and renewable fuel generation from beneficial use of biogas that could help the economics of projects like the ones under consideration in these alternatives.

5.3.2 Capital Costs

In accordance with the Association for the Advancement of Cost Engineering International (AACE) criteria, Class 5 capital estimates were developed as a means of comparing costs for the different alternatives. In a Class 5 estimate, engineering is typically 0% to 2% complete. Class 5 estimates are used to prepare planning-level cost scopes or to evaluate alternatives in design conditions and form the base work for the Class 4 project budget or funding estimate. Development of Class 4 estimates would be recommended if a project were advanced for inclusion in a capital plan.

Expected accuracy for Class 5 estimates typically range from -50 to +100%, depending on the project’s technological complexity, appropriate reference information, and the inclusion of an appropriate contingency determination. In unusual circumstances, ranges could exceed those shown.

The factors in Table 5-3 were used to estimate total project cost for each alternative. Major equipment costs were developed based on vendor budgetary estimates and comparable recent project costs. These are purely planning numbers that should be vetted as part of a more complete design assessment. Detailed cost

estimate calculations for each alternative are shown in Appendix C. These assumptions are based on historical cost factors; recent price instabilities could have a disproportionate impact on certain factors. More analysis would be needed in further design.

Table 5-3. Construction Cost-estimating Markups		
Markup	%	Basis
Installation	20%	of equipment cost
Electrical, Instrumentation & Controls	30%	of major mechanical equipment
Misc. Demolition	5%	of equipment installed in existing areas
Site Civil	10%	of equipment cost
Piping	15%	of equipment cost
Shipping and Handling	2%	of materials and equipment
General Conditions, Contractor Overhead and Profit	30%	of subtotal of items above
Sales Tax	5.5%	
Bonds and Insurance	2.5%	
Construction Management	10%	
Contingency	30%	
Engineering	10%	

5.3.3 Life-cycle Cost Analysis

BC created a process and cost model in its Solids-Water-Energy Evaluation Tool (SWEET) to evaluate the technical performance and economic viability of installing the different alternatives. The economic analysis considered capital and operating costs and produced a 20-year net present cost (NPC) life-cycle cost analysis of the alternatives.

For NPC calculations, the interest rates in Table 5-4 were used. These values were obtained from the most recent version of the United States Office of Management and Budget Circular A-94, Appendix C (December 2022). All operating costs are escalated by 4.2% per year to account for inflation and other price increases. Future costs are brought back to 2023 dollars via a 2.2% discount rate. These calculations assume capital, construction, and operation costs start in 2026, and operation continues for 20 years to 2046. Appendix D shows the NPC calculations for each alternative.

Table 5-4. Interest Rate Assumptions	
Escalation Rate	4.2%
Discount Rate	2.2%



5.3.4 Sensitivity Analysis

The effect of a change in one of three cost factors that can vary significantly was used to determine the sensitivity of the results obtained in the life-cycle analysis. These factors are:

- Dewatered biosolids management cost (increase to \$190/wet-ton): As discussed, there is significant uncertainty about the future management options in Maine and nearby states and provinces. Under some scenarios (e.g., JRL is not expanded), biosolids management costs would likely increase far more, but \$190/wet-ton is in the range of the increased cost many utilities were paying during the challenges of spring 2023.
- NG cost (+50%): A non-renewable resource, for which supply and demand heavily influence prices, and which is predicted to increase in price over time.
- Funding (-30% in capital cost): State and federal grants and no- or low-interest loans can have a significant impact on the overall project payback, but funds are limited.

5.4 Cost Evaluation Results: Small POTW

The small-scale (0.5 mgd) alternatives are listed in Table 5-5. The first alternative at this scale is considered the baseline alternative, which assumes the addition of dewatering. The second and third alternatives add a raw sludge belt dryer or raw sludge thin film dryer. Digestion is unlikely to be feasible for small facilities. Thin film dryers and belt dryers have been proven to be effective at processing undigested sludge, so they were chosen as the best equipment to achieve sludge volume reduction for these alternatives.

Table 5-5. List of Small (0.5 mgd) POTW Alternatives	
Alternative	Major Solids Processing Equipment
1-A (Baseline)	Dewatering
1-B	Dewatering + Raw Sludge Belt Dryer
1-C	Dewatering + Raw Sludge Thin Film Dryer

5.4.1 Operations and Maintenance Costs

O&M costs for small-scale facilities were analyzed based on biosolids hauling and landfill tip fees, electricity, NG, polymer, labor, and repair and rehabilitation (R&R) costs. The total costs for each of these factors and their given alternatives are shown in Table 5-6.

Table 5-6. O&M Costs for Small-scale POTW Alternatives (\$ thousands)								
Alternative ID	Description	Biosolids Management	Electric	NG	Polymer	Labor	R&R	TOTAL
1-A (Baseline)	Dewatering Only	\$122k	\$7k	--	\$14k	--	\$16k	\$160k
1-B	Raw Sludge Belt Dryer	\$29k	\$210k	\$36k	\$14k	\$76k	\$42k	\$408k
1-C	Raw Sludge Thin Film Dryer	\$29k	\$210k	\$36k	\$14k	\$76k	\$42k	\$408k



5.4.2 Capital Costs

Capital costs for the small-scale POTW alternatives were estimated using ACE Class 5 estimating standards. Budgetary quotes from vendors as well as recent project data and the markup assumptions shown in Section 5.3.2 were used to estimate capital costs for these alternatives. It was assumed that new buildings would be needed for new equipment.

Table 5-7. Class 5 Capital Cost Estimates for Small-scale POTWs (\$ millions)				
Alternative ID	Description	Major Equipment Cost	Capital Cost Estimate ^a	Estimating Range
1-A (Baseline)	Dewatering Only	Dewatering Centrifuge: \$0.8M	\$2.9M	\$1.5M to \$6M
1-B	Raw Sludge Belt Dryer	Dewatering Centrifuge: \$0.8M Belt Dryer: \$1.3M	\$10.3M	\$5M to \$21M
1-C	Raw Sludge Thin Film Dryer	Dewatering Centrifuge: \$0.8M Thin Film Dryer: \$1.3M	\$10.3 M	\$5M to \$21M

a. ACE Class 5 Capital Cost Estimate

5.4.3 Life-cycle Cost Analysis

Results of a 20-year life-cycle cost analysis of the small-scale facility alternatives are shown in Figure 5-2. These life-cycle costs are based on NPCs in 2023-equivalent dollar values. Figure 5-2 shows that for smaller facilities, the most economically feasible alternative is the baseline dewatering alternative, which will have the least overall capital costs and O&M costs compared to the other two alternatives. The belt drying and thin film drying options (1-B and 1-C) are closer in terms of NPC, but still double that of the baseline alternative, 1-A.

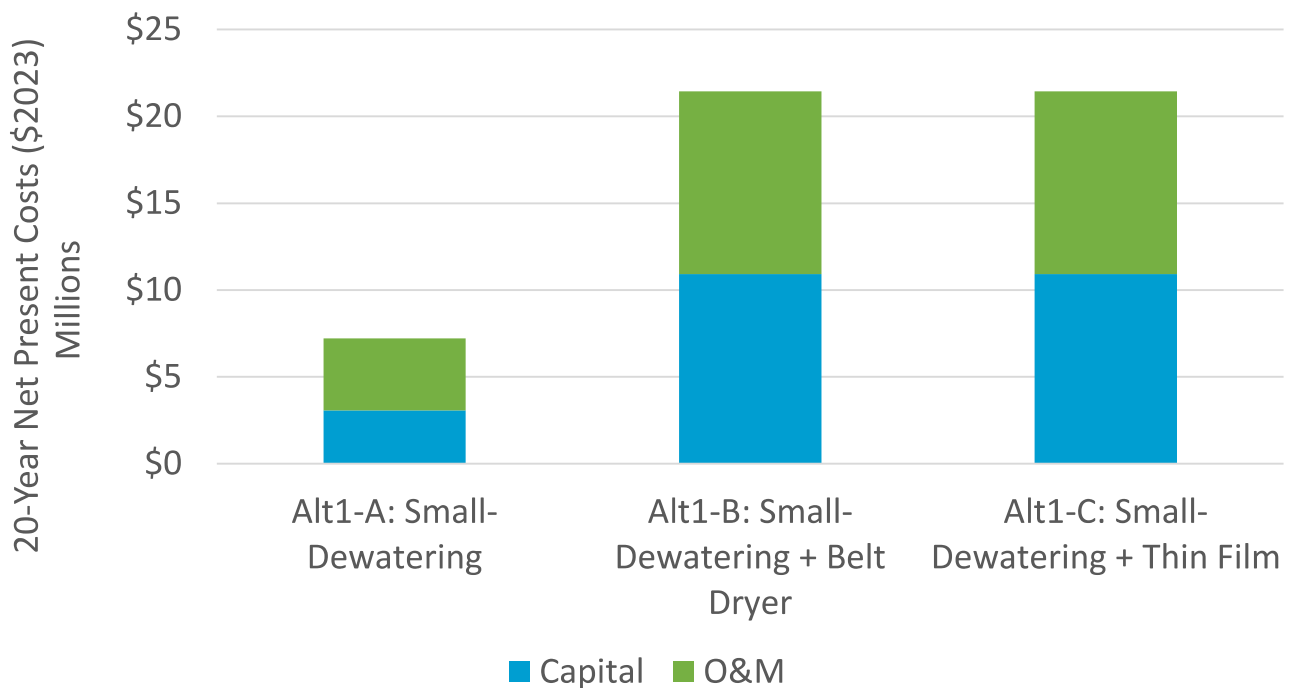


Figure 5-2. Net present cost for small-scale POTW alternatives



5.4.4 Sensitivity Analysis

The results of a sensitivity analysis on the small-scale alternatives' NPCs are shown in Figure 5-3. None of the variables changes the overall result. This matches with previous experience; dryers typically do not have a sufficient payback at this scale to make up for the capital cost within the dryer's life cycle.

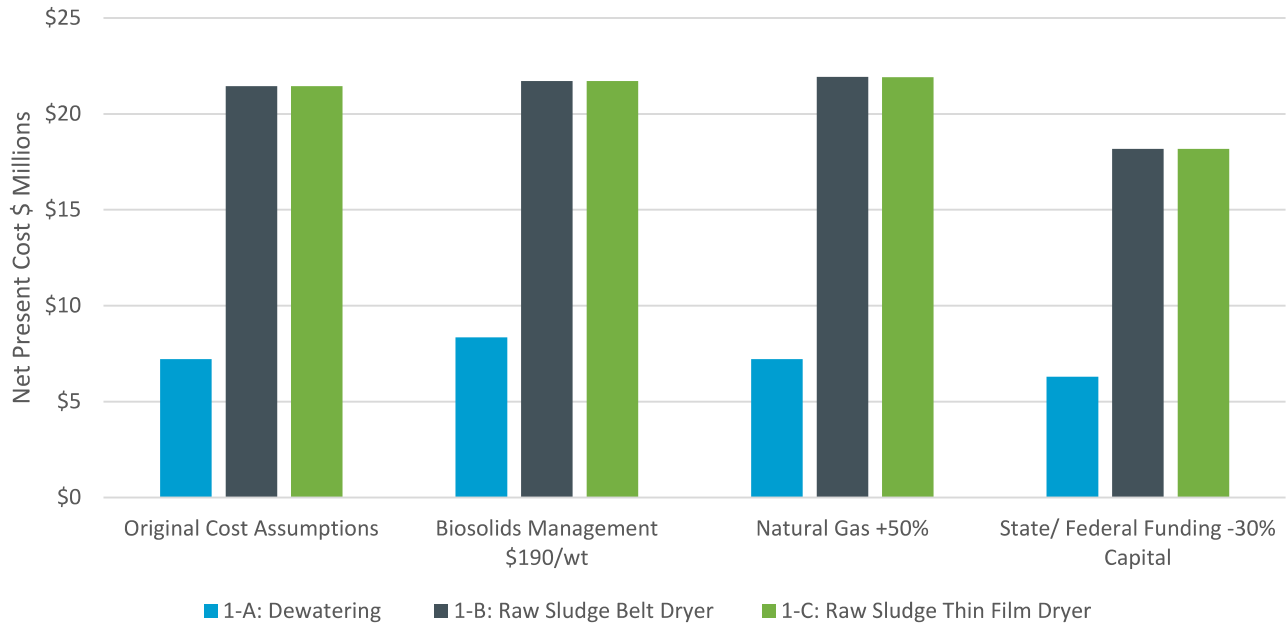


Figure 5-3. Sensitivity analysis for small-scale POTW alternatives

5.5 Cost Evaluation Results: Medium POTW

The medium-scale (2.5 mgd) alternatives are listed in Table 5-8. All alternatives assume that the facility already has dewatering. The first alternative at this scale is the baseline alternative, which assumes no new equipment is added. Alternative 2-A includes the addition of a raw sludge (i.e., undigested) thin film dryer. Alternative 2-B adds mesophilic anaerobic digestion for volume reduction, and assumes the existing dewatering will be used after digestion. Alternative 2-C adds a belt dryer to the equipment from 2-B.

Table 5-8. List of Medium-scale (2.5 mgd) POTW Alternatives	
Alternative	Major Solids Processing Equipment
2-Baseline	No new equipment
2-A	Raw Sludge Thin Film Dryer
2-B	Mesophilic Anaerobic Digestion (MAD)
2-C	MAD + Belt Dryer



5.5.1 Operations and Maintenance Costs

O&M costs for medium-scale facilities were analyzed based on biosolids hauling and landfilling, electricity, NG, polymer, labor, and repair and rehabilitation (R&R) costs. The total costs for each of these factors and their given alternatives are shown in Table 5-9. Dewatering power and polymer costs are calculated for all alternatives, including the baseline, since digestion upstream has an impact on dewatering (fewer solids and typically higher polymer usage). It should be noted that the O&M cost for the baseline scenarios (continued landfilling of dewatered biosolids) is predominantly driven by volatile biosolids management costs. There is an advantage to the alternatives that are more distributed to several, more stable costs (e.g., electricity, NG, polymer, and maintenance).

Alternative ID	Description	Biosolids Management	Electric	NG	Polymer	Labor	R&R	TOTAL
2-Baseline	Dewatering Only	\$610k	\$35k	--	\$75k	--	--	\$720k
2-A	Raw Sludge Thin Film Dryer	\$151k	\$239k	\$169k	\$75k	\$76k	\$37k	\$747k
2-B	MAD	\$387k	\$234k	--	\$46k	\$153k	\$75k	\$895k
2-C	MAD + Belt Dryer	\$91k	\$437k	\$62k	\$46k	\$229k	\$104k	\$968k

5.5.2 Capital Costs

Capital costs for the medium-scale POTW alternatives were estimated using AACE Class 5 estimating standards. Budgetary quotes from vendors as well as recent project data and the markup assumptions shown in Section 5.3.2 were used to estimate capital costs for these alternatives. It was assumed that new buildings would be needed for new equipment.

Alternative ID	Description	Major Equipment Cost	Capital Cost Estimate ^a	Estimating Range
2-A	Raw Sludge Thin Film Dryer	Thin Film Dryer: \$2M	\$10M	\$5M to \$20M
2-B	MAD	Digesters: \$4M	\$12M	\$6M to \$24M
2-C	MAD + Belt Dryer	Digesters: \$4M Belt Dryer: \$4M	\$22M	\$11M to \$44M

^aAACE Class 5 Capital Cost Estimate

5.5.3 Life-cycle Cost Analysis

The results of a 20-year lifecycle cost analysis of the medium-scale facility alternatives are shown in Figure 5-4. These life-cycle costs are based on NPCs in 2023-equivalent dollar values. Figure 5-4 shows that for medium-sized facilities, the most economically feasible alternative is the baseline dewatering alternative, which will have the least overall capital and O&M costs compared to the other two alternatives. The raw sludge thin film drying alternative (2-A) is the second most economically feasible alternative for medium-



scale facilities, with O&M costs that are roughly the same as the baseline O&M costs. Alternatives 2-B and 2-C are the most-costly alternatives, with the addition of anaerobic digestion.

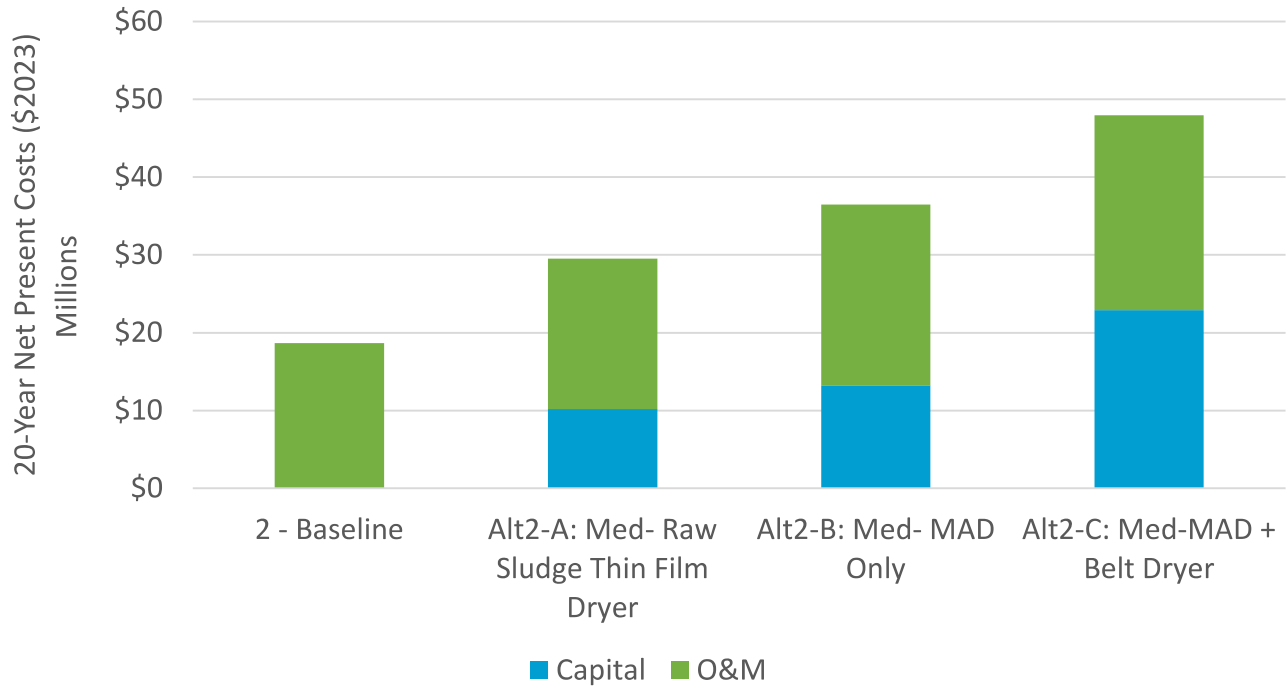


Figure 5-4. Net present costs for medium-scale POTW alternatives

5.5.4 Sensitivity Analysis

The results of a sensitivity analysis on the medium-scale alternatives’ NPCs are shown in Figure 5-5. For these alternatives, the NG increasing by 50% or the biosolids hauling costs increasing to \$190/wet ton had minimal impact on their NPCs compared to the original cost assumptions. The most impactful variable on these relative costs is funding from the state, which in this case was assumed to be 30% of the overall capital cost. Higher rates of funding could make dryer projects economically feasible. The value to the state in supporting dryer projects is that dryer projects free up landfill capacity for biosolids from other POTWs.

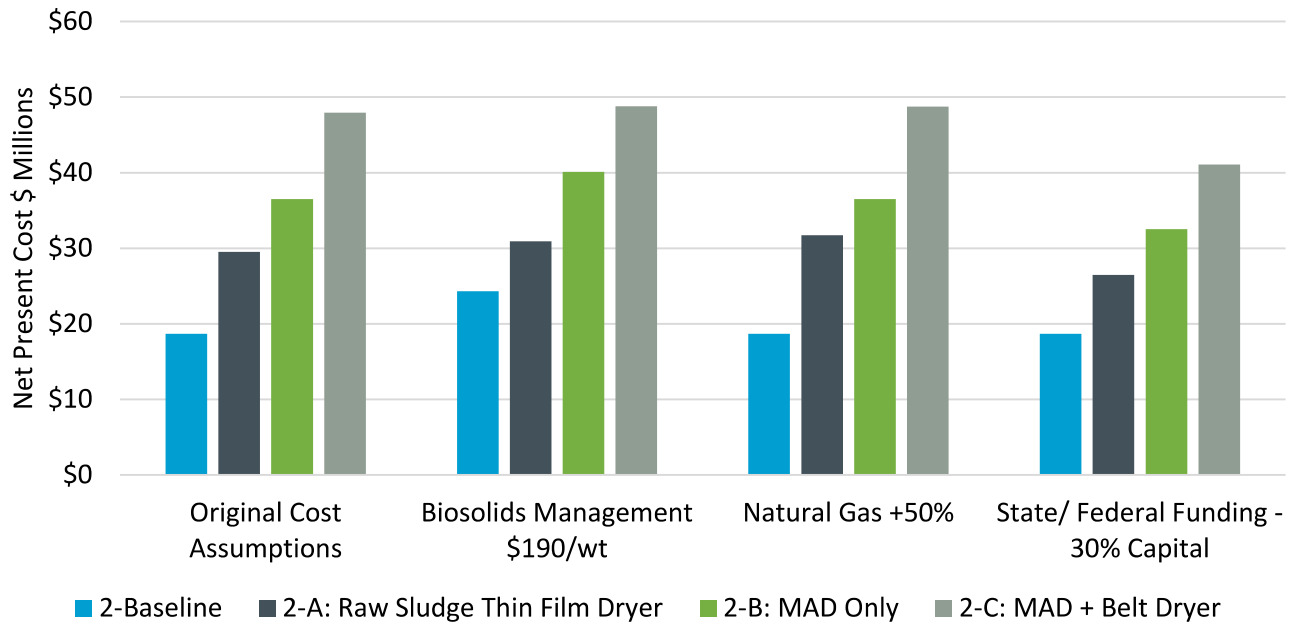


Figure 5-5: Sensitivity analysis for medium-scale POTW alternatives

5.6 Cost Evaluation Results: Large POTW

The large-scale (7.0 mgd) alternatives are listed in Table 5-11. All alternatives assume that the facility already has dewatering. The first alternative at this scale is the baseline alternative, which assumes no new equipment is added. Alternative 3-A includes the addition of a raw sludge belt dryer. Alternative 3-B adds mesophilic anaerobic digestion for volume reduction and assumes the existing dewatering will be used after digestion. Alternative 3-C adds a belt dryer to the equipment from 3-B.

Table 5-11. List of Large-scale (7.0 mgd) POTW Alternatives	
Alternative	Major Solids Processing Equipment
3-Baseline	No new equipment
3-A	Raw Sludge Belt Dryer
3-B	MAD
3-C	MAD + Belt Dryer

5.6.1 Operations and Maintenance Costs

O&M costs for large-scale facilities were analyzed using the SWEET model based on biosolids hauling and landfilling, electricity, NG, polymer, labor, and R&R costs. The total costs for each of these factors and their given alternatives are shown in Table 5-12.

Table 5-12. O&M Costs for Large-scale POTW Alternatives

Alternative ID	Description	Biosolids Management	Electric	NG	Polymer	Labor	R&R	TOTAL
3-Baseline	Dewatering Only	\$1.7M	\$99k	--	\$201k	--	--	\$2.0M
3-A	Raw Sludge Belt Dryer	\$423k	\$303k	\$472k	\$201k	\$153k	\$126k	\$1.8M
3-B	MAD	\$1.1M	\$297k	--	\$127k	\$153k	\$107k	\$1.8M
3-C	MAD + Belt Dryer	\$255k	\$500k	\$207k	\$127k	\$305k	\$210k	\$1.6M

5.6.2 Capital Costs

Capital costs for the large-scale POTW alternatives were estimated using AACE Class 5 estimating standards. Budgetary quotes from vendors as well as recent project data and the markup assumptions shown in Section 5.3.2 were used to estimate capital costs for these alternatives. It was assumed that new buildings would be needed for new equipment.

Table 5-13. Class 5 Capital Costs for Large-scale POTW Alternatives (\$ millions)

Alternative ID	Description	Major Equipment Cost	Capital Cost Estimate ^a	Estimating Range
3-A	Raw Sludge Belt Dryer	Belt Dryer: \$5.6M	\$29M	\$15M to \$58M
3-B	MAD	Digesters: \$5M	\$18M	\$9M to \$36M
3-C	MAD + Belt Dryer	Belt Dryer: \$5.6M Digesters: \$5M	\$42M	\$21M to \$84M

^a AACE Class 5 Estimate

Note that privately developed projects do not typically have the same redundancy and materials of construction as municipal facilities, which are constructed for reliability and longevity. In addition, some private owners or operators may be able to realize further capital and operational savings via management decisions, including use of landfill gas or maintenance of backup outlets to manage cake in case of process upset or shutdown.

5.6.3 Life-cycle Cost Analysis

The results of a 20-year life-cycle cost analysis of the large-scale facility alternatives are shown in Figure 5-6. These life-cycle costs are based on NPCs in 2023-equivalent dollar values. Figure 5-6 shows that for large-sized facilities, the most economically feasible alternative is digestion only (3-B), which is slightly above the baseline dewatering costs.



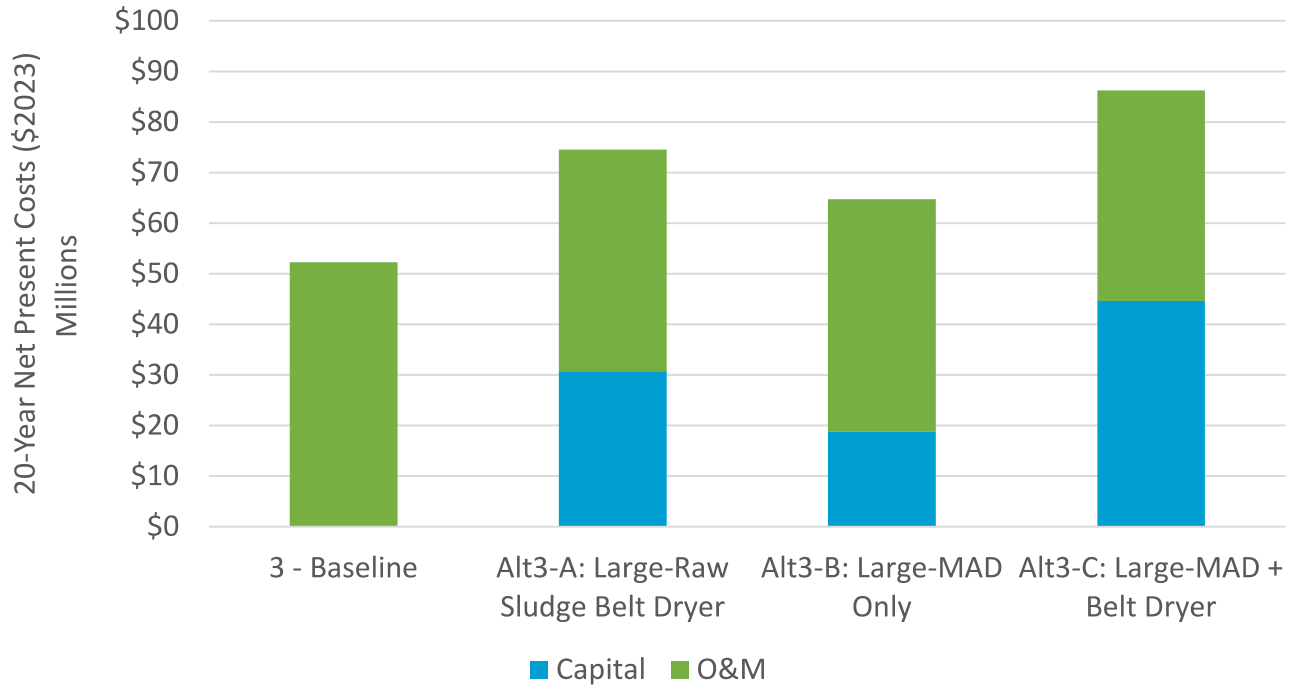


Figure 5-6. Net present costs for large-scale POTW alternatives

5.6.4 Sensitivity Analysis

The results of a sensitivity analysis on the large-scale alternatives’ NPCs are shown in Figure 5-7. For these alternatives, the NG increasing by 50% or the biosolids hauling costs increasing to \$190/wet ton had minimal impacts on their NPCs compared to the original cost assumptions. The most impactful variable on these relative costs is funding from the state, which in this case was assumed to be 30% of the overall capital cost. Higher rates of funding could make dryer or digestion projects economically feasible.

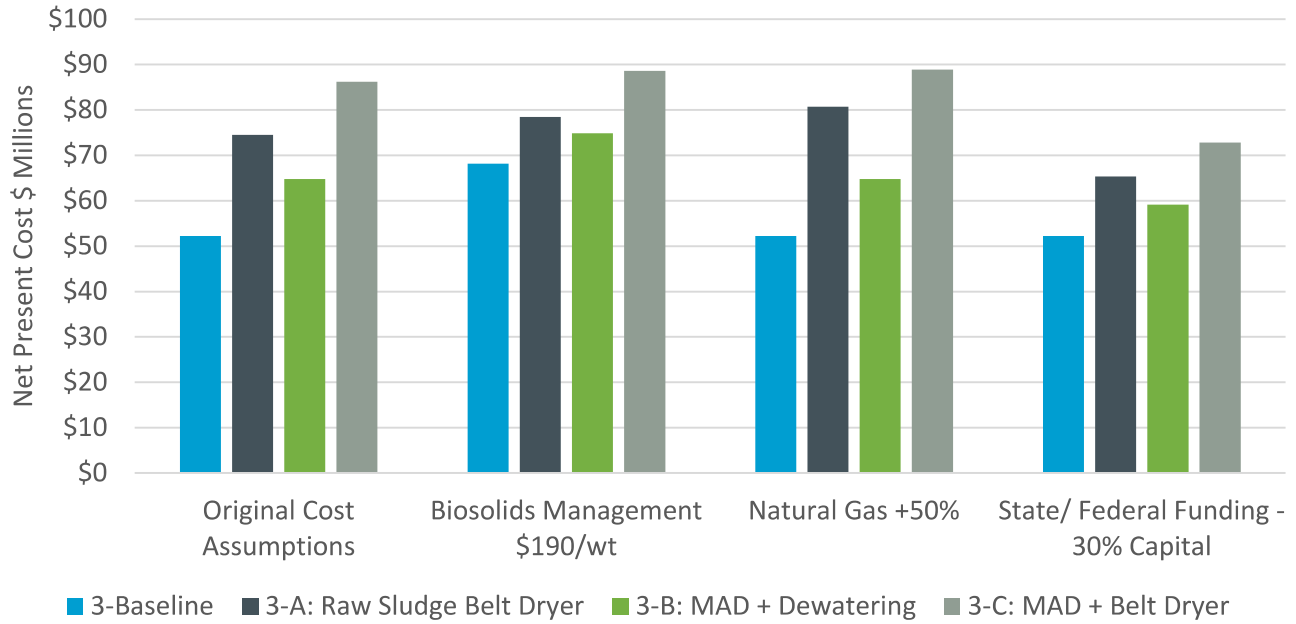


Figure 5-7. Sensitivity analysis of large-scale POTW alternatives

5.7 Cost Evaluation Results: Regional Facility

The regional-scale (20 mgd) alternatives are listed in Table 5-14. The first alternative at this scale is considered the baseline alternative, which assumes that the facility in question has a dewatering process in place. Alternative 4-A includes the addition of a raw sludge belt dryer. Alternative 4-B pairs dewatering with a raw sludge belt dryer, and Alternative 4-C is the most complex alternative, with thermal hydrolysis, anaerobic digestion, dewatering, and a belt dryer.

Table 5-14. List of Regional-scale (20 MGD) POTW Alternatives	
Alternative	Major Solids Processing Equipment
4-Baseline	No new equipment
4-A	Raw Sludge Belt Dryer
4-B	Raw Sludge Drum Dryer
4-C	Thermal Hydrolysis Process + Anaerobic Digestion + Dewatering + Belt Dryer

5.7.1 Operations and Maintenance Costs

O&M costs for regional-scale facilities were analyzed using the SWEET model based on biosolids hauling and landfilling, electricity, NG, polymer, labor, R&R, and cake hauling costs to the regional facility. The total costs for each of these factors and their given alternatives are shown in Table 5-15.

Note that for a facility like the dryer proposed at the Crossroads Landfill that has access to very-low-cost power (in that case from on-site landfill gas power generation) the operating costs would be significantly reduced from what is shown in the table.

Table 5-15. O&M Costs for Regional-scale Alternatives									
Alternative ID	Description	Biosolids Management	Electric	NG	Polymer	Labor	R&R	Hauling Cake to Regional Facility	TOTAL
4-Baseline	Dewatering Only	\$4.7M	--	--	--	--	--	--	\$4.7M
4-A	Raw Sludge Belt Dryer	\$1.2M	\$203k	\$1.3M	--	\$305k	\$190k	\$498k	\$3.8M
4-B	Raw Sludge Drum Dryer	\$1.2M	\$203k	\$1.2M	--	\$381k	\$302k	\$498k	\$3.8M
4-C	THP + MAD + Dewatering + Belt Dryer	\$543k	\$629k	\$138k	\$271k	\$517k	\$1.1M	\$498k	\$3.7M

5.7.2 Capital Costs

Capital costs for the regional-scale POTW alternatives were estimated using ACE Class 5 estimating standards. Budgetary quotes from vendors as well as recent project data and the markup assumptions shown in Section 5.3.2 were used to estimate capital costs for these alternatives. It was assumed that new buildings would be needed for new equipment.

Table 5-16. Class 5 Capital Cost Estimates for Regional-scale POTW Alternatives (\$ millions)				
Alternative ID	Description	Major Equipment Cost Estimate	Capital Cost Estimate ^a	Estimating Range
4-A	Raw Sludge Belt Dryer	Cake Receiving: \$4.1M Belt Dryer: \$5.5M	\$44M	\$22M to \$88M
4-B	Raw Sludge Drum Dryer	Cake Receiving: \$4.1M Drum Dryer: \$11M	\$71M	\$36M to \$142M
4-C	THP + MAD + Dewatering + Belt Dryer	Cake Receiving: \$4.1M THP: \$30M Digesters: \$9M Centrifuges: \$3.5M Belt Dryer: \$3M	\$199M	\$100M to \$398M

^a ACE Class 5 Capital Cost Estimate

Note that privately developed projects do not typically have the same redundancy and materials of construction as municipal facilities, which are constructed for reliability and longevity. In addition, some private owners or operators may be able to realize further capital and operational savings via management decisions, including use of landfill gas or maintenance of backup outlets to manage cake in case of process upset or shutdown.

5.7.3 Life-cycle Cost Analysis

The results of a 20-year life-cycle cost analysis of the regional-scale facility alternatives are shown in Figure 5-8. These life-cycle costs are based on NPCs in 2023-equivalent dollar values. Figure 5-8 shows that for regional-sized facilities, the most economically feasible alternative is the raw sludge belt dryer alternative (4-A); however, it is still higher than the baseline of individual POTWs continuing to dewater and send biosolids cake to the landfill directly.

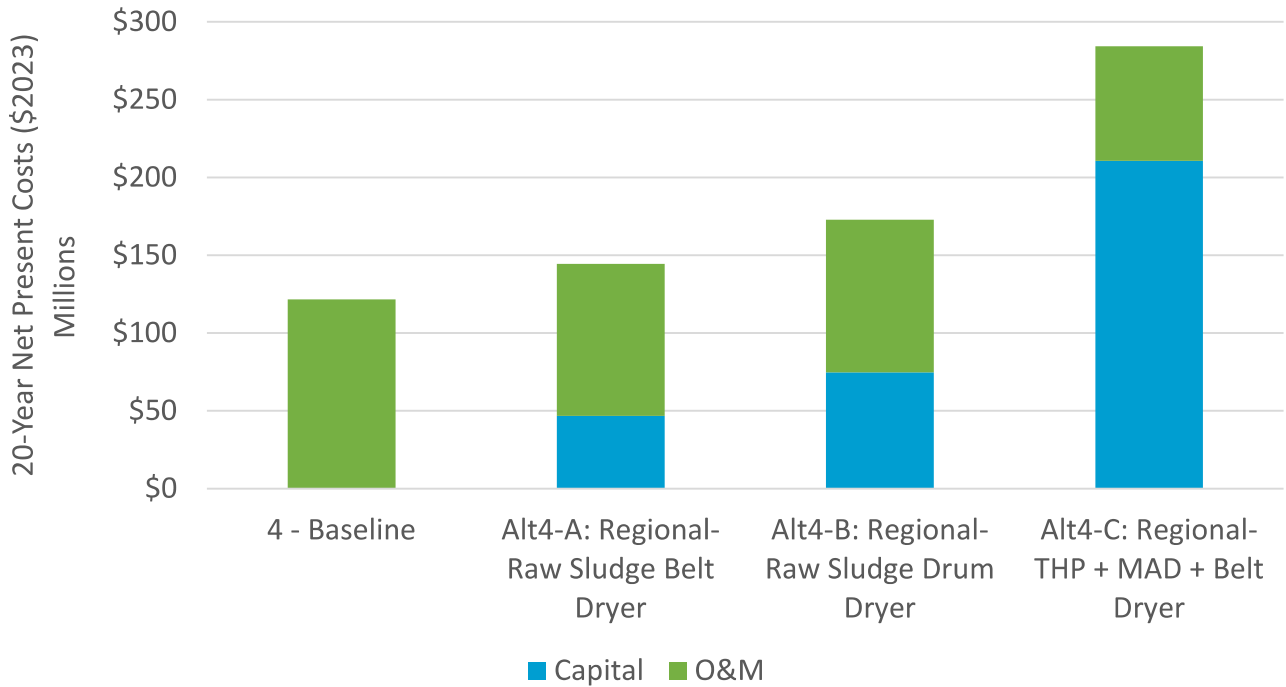


Figure 5-8. Net present costs for regional-scale alternatives

5.7.4 Sensitivity Analysis

The results of a sensitivity analysis on the regional-scale alternatives’ NPCs are shown in Figure 5-9. For these alternatives, the NG increasing by 50% had minimal impacts on the relative NPC compared to the original cost assumptions. The most impactful variable on these costs is increasing biosolids management costs. If biosolids costs were to return to the levels seen in spring 2023 (\$190/wet-ton), regional drying alternatives would be competitive with individual POTWs continuing to dewater and landfill biosolids cake directly. State or federal funding also brings the NPC closer to parity with the baseline.

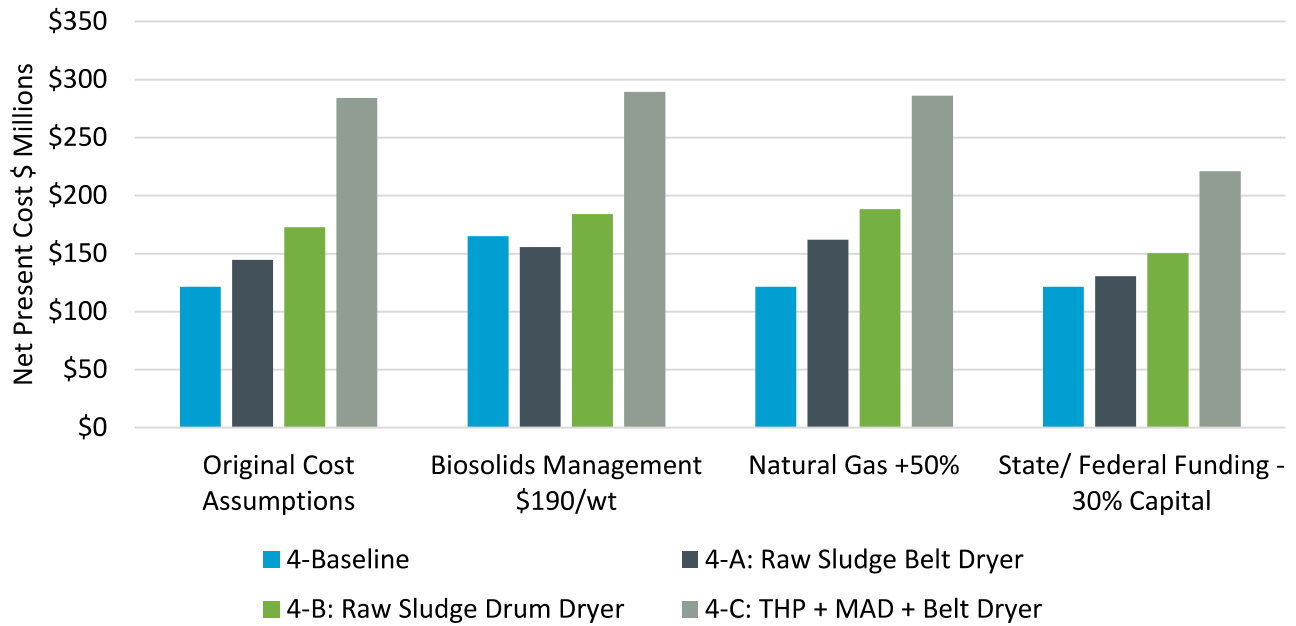


Figure 5-9. Sensitivity analysis for regional-scale POTW alternatives

5.8 Summary of Cost Evaluation Results

This analysis shows the importance of economies of scale for the technologies under consideration. Dryers and digestion typically do not make sense economically at small facilities, but can have a payback at larger facilities, particularly with state or federal support to offset some of the construction costs. Economies of scale are especially apparent for regional-scale facilities, which have the benefit of managing more material and hence having a more meaningful impact on the overall state of biosolids capacity in the state. If biosolids costs increase to the levels seen in spring 2023 or if sufficient funding is provided, regional drying facilities appear to be cost effective according to the assumptions in this analysis.

Section 6: Piloting PFAS Treatment Technologies

Across the U.S. there is a need to identify cost-effective technologies to reduce the levels of PFAS in biosolids. While several technologies have shown promising results in reducing PFAS in biosolids, this is an emerging area of research (Winchel, 2020). Using knowledge gained from other studies, Maine can develop a pilot study that matches the specific needs of utilities in the state and answers questions still remaining regarding the fate of PFAS in these treatment processes. The pilot project will contribute to the advancement of scientific knowledge and the development of best practices for PFAS treatment in biosolids. The results of the study, as well as results of studies elsewhere in the U.S., can be used to determine if these technologies are able to provide levels of PFAS reduction that the state would want to support for full-scale development in the state, and inform the required regulatory approach.

To select a pilot(s), BC recommends that the state of Maine authorize funding for and issue a request for proposal (RFP) from interested vendors. Sections 6.1 and 6.2 discuss some of the particular considerations for this type of piloting, which will be significantly more involved than pilots of more traditional wastewater treatment equipment. Vendors of the technologies under consideration reportedly can charge hundreds of thousands of dollars for on-site pilots lasting 2 to 3 months. Costs can be less for shorter-term piloting at out-of-state demonstration facilities or existing installations. Section 6.4 provides the suggested screening criteria for selecting proposals that are eligible for funding. Also presented are suggested responsibilities during piloting for the vendor, the host POTW (if applicable) and the state (Section 6.5; PFAS sampling protocols specific to these technologies (Section 6.6); and intended pilot outputs (Section 6.7).

As one of the state's piloting goals would be to determine which technologies could provide significant PFAS reduction in biosolids and be worth supporting for full-scale development, if funding allows, it is recommended that DEP select at least one pilot from at least two technologies. If possible, for consistency, the biosolids used in the multiple pilots should come from the same POTW at the same time. For instance, if one pilot were being performed on site at a POTW and one at a remote site, the biosolids sent to the remote facility should be collected and sent at the same time as the biosolids were fed to the on-site pilot.

These technologies and vendors are not as mature as traditional processing equipment so there is the possibility that one pilot could fail. Funding more than one pilot would help ensure some results were obtained, even if one of the pilots should fail.

6.1 Siting Considerations

Siting considerations for the pilot study are important to ensure that the treatment technologies are tested under conditions where results are reliable and meaningful. Ideally, the pilot study will be located at a facility that accepts landfill leachate and/or septage. This will allow the pilot study to demonstrate the potential for disrupting the PFAS cycle, as landfill leachate and septage are common sources of PFAS contamination in wastewater and biosolids. Another siting option to consider would be to process solids from a facility with consistent, moderately elevated levels of a range of PFAS. This will ensure the treatment technologies are evaluated against elevated concentrations of PFAS so the impact of treatment is more apparent in the results.

6.2 Logistical Considerations

Piloting pyrolysis, gasification, and supercritical water oxidation (SCWO) is different from piloting other technologies, such as centrifuges, and thus requires several logistical considerations. Firstly, most PFAS reduction technologies require NG or another fuel source. This means that the pilot site should have access to a reliable and sufficient supply of NG or other suitable fuel source. For pyrolysis and gasification



specifically, dewatered solids typically must be dried to less than 20% moisture content first. Each treatment technology will produce various solid and liquid residues that need to be monitored, collected, and disposed of properly, and air emissions that need to be monitored, collected, and treated properly. Maine DEP should work with host locations and technology vendors to establish a plan to handle these emissions prior to pilot startup.

6.3 Pilot Location

As many of these vendors do not have mobile pilot units, treatment technologies may not be readily available or transportable to the pilot site. Vendors should be evaluated on their readiness and availability to install technology at the selected host site. Some of the vendors may only have demonstration facilities or existing installations in other locations. These vendors should be considered if it is not feasible or economically viable to install the technology at a host plant in Maine.

6.4 Suggested Criteria for Selecting Pilots

BC recommends limiting piloting to the following technologies, which have commercially available units and have shown promising results for PFAS removal: pyrolysis, gasification, and SCWO. BC has published several literature reviews (e.g., Ross, et al., 2022) that show strong support for the significant reduction of PFAS in biosolids through pyrolysis and gasification units. For SCWO, the EPA showed a greater than 99% reduction of the PFAS compounds identified in a targeted analysis (Krause, 2022). Other technologies can be considered if peer-reviewed scientific literature showing significant PFAS reduction (i.e., >90%) in all phases (solid, liquid and air) is provided.

Table 6-1 shows suggested criteria that a proposer must meet to be considered for pilot funding.

Table 6-1. Suggested Pass/Fail Criteria for Screening Pilot Proposals	
Category	Criteria
Willingness to Share Data	Is the respondent willing to share all operating, cost, PFAS, and other data associated with the pilot?
Technology with Proven Ability to Reduce PFAS	Is the respondent proposing one of the following technologies? <ul style="list-style-type: none"> • Pyrolysis • Gasification • SCWO • Others showing an overall destruction removal efficiency >90% as supported by submitted peer-reviewed scientific literature
Vendor Maturity	Has the respondent operated a full-scale unit (>3 wet-tons/day capacity) within the last 3 years that is functionally equivalent to the one proposed?
Availability of a Unit for Piloting	Does the vendor have a full-scale unit meeting one of the criteria below available for this pilot in the timeframe indicated in the RFP? <ul style="list-style-type: none"> • Mobile pilot unit • Demonstration facility • Existing installation

Respondents should also provide:

- A list of other installations, current and in development
- Life-cycle cost estimates



- Prior PFAS fate and transport research for their proposed pilot
- Staff qualifications to operate all aspects of the pilot, including relevant sampling of waste streams
- Information pertaining to the pilot's ability to handle other materials (e.g., PFAS treatment residuals)
- All-in costs per month (shipping, mobilization, interconnections, utilities, staff time, sampling)

In addition, if the pilot will be on site at a POTW in Maine, the respondent should also provide:

- Identification of a host site
- Required utilities
- Footprint size requirements
- Requirements for feedstock solids (e.g., is drying or slurring of dewatered cake required before feeding?)

6.5 Roles and Responsibilities During Piloting

6.5.1 Technology Vendor

The vendor would be responsible for the following aspects of the pilot:

- Arranging all shipping and setup (for mobile units)
- Running all aspects of the pilot
- For out-of-state pilots, performing PFAS sampling per established protocol (Appendix E and send all samples as directed to an approved lab)

6.5.2 Utility

The host plant of the pilot project plays a vital role in providing the necessary resources and support for the successful implementation and evaluation of the treatment technologies for PFAS in biosolids. The host plant will allocate a suitable area within its premises for pilot equipment installation and operation. The host plant will also supply the biosolids that will be used as the treatment technologies' feedstock. The biosolids should have a consistent quality and should be representative of the typical biosolids produced by the host plant. The host plant will collect and share the relevant operating data from the plant (e.g., total and volatile solids of dewatered cake) at the time of the pilot. The operability of the technology should also be evaluated, and feedback should be based on the experience and observations of the plant staff who are trained on the use of the pilot equipment. The overall ease of the technology's use is an important aspect in evaluating the feasibility on a larger scale.

6.5.3 State of Maine

State government is a key partner and stakeholder of the pilot project, as it provides support and resources for evaluating treatment technologies for PFAS in biosolids. Maine will fund the pilot project, covering the equipment installation costs and disposal costs for the end product.

Additionally, for in-state pilots, the state will provide personnel (staff or contractors) to conduct PFAS sampling and will cover the cost of laboratory analysis. Data associated with the pilot study will be compiled and analyzed by the state unless otherwise agreed. The state will grant the necessary regulatory approval for the pilot project.

6.6 PFAS Sampling Protocol

BC's research to date indicated that all inputs and outputs must be measured to ensure the full fate and transport of PFAS through the technology is determined. To truly understand what happens to the thousands of PFAS compounds, detailed analyses must be performed. A suggested PFAS sampling protocol, provided in Appendix F, includes the following items:

- All inputs and outputs, including stack emissions: This will involve collecting representative samples of the biosolids before and after treatment, as well as the air emissions from the treatment process. The samples will be stored and transported according to standard procedures and quality assurance/quality control measures.
- Targeted PFAS analysis: This will involve measuring the concentrations of specific PFAS compounds in the samples using validated analytical methods.
- Targeted byproducts analysis: This will involve measuring the concentrations of byproducts of the treatment technologies.
- Non-targeted analysis: This will involve identifying and characterizing unknown or emerging PFAS and byproducts in the samples using advanced analytical techniques.
- Total organic fluorine balance: This will involve measuring the total amount of organic fluorine in the samples. The total organic fluorine balance will help in evaluating the mass balance and removal efficiency of the treatment technologies for PFAS and byproducts.

6.7 Pilot Outputs

The pilot project aims to test the performance and feasibility of different treatment technologies for reducing PFAS in biosolids. To evaluate the effectiveness of these technologies, the pilot output should include publishing PFAS fate and transport data, which will show PFAS levels before and after treatment. Additionally, the pilot operating parameters and costs should be published, including energy usage and any added chemicals. Such considerations will provide information on the technical and economic aspects of the treatment technologies. This information will help to compare the advantages and disadvantages of each technology and to identify the most cost-effective and sustainable options for PFAS management in biosolids. Ideally, the data collected is sufficient to allow DEP to develop a regulatory and permitting strategy around these technologies and determine which could be beneficial to support for full-scale development.

6.8 Pilot Costs

Vendors of the technologies under consideration reportedly can charge hundreds of thousands of dollars for on-site pilots lasting 2 to 3 months. Costs can be less for shorter-term piloting at out-of-state demonstration facilities or existing installations.

Comprehensive PFAS treatment testing will add considerable cost as well, particularly air emissions testing. BC recommends running these studies on 3 consecutive days at the same operating parameters to have triplicate results. In the research projects BC is performing on pyrolysis units and incinerators, vendors have charged \$50,000 for a 3-day test (4 hours each day). A targeted PFAS sample analysis for solids and liquid is around \$500 per sample. Four sampling points (incoming cake, dryer exhaust, condensate, dried biosolids) over 3 days is an additional \$6,000. One comprehensive round of sampling and analysis would, therefore, total approximately \$56,000 to pilot.

Section 7: Recommendations

7.1 Biosolids Beneficial Use Screening Levels

The current situation for biosolids management in Maine is not sustainable. Leaving landfill disposal as the sole outlet for biosolids in the state exacerbates landfill capacity issues, runs counter to the state’s solid waste management hierarchy as well as the state’s climate goals, and leaves POTWs (and ultimately ratepayers) at the risk of drastic and sudden increases in biosolids management costs (as seen during the “sludge crisis” in 2023). The three landfills currently handling nearly all the biosolids generated in the state are all estimated to be exhausted in, at best, the next 20 years, with JRL (which handled nearly 90% of biosolids disposal in 2022) exhausted as soon as 2028. There are several proposals being developed to install biosolids dryers or thermal treatment technologies in the state (Section 4.4) but under the absolute restrictions on land application of biosolids and biosolids-derived products in Maine, the resulting dried biosolids, biochar, or other products would also have no outlet in the state when landfills are exhausted.

In the coming years, the state may, therefore, want to consider establishing screening levels to allow the use of biosolids and biosolids-derived products outside of landfills in a manner that protects human health and the environment. This is the approach being pursued by the EPA and every other state that has regulated PFAS in biosolids.

While some pushback to reversing the ban on the agronomic utilization of biosolids should be expected, several important factors have changed since the passing of Maine’s biosolids land application ban:

- Maine has conducted significant sampling of biosolids and land application sites, which has shown that the significant impacts to particular dairy farms that ultimately led to the ban appear to be the exception rather than the rule. In particular, while the Department of Agriculture, Conservation, and Forestry has noted that about 70 farms have had varying levels of impacts from PFAS, there are almost 800 farms in Maine. At least four dairy farms that have had annual applications of biosolids for 30 years or more showed no detectable PFAS in their milk (NEBRA, 2019).
- The significant biosolids management challenges in 2023 have exposed the risk to utilities and ultimately ratepayers to having only one outlet for biosolids available in the state.
- As the requirements for reporting and restricting products containing PFAS (see Section 3.5) take effect in Maine (and elsewhere), the amount of PFAS in the state and consequently in biosolids should dramatically decrease in line with previous PFAS phase-outs. The Maine PFAS Task Force final report envisioned this reduction, stating “reduc[ing] uses of PFAS is expected to reduce concentrations of PFAS in residuals [biosolids] so that utilization can resume” (2020).
- The EPA is conducting a very thorough risk assessment of PFAS in biosolids, scheduled to be completed in late 2024, which is evaluating 18 human and ecological exposure pathways based on the latest research (Tobias, 2023). The anticipated result is the establishment of science-based PFAS limits for beneficially reused biosolids consistent with EPA’s mission to protect human health and the environment.

It is therefore recommended that the State Legislature consider reevaluating the ban on land application to determine if DEP ought to adopt the federal biosolids PFAS limits once established. Many other states are deferring to this comprehensive federal process for regulating PFAS in biosolids (Hughes, 2023). For instance, the New York interim strategy for controlling PFAS in recycled biosolids (i.e., those that are not landfilled) explicitly states that the state will incorporate federal standards when available (pending state review of the federal standards).

7.2 Landfill Capacity for Biosolids

The state-owned Juniper Ridge Landfill in Old Town was the outlet for nearly 90% of biosolids generated in Maine in 2022. This facility's current permitted capacity is estimated to be fully used by 2028. It is BC's understanding that the next step in the JRL expansion process is for the current JRL operator to submit a Public Benefit Determination (PBD) application (38 M.R.S. § 1310-AA) to DEP for approval. The last time JRL was expanded it took nearly 6 years between PBD submittal and final approval, with additional time needed to then construct the new area. For another state-owned landfill, the former Maine State Planning Office estimated 7 years would be needed to prepare the PBD and expansion applications, have them reviewed by DEP, address legal challenges, and construct the expansion. Using these timelines and to meet landfill expansion needs, the PBD should have been submitted by 2021 at the latest.

If JRL is not expanded, the state faces a dire situation for solid waste generally in the state. For biosolids, there is no current or proposed alternative outlet in the state that would be able to accept the tonnage currently handled at JRL. Regional facilities (Sections 4 and 5.7) and installation of digesters and dryers at POTWs (Section 5) will help, but it is unlikely more than one or two of these facilities will be operational by 2028. Out-of-state options would be very costly, with POTWs likely facing significantly higher costs than even those seen during mid-2023.

Given the severity of the implications if the facility is not expanded, it is recommended that **the State work with the current operator to ensure that an application is submitted as soon as possible** to ensure sufficient time to pursue alternatives if the expansion is not pursued by the current operator.

In a questionnaire sent to landfill operators in the state as part of this project, three additional landfill facilities expressed interest in discussing with DEP the possibility of obtaining authorization to accept biosolids (see Section 3.1). While these facilities are significantly smaller than JRL, **DEP should coordinate discussions with the owners of these facilities to provide supplemental or contingency capacity for biosolids.** Possibilities for future use at the facility in Jay, which is currently in the process of a real estate transfer, should also be discussed with the new owners once closing has occurred.

7.3 Bulking Agents

To avoid another "sludge crisis" in the coming 2 years when the restrictions on out-of-state waste and recycling requirements for certain large solid waste processing facilities go back into effect (as described in Sections 2.1.2 and 2.1.3), the state can take several immediate and longer-term actions. Most pressing, the state needs to verify that ReSource Lewiston (the solid waste processing facility producing much of the bulking agent for JRL) and Casella anticipate having sufficient and consistent amounts of bulking agent available to support continued acceptance of the current levels of biosolids (and other wet wastes). **BC recommends that the state fund an independent study evaluating the availability of traditional and alternative bulking agents.** If the study finds that insufficient quantities of bulking agent are available, then the extension on the restrictions in P.L. 2021, ch. 626 may need to be extended until reliable alternatives are secured.

Given the current state of development, design, and permitting (Section 4), the only new facility that could reasonably be operational by July 1, 2025, when the restriction on out-of-state oversized bulky waste goes back into effect is the Crossroads Landfill biosolids dryer. BC is not aware of any digestion or drying projects at individual POTWs in Maine that are scheduled to be operational by this time. These projects take several years to develop. Many dryers, for instance, currently have manufacturing lead times of 12 to 18 months—which does not include the installation and ramp-up time needed for full-scale operation.

In the longer term, it is recommended that the state incentivize increased recycling of CDD produced in the state, including by supporting increased processing capacity in the state. This will also help extend the available landfill capacity generally in the state.

7.4 Piloting of PFAS Treatment Technologies

The full fate of PFAS through biosolids treatment technologies is not known. By funding pilots, Maine can advance the understanding of the potential for cost-effective destruction of PFAS in biosolids and inform future permitting. **It is recommended that the state issue an RFP to select pilots of these technologies for the state to fund.** Within this RFP, the state should identify necessary data collection to facilitate future permitting of full-scale facilities (see Section 6 for more details).

7.5 Volume Reduction and Dryer Projects

Current drivers in Maine lead to the need for less material and/or material dried to no longer fall under wet waste restrictions at landfills. There are mature technologies for these purposes: anaerobic digestion and drying. Section 5 provided a generalized economic analysis of a series of alternatives employing these technologies at different scales of POTWs and for regional facilities. This analysis showed that using generalized cost factors for Maine, thermal drying and anaerobic digestion can be economically viable at sufficient scale. It should also be noted that the O&M cost for baseline scenarios (continued landfilling of dewatered biosolids) is predominantly driven by volatile biosolids management costs. Alternatives with similar overall O&M costs to the baseline would have the advantage of being less risky as the overall O&M costs for the alternatives are made up of a more even distribution of several relatively more stable costs (e.g., electricity, NG, polymer and maintenance).

According to the members of the Maine Water Environment Association who were involved in this project (representatives of three wastewater utilities), the Clean Water State Revolving Fund (CWSRF), which is the typical method for providing state support to wastewater infrastructure projects, is stretched each year to support the basic capital improvement projects that POTWs need to repair and replace aging infrastructure and keep plants meeting discharge limits. The Bipartisan Infrastructure Law (BIL) provides additional funding allocations to CWSRF for fiscal years 2022-2026; however, for FY23, the base CWSRF plus supplement BIL funding was insufficient to fund approximately two-thirds of projects that applied for funding (Maine DEP, 2023). BIL also provides Emerging Contaminant funding specifically for treatment of PFAS and other contaminants of emerging concern; however, the funds are, again, limited. For FY23 there was \$1.5M allocated for these projects.

It is therefore recommended to create a separate program to fund the capital projects recommended in this report to address biosolids challenges through volume reduction and the production of drier material. Similar to the Wastewater Treatment Facility Planning and Construction Grants Program for state FY19-20, a bond could be issued to provide funding for these projects, including regional solutions. Under this previous program, up to 80% of the construction costs of wastewater infrastructure projects were eligible for grant funding.

As the market matures, the research improves, and the state feels confident in PFAS treatment technologies, a similar program could be set up to fund these projects. Having a fund dedicated to PFAS treatment would facilitate the separate tracking of PFAS expenditures.

7.6 Biosolids Production Reporting

DEP does not currently have readily available comprehensive data on biosolids production in the state. These data would provide needed context for legislators, regulators, and solutions providers, particularly in uncertain times, for biosolids management. POTWs with an Agronomic Utilization Program License are required to report annual tonnages by destination, but this only covers around one-third of the approximately 150 POTWs in the state. With the ban on biosolids agronomic utilization under P.L. 2021, ch. 641, this reporting will gradually phase out as licenses that are no longer able to be used are surrendered. While landfills are required to report the annual amount of biosolids received, this data is not always broken out by generator.

The reporting form provided by the state (DEP Form 49) to aid with submitting Discharge Monitoring Reports (DMRs) required of all POTWs in Maine (Section D.1.d of the standard permit conditions) includes “sludge disposal,” including the site used. It is recommended that DEP evaluate the structure and purpose of this form and how it is currently being used and **develop a tool for mining biosolids management data from existing DMR submittals.**

Section 8: Conclusion

While the situation for biosolids management in Maine is challenging and uncertain, there are several actions the state can take to provide more options for POTWs responsible for managing the biosolids generated by treating the wastewater from homes, businesses, and industry. In the short term, the state needs to support efforts to provide additional, reliable landfill capacity for biosolids—by prioritizing the landfill application process for the expansion at JRL, discussing accepting biosolids with landfills not currently accepting biosolids, and helping to ensure bulking agents are available.

The state can also make POTWs less reliant on landfills by supporting projects to reduce the quantity of biosolids produced as well as opening up additional outlets. It is recommended that the state adopt the federal biosolids limits for PFAS when available and reevaluate whether the land application of biosolids can once again become an option for Maine.

While source control has often proven to be the most effective approach to reducing environmental pollutants, the state can also support the deployment of new technologies to reduce PFAS in biosolids. These technologies are not yet widely proven, and the level of PFAS destruction is an open area of research. Maine can contribute to filling knowledge gaps, determine permitting pathways, and select technologies to support full-scale deployment by funding pilots that include comprehensive PFAS testing. Maine can become a leader in implementing some of these new technologies, which in turn could help local businesses and create jobs.

By taking these recommended actions, the State of Maine can play a more proactive role in managing its biosolids capacity.

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Attachment A: Innovative Technology Provider Survey



Several technologies on the market seek to address the issue of PFAS in the environment. To understand the state of the technology and the options available to Maine as they move forward, BC sent out a survey to twenty-three high-temperature technology companies. The survey was comprised of 10 questions and asked companies to assess their own Technology Readiness Level (TRL), as defined by the Department of Energy (2023), and to discuss the technological impacts on PFAS concentrations on the processing stream. For both of these pieces, BC requested supporting documents, with a preference for peer-reviewed publications supporting the claims. Of the twenty-three who received the survey, thirteen responded. Responses are summarized below.

Table A-1. Technology Provider Survey Results

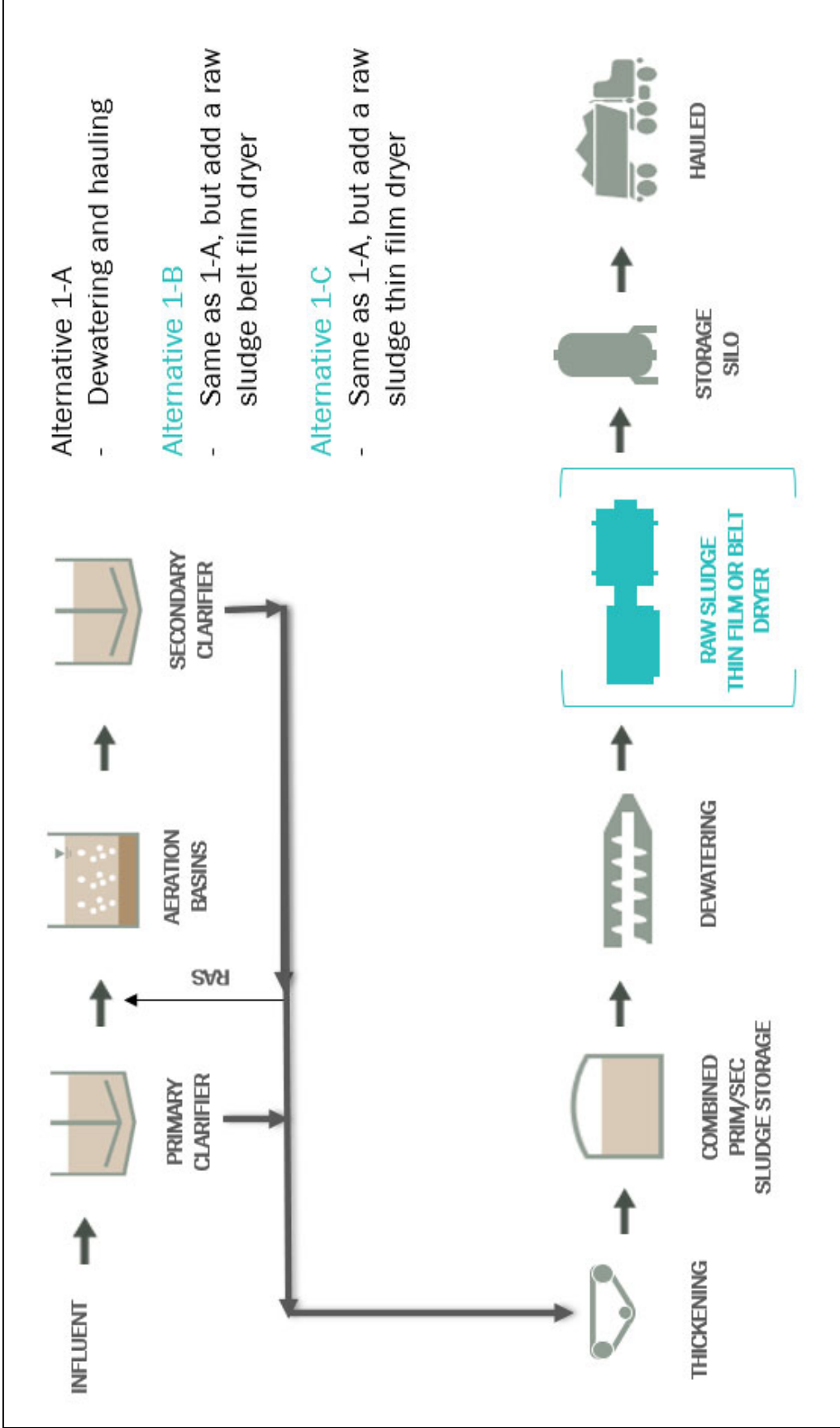
Company	Company Age (years)	Technology Description	TRL (1-9)	Operating Parameters	PFAS Destruction (as reported by company)	Supporting Info
SoniQ Force	4	Supersonic drying	3		No/unknown	
SoMax Circular Solutions	6	Hydrothermal carbonization	7		Yes, per operating parameters	General literature*
C-Green/ Next Rung	7	Hydrothermal carbonization and wet oxidation	7		Unconfirmed, testing in progress	
374 Water	5	Supercritical water oxidation	7	374 °C, 218 atm (H2O supercritical conditions)	Yes, per internal tests	Verbal/Conference data
Stircor Services	4	Gasification, drying	9		Drying – no Gasification – yes	Publicly available PFAS results
Aries Clean Technologies	12	Gasification (fluidized bed)	7	Gasifier: 675 °C Thermal oxidizer: 980 °C	Yes, per operating parameters	General literature*
CTEC Energy	13	Gasification	9	1400 °C	Yes, per operating parameters	General literature*
Heartland Water	15	Gasification (ultra-high-temperature ionic)	7	5000 °C	Yes, per operating parameters	General literature*
Biowaste Pyrolysis Solutions	8	Pyrolysis	6	850 °C, 15 sec	Reduction	
Green Waste Energy	8	Pyrolysis	6	> 900 °C	Yes, per operating parameters	General literature*
Aquagreen	8	Pyrolysis, steam drying	8	Pyrolysis: 650 °C, 10 min Burner: 900 °C, 2 sec	Yes	Public pilot study data
CharTech	10	Pyrolysis	6	> 850 °C	Yes	Public pilot study data
Bioforcetech	11	Pyrolysis, bio drying	7	Pyrolysis: 450-750 °C Burner: 900-1100 °C	Reduction	Public pilot study data

* PFAS destruction has been observed for a particular technology broadly but not tested on a company’s specific unit and operating parameters.



Attachment B: Process Flow Diagrams for Technology Alternatives





- Alternative 1-A**
- Dewatering and hauling
- Alternative 1-B**
- Same as 1-A, but add a raw sludge belt film dryer
- Alternative 1-C**
- Same as 1-A, but add a raw sludge thin film dryer

Figure 1: Alternative 1-A, 1-B, and 1-C Process Flow Diagrams

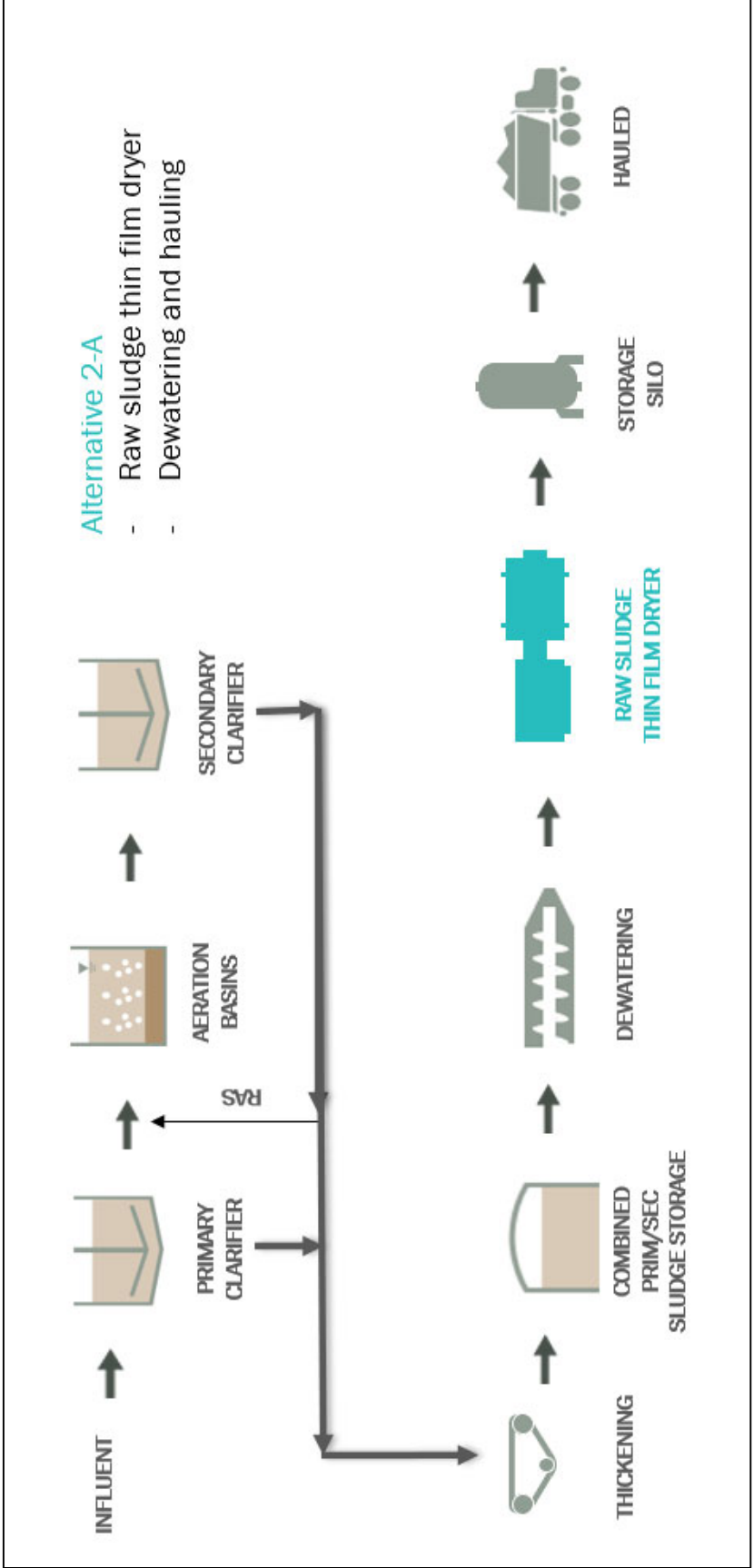


Figure 2: Alternative 2-A Process Flow Diagram

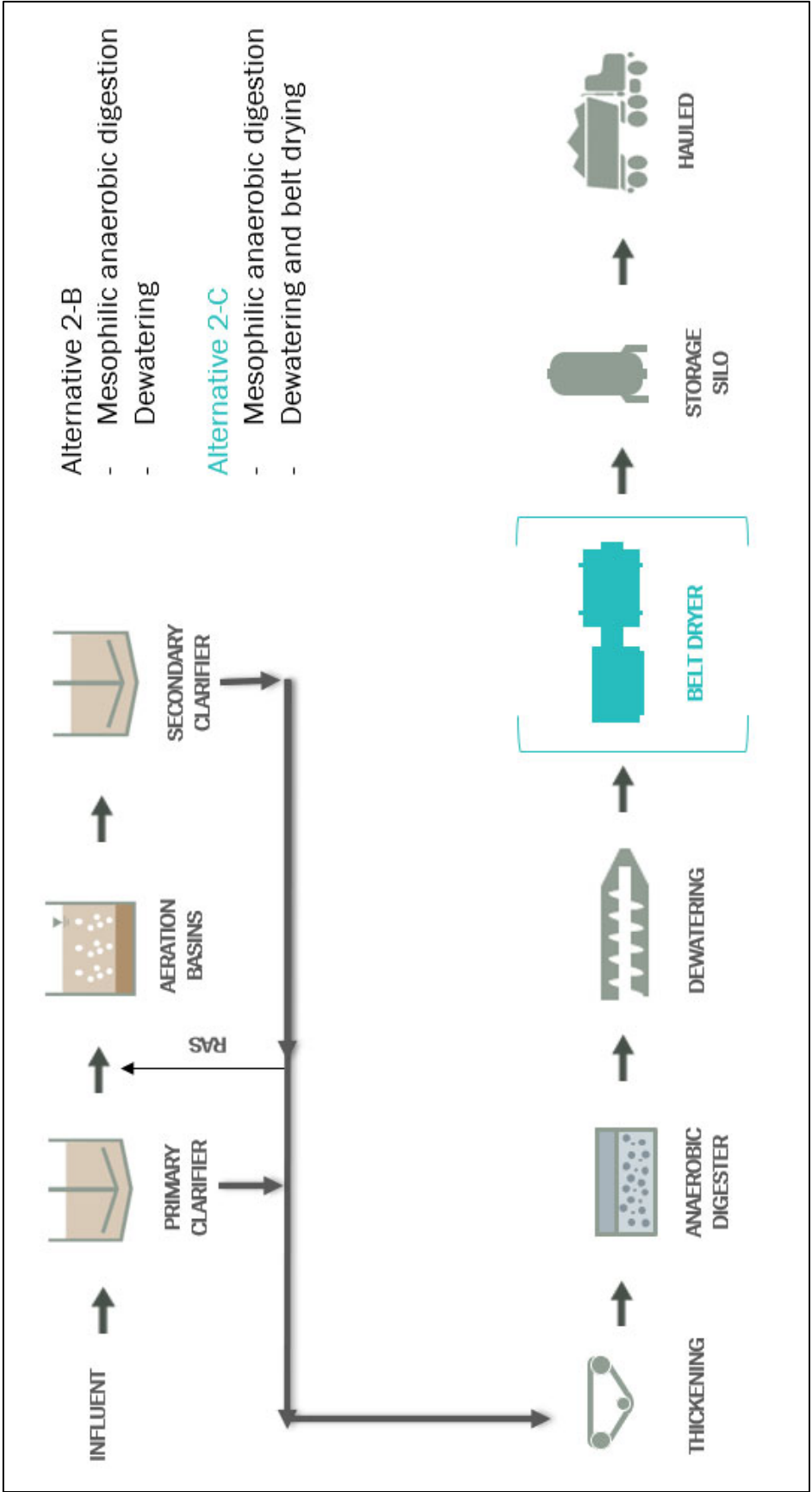
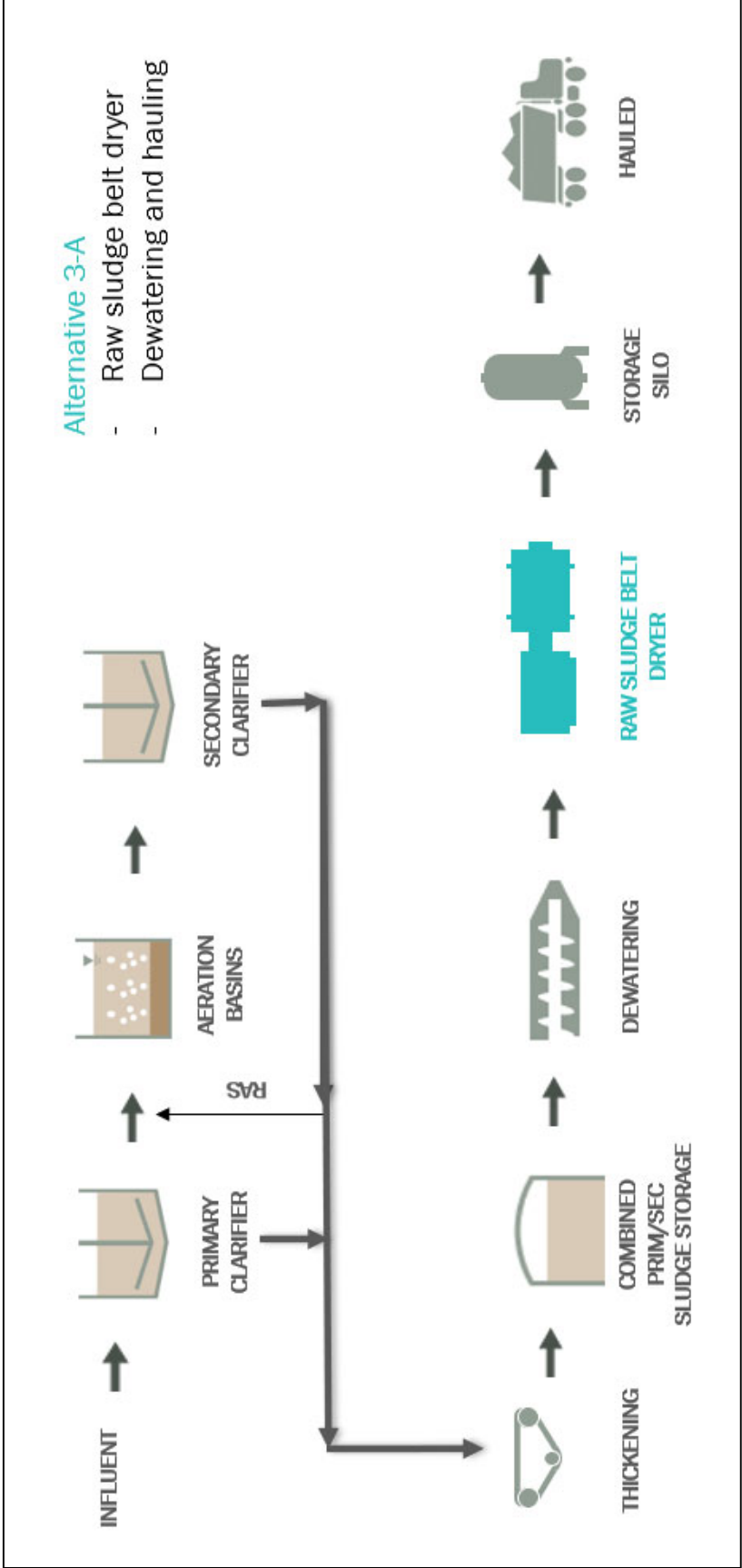


Figure 3: Alternatives 2-B and 2-C Process Flow Diagrams



Alternative 3-A

- Raw sludge belt dryer
- Dewatering and hauling

Figure 4: Alternative 3-A Process Flow Diagram

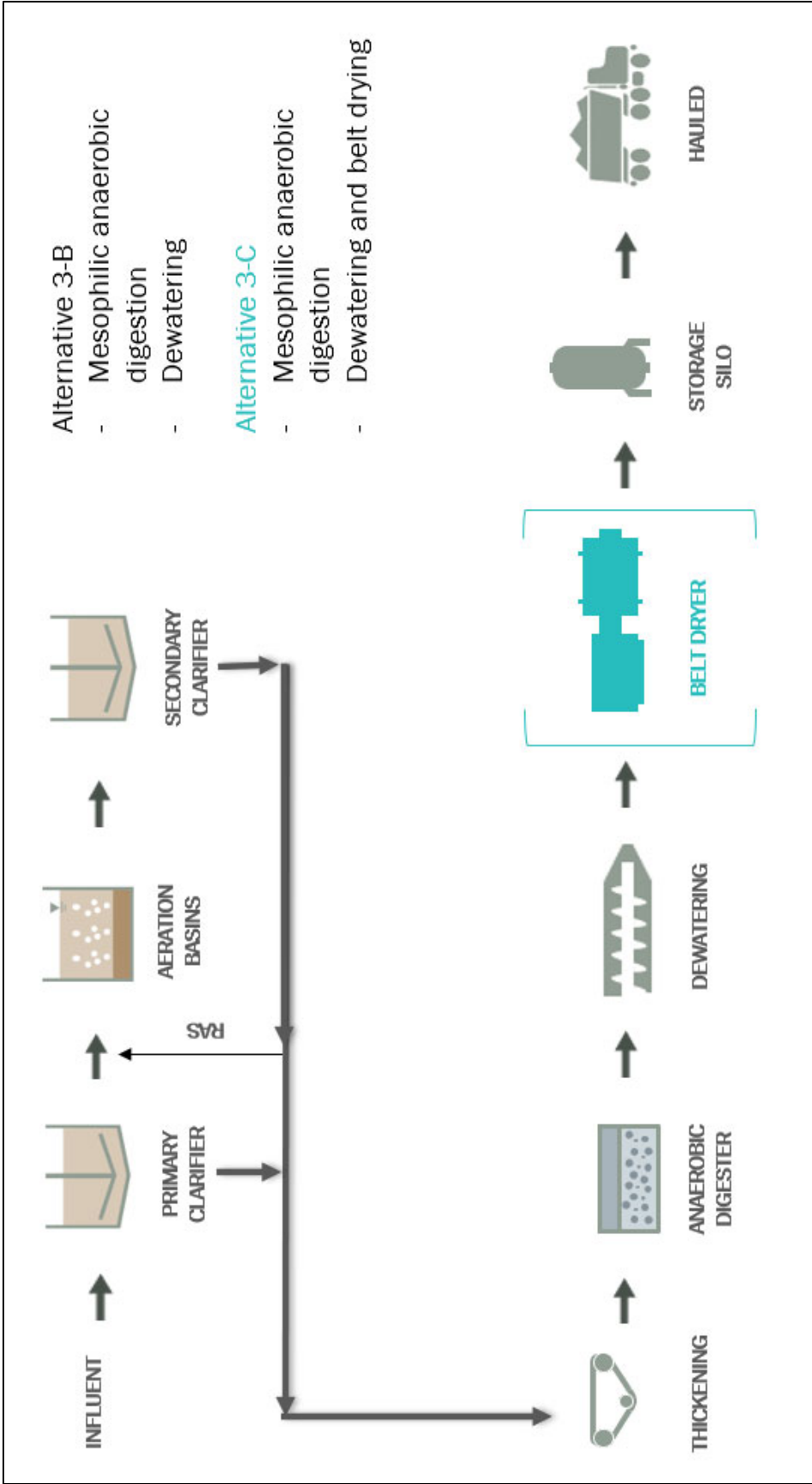


Figure 5: Alternatives 3-B and 3-C Process Flow Diagrams

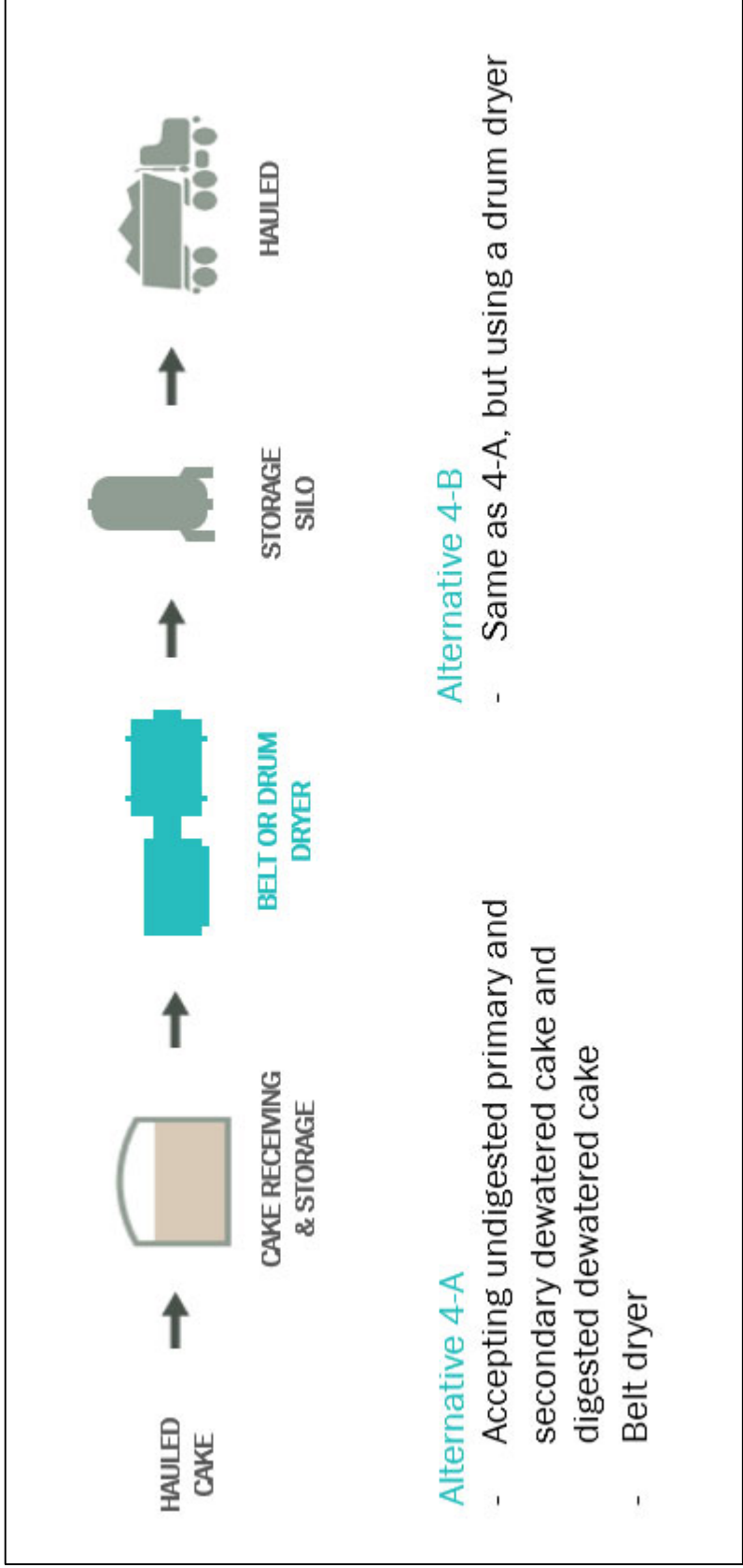


Figure 6: Alternatives 4-A and 4-B Process Flow Diagrams

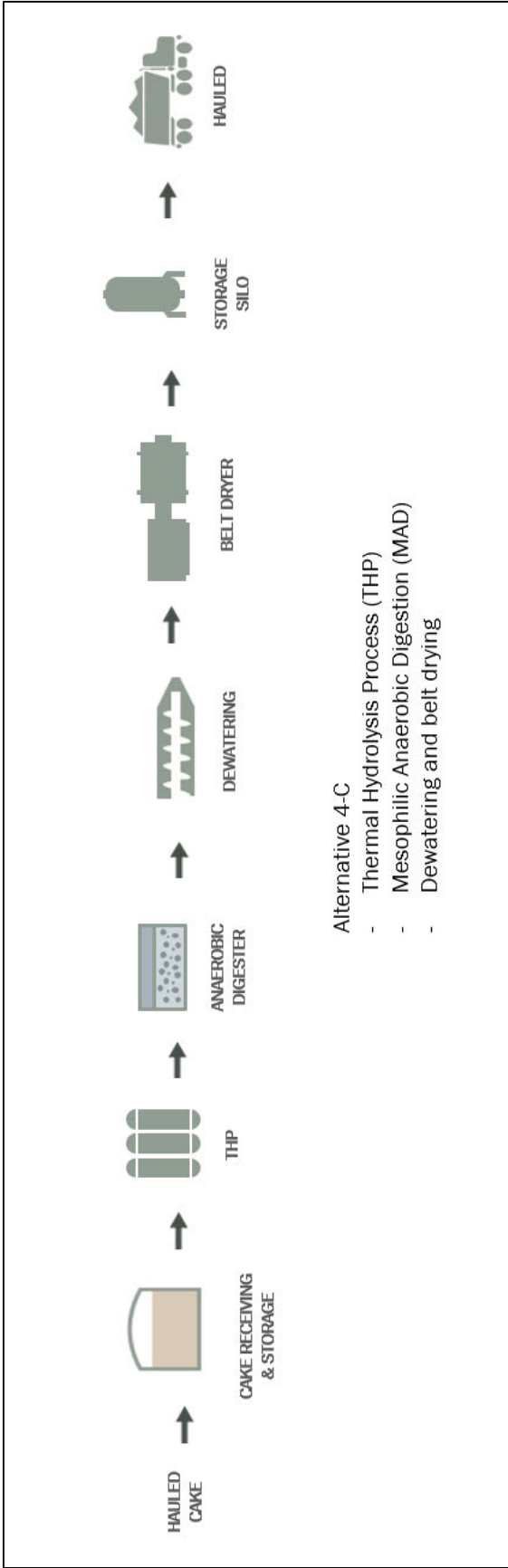


Figure 7: Alternative 4-C Process Flow Diagram

Attachment C: Capital Cost Estimates



DISCLAIMERS AND ASSUMPTIONS TO PROVIDE ON THE COVER PAGE FOR THE COST ESTIMATING APPENDIX:

In accordance with the Association for the Advancement of Cost Engineering International (AACE) criteria, this is a Class 5 estimate. A Class 5 estimate is defined as a Conceptual Level or Project Viability Estimate. Typically, engineering is from 0 to 2 percent complete. Class 5 estimates are used to prepare planning level cost scopes or evaluation of alternative schemes, long range capital outlay planning and can also form the base work for the Class 4 Planning Level or Design Technical Feasibility Estimate.

Expected accuracy for Class 5 estimates typically ranges from -50 to +100 percent, depending on the technological complexity of the project, appropriate reference information and the inclusion of an appropriate contingency determination. In unusual circumstances, ranges could exceed those shown.

The following assumptions were used in the development of this estimate.

1. Contractor performs the work during normal daylight hours, nominally 7 a.m. to 5 p.m., Monday through Friday.
2. Contractor has complete access for lay-down areas and mobile equipment.
3. Major equipment costs are based on both vendor supplied price quotes obtained by the project design team and/or estimators, and on historical pricing of like equipment.
4. There is sufficient electrical power to feed the specified equipment. The local power company will supply power and transformers suitable for this facility.
5. Soils are of adequate nature to support the structures. No piles have been included in this estimate.
6. The Estimating Contingency line item does not include changed conditions or large scope changes.

The following estimating exclusions were assumed in the development of this estimate.

1. Hazardous materials remediation and/or disposal.
2. Utility agency costs for incoming power modifications.
3. Permits beyond those normally needed for the type of project and project conditions.

**Class 5 Capital Cost Estimate for Biosolids Management
Alternative 1-A: Dewatering Only**

Item	Unit Costs		Quantity	Class 5 Total	Notes
1-A: Dewatering Only					
Sludge Storage Dewatering	\$3 /gallon	\$810,000 /unit	1,766 gallon 1 unit	\$5,298 \$810,000	assumes 4 hrs of storage for each tank, n+1
Subtotal A				\$820,000	
Piping	15% of "A"			\$123,000	
Site Civil	10% of "A"			\$82,000	
Misc. Demolition	5% of "A"			\$41,000	
Electrical, Instrumentation & Controls	30% of Subtotal A minus building construction of Materials and Processing			\$246,000	
Shipping and Handling	2% Equipment			\$106	
Subtotal B				\$1,310,000	
Startup and Construction Sequencing	2% of "B"			\$26,200	
General Conditions	15% of "B"			\$196,500	
Contractor Overhead and Profit	15% of "B"			\$196,500	
Sales Tax	5.50% of "B"			\$72,050	
Bonds and Insurance	2.5% of "B"			\$32,750	
Subtotal C Construction Costs				\$1,830,000	
Engineering	10% of total construction costs			\$183,000	
Construction Management	10% of total construction costs			\$183,000	
Subtotal Project Costs				\$2,200,000	
Estimating Contingency	30% of subtotal Project Costs			\$660,000	
Total Project Cost				\$2,900,000	

Note: Refer to title sheet for additional assumptions.

**Class 5 Capital Cost Estimate for Biosolids Management
Alternative 1-B: Dewatering + Raw Sludge Belt Dryer**

Item	Unit Costs		Quantity	Class 5 Total	Notes
1-B: Dewatering + Raw Sludge Belt Dryer					
Sludge Storage					
Dewatering	\$3 /gallon		1,766 gallon	\$5,298	assumes 4 hrs of storage for each tank, n+1
Dryer Equipment	\$810,000 /unit		1 unit	\$810,000	
Huber Belt Dryer	\$1,290,439 /package		1 package	\$1,290,439	Vendor Quote, assuming this includes conveyance
Installation of dryers	20% percent			\$258,088	
Dryer Building	\$325 /sf		2000 sf	\$650,000	
Subtotal A				\$3,010,000	
Piping	15% of "A"			\$451,500	
Site Civil	10% of "A"			\$301,000	
Misc. Demolition	5% of "A"			\$150,500	
Electrical, Instrumentation & Controls	30% of Subtotal A minus building construction of Materials and Processing			\$708,000	
Shipping and Handling	2% Equipment			\$42,115	
Subtotal B				\$4,700,000	
Startup and Construction Sequencing	2% of "B"			\$94,000	
General Conditions	15% of "B"			\$705,000	
Contractor Overhead and Profit	15% of "B"			\$705,000	
Sales Tax	5.50% of "B"			\$258,500	
Bonds and Insurance	2.5% of "B"			\$117,500	
Subtotal C Construction Costs				\$6,600,000	
Engineering	10% of total construction costs			\$660,000	
Construction Management	10% of total construction costs			\$660,000	
Subtotal Project Costs				\$7,900,000	
Estimating Contingency	30% of subtotal Project Costs			\$2,370,000	
Total Project Cost				\$10,300,000	

Note: Refer to title sheet for additional assumptions.

**Class 5 Capital Cost Estimate for Biosolids Management
Alternative 1-C: Dewatering + Raw Sludge Thin Film Dryer**

Item	Unit Costs	Quantity	Class 5 Total	Notes
1-C: Dewatering + Raw Sludge Thin Film Dryer				
Sludge Storage				
Dewatering	\$3 /gallon	1,766 gallon	\$5,298	assumes 4 hrs of storage for each tank, n+1
Dryer Equipment				
Thin Film Dryer	\$810,000 /unit	1 unit	\$810,000	
Installation of dryers	\$1,286,214 /package	1 package	\$1,286,214	Scaled based on vendor quote, package includes conveyance and hopper
Dryer Building	20% percent		\$257,243	
	\$325 /sf	1800 sf	\$585,000	
Subtotal A			\$2,940,000	
Piping	15% of "A"		\$441,000	
Site Civil	15% of "A"		\$441,000	
Misc. Demolition	5% of "A"		\$147,000	
Electrical, Instrumentation & Controls	30% of Subtotal A minus building construction of Materials and Processing		\$706,500	
Shipping and Handling	2% Equipment		\$42,030	
Subtotal B			\$4,700,000	
Startup and Construction Sequencing	2% of "B"		\$94,000	
General Conditions	15% of "B"		\$705,000	
Contractor Overhead and Profit	15% of "B"		\$705,000	
Sales Tax	5.50% of "B"		\$258,500	
Bonds and Insurance	2.5% of "B"		\$117,500	
Subtotal C Construction Costs			\$6,600,000	
Engineering	10% of total construction costs		\$660,000	
Construction Management	10% of total construction costs		\$660,000	
Subtotal Project Costs			\$7,900,000	
Estimating Contingency	30% of subtotal Project Costs		\$2,370,000	
Total Project Cost			\$10,300,000	

Note: Refer to title sheet for additional assumptions.

Class 5 Capital Cost Estimate for Biosolids Management Alternative 2-A: Dewatering + Raw Sludge Thin Film Dryer				
Item	Unit Costs	Quantity	Class 5 Total	Notes
2-A: Dewatering + Raw Sludge Thin Film Dryer				
Sludge Storage				
Thin Film Dryer	\$3 /gallon	4,320 gallon	\$12,960	assumes 4 hrs of storage for each tank, .18gpm
Dryer Equipment				
Thin Film Dryer	\$1,827,310 /package	1 package	\$1,827,310	Vendor Quote, assumes dried product conveyance and silos are included
Installation of dryers	20% percent		\$365,462	
Dryer Building	\$325 /sf	2000 sf	\$650,000	
Subtotal A			\$2,860,000	
Piping	15% of "A"		\$429,000	
Site Civil	10% of "A"		\$286,000	
Misc. Demolition	5% of "A"		\$143,000	
Electrical, Instrumentation & Controls	30% of Subtotal A minus building construction of Materials and Processing		\$663,000	
Shipping and Handling	2% Equipment		\$36,805	
Subtotal B			\$4,400,000	
Startup and Construction Sequencing	2% of "B"		\$88,000	
General Conditions	15% of "B"		\$660,000	
Contractor Overhead and Profit	15% of "B"		\$660,000	
Sales Tax	5.50% of "B"		\$242,000	
Bonds and Insurance	2.5% of "B"		\$110,000	
Subtotal C Construction Costs			\$6,200,000	
Engineering	10% of total construction costs		\$620,000	
Construction Management	10% of total construction costs		\$620,000	
Subtotal Project Costs			\$7,400,000	
Estimating Contingency	30% of subtotal Project Costs		\$2,220,000	
Total Project Cost			\$9,600,000	

Note: Refer to title sheet for additional assumptions.

Class 5 Capital Cost Estimate for Biosolids Management Alternative 2-B: Dewatering + MAD					
Item	Unit Costs		Quantity	Class 5 Total	Notes
2-B: Dewatering + MAD					
Digester					
Digesters	\$3 /gal		400,000 unit	\$1,200,000	
Control Building & Ancillary Equipment	\$3 /gal		400,000 unit	\$1,200,000	
Digested Sludge Storage	\$3 /gal		400,000 unit	\$1,200,000	
Waste Gas Burner					
Waste Gas Burner	\$50,000 /unit		1 unit	\$50,000	scaled off of the cost for a new flare (1500 scfm)
Gas flare concrete, assumes 18in thick slab	\$800 /cy		0.22 cy	\$178	Assumed 18 inch slab, costs from Dan Goddard, includes installation
Gas Conditioning	\$3,583 /scfm		30 scfm	\$107,503	assumes Hydrogen Sulfide removal and moisture
Subtotal A				\$3,760,000	
Piping	15% of "A"			\$564,000	
Site Civil	10% of "A"			\$376,000	
Misc. Demolition	5% of "A"			\$188,000	
Electrical, Instrumentation & Controls	30% of Subtotal A minus building construction of Materials and Processing of Equipment			\$768,000	
Shipping and Handling	2%			\$51,150	
Subtotal B				\$5,700,000	
Startup and Construction Sequencing	2% of "B"			\$114,000	
General Conditions	15% of "B"			\$855,000	
Contractor Overhead and Profit	15% of "B"			\$855,000	
Sales Tax	5.50% of "B"			\$313,500	
Bonds and Insurance	2.5% of "B"			\$142,500	
Subtotal C Construction Costs				\$8,000,000	
Engineering	10% of total construction costs			\$800,000	
Construction Management	10% of total construction costs			\$800,000	
Subtotal Project Costs				\$9,600,000	
Estimating Contingency	30% of subtotal Project Costs			\$2,880,000	
Total Project Cost				\$12,500,000	
Note: Refer to title sheet for additional assumptions.					

Class 5 Capital Cost Estimate for Biosolids Management Alternative 2-C: MAD + Dewatering + Belt Dryer					
Item	Unit Costs		Quantity	Class 5 Total	Notes
2-C: MAD + Dewatering + Belt Dryer					
Digester					
Digesters	\$3 /gal		400,000 unit	\$1,200,000	
Control Building & Ancillary Equipment	\$3 /gal		400,000 unit	\$1,200,000	
Digested Sludge Storage	\$3 /gal		400,000 unit	\$1,200,000	
Waste Gas Burner					
Waste Gas Burner	\$50,000 /unit		1 unit	\$50,000	scaled off of the cost for a new flare (1500 scfm)
Gas flare concrete, assumes 18in thick slab	\$800 /cy		0.22 cy	\$178	Assumed 18 inch slab, costs from Dan Goddard, includes installation
Gas Conditioning	\$3,583 /scfm		30 scfm	\$107,503	assumes Hydrogen Sulfide removal and moisture
Dryer Equipment					
Huber Belt Dryer	\$1,422,870 /package		1 package	\$1,422,870	Vendor Quote, assumes dried product conveyance and silos are included
Installation of dryers	20% percent			\$284,574	
Dryer Building	\$325 /sf		2500 sf	\$812,500	
Subtotal A				\$6,280,000	
Piping	15% of "A"			\$942,000	
Site Civil	10% of "A"			\$628,000	
Misc. Demolition	5% of "A"			\$314,000	
Electrical, Instrumentation & Controls	30% of Subtotal A minus building construction of Materials and Processing			\$1,640,250	
Shipping and Handling	2% Equipment			\$79,607	
Subtotal B				\$9,900,000	
Startup and Construction Sequencing	2% of "B"			\$198,000	
General Conditions	15% of "B"			\$1,485,000	
Contractor Overhead and Profit	15% of "B"			\$1,485,000	
Sales Tax	5.50% of "B"			\$544,500	
Bonds and Insurance	2.5% of "B"			\$217,500	
Subtotal C Construction Costs				\$13,800,000	
Engineering				\$1,380,000	
Construction Management	10% of total construction costs			\$1,380,000	
Subtotal Project Costs				\$16,600,000	
Estimating Contingency				\$4,980,000	
Total Project Cost				\$21,600,000	
Note: Refer to title sheet for additional assumptions.					

Class 5 Capital Cost Estimate for Biosolids Management Alternative 3-A: Raw Sludge Belt Dryer				
Item	Unit Costs	Quantity	Class 5 Total	Notes
3-A: Raw Sludge Belt Dryer				
Sludge Storage				
Dryer Equipment				
Huber BT8 Belt Dryer	\$3 /gallon	216,480 gallon	\$649,440	assumes 4 hrs of storage for each tank
Installation of dryers	\$5,651,865 /package	1 package	\$5,651,865	Vendor Quote, conveyance and pumps included
Dryer Building	20% percent		\$1,130,373	
	\$325 /sf	3000 sf	\$975,000	
Subtotal A			\$8,410,000	
Piping	15% of "A"		\$1,261,500	
Site Civil	10% of "A"		\$841,000	
Misc. Demolition	5% of "A"		\$420,500	
Electrical, Instrumentation & Controls	30% of Subtotal A minus building construction		\$2,230,500	
Shipping and Handling	2% of Materials and Processing Equipment		\$126,026	
Subtotal B			\$13,300,000	
Startup and Construction Sequencing	2% of "B"		\$266,000	
General Conditions	15% of "B"		\$1,995,000	
Contractor Overhead and Profit	15% of "B"		\$1,995,000	
Sales Tax	5.50% of "B"		\$731,500	
Bonds and Insurance	2.5% of "B"		\$332,500	
Subtotal C Construction Costs			\$18,600,000	
Engineering	10% of total construction costs		\$1,860,000	
Construction Management	10% of total construction costs		\$1,860,000	
Subtotal Project Costs			\$22,300,000	
Estimating Contingency	30% of subtotal Project Costs		\$6,690,000	
Total Project Cost			\$29,000,000	
Note: Refer to title sheet for additional assumptions.				

Class 5 Capital Cost Estimate for Biosolids Management Alternative 3-B: Dewatering + MAD					Notes
Item	Unit Costs		Quantity	Class 5 Total	Notes
3-B: Dewatering + MAD					
Digester					
Lipp Digesters			1100000 unit	\$1,650,000	
Control Building & Ancillary Equipment			1100000 unit	\$1,650,000	
Digested Sludge Storage			1100000 unit	\$1,650,000	
Waste Gas Burner					
Waste Gas Burner			1 unit	\$100,000	assumes to be the same cost of new flare
Gas flare concrete, assumes 18in thick slab			0.22 cy	\$178	Assumed 18 inch slab, costs from Dan Goddard, includes installation
Gas Conditioning			83 scfm	\$295,634	assumes Hydrogen Sulfide removal and moisture
Subtotal A				\$5,350,000	
Piping	15% of "A"			\$802,500	
Site Civil	10% of "A"			\$535,000	
Misc. Demolition	5% of "A"			\$267,500	
Electrical, Instrumentation & Controls	30% of Subtotal A minus building construction of Materials and Processing			\$1,110,000	
Shipping and Handling	2% of Equipment			\$73,913	
Subtotal B				\$8,100,000	
Startup and Construction Sequencing	2% of "B"			\$162,000	
General Conditions	15% of "B"			\$1,215,000	
Contractor Overhead and Profit	15% of "B"			\$1,215,000	
Sales Tax	5.50% of "B"			\$445,500	
Bonds and Insurance	2.5% of "B"			\$202,500	
Subtotal C Construction Costs				\$1,110,000	
Engineering	10% of total construction costs			\$1,130,000	
Construction Management	10% of total construction costs			\$1,130,000	
Subtotal Project Costs				\$13,600,000	
Estimating Contingency	30% of subtotal Project Costs			\$4,080,000	
Total Project Cost				\$17,700,000	
Note: Refer to title sheet for additional assumptions.					

Class 5 Capital Cost Estimate for Biosolids Management Alternative 3-C: Dewatering + MAD + Belt Dryer					
Item	Unit Costs		Quantity	Class 5 Total	Notes
3-C: Dewatering + MAD + Belt Dryer					
Digester					
Digesters			1100000 unit	\$2,200,000	
Control Building & Ancillary Equipment	\$2 /gal		1100000 unit	\$2,200,000	
Digested Sludge Storage	\$2 /gal		1100000 unit	\$2,200,000	
Waste Gas Burner					
Waste Gas Burner	\$100,000 /unit		1 unit	\$100,000	assumes to be the same cost of new flare
Gas flare concrete, assumes 18in thick slab	\$800 /cy		0.22 cy	\$178	Assumed 18 inch slab, costs from Dan Goddard, includes installation
Gas Conditioning	\$3,583 /scfm		83 scfm	\$295,634	assumes Hydrogen Sulfide removal and moisture
Dryer Equipment					
Huber BT8 Belt Dryer	\$3,485,290 /package		1 package	\$3,485,290	Vendor Quote includes conveyance and pumps
Installation of dryers	20% percent			\$697,058	
Dryer Building	\$325 /sf		3000 sf	\$975,000	
Subtotal A				\$42,150,000	
Piping	15% of "A"			\$1,822,500	
Site Civil	15% of "A"			\$1,822,500	
Misc. Demolition	5% of "A"			\$607,500	
Electrical, Instrumentation & Controls	30% of Subtotal A minus building construction of Materials and Processing			\$2,692,500	
Shipping and Handling	2% Equipment			\$165,618	
Subtotal B				\$19,300,000	
Startup and Construction Sequencing	2% of "B"			\$386,000	
General Conditions	15% of "B"			\$2,895,000	
Contractor Overhead and Profit	15% of "B"			\$2,895,000	
Sales Tax	5.50% of "B"			\$1,061,500	
Bonds and Insurance	2.5% of "B"			\$482,500	
Subtotal C Construction Costs				\$27,000,000	
Engineering	10% of total construction costs			\$2,700,000	
Construction Management	10% of total construction costs			\$2,700,000	
Subtotal Project Costs				\$32,400,000	
Estimating Contingency	30% of subtotal Project Costs			\$9,720,000	
Total Project Cost				\$42,100,000	
Note: Refer to title sheet for additional assumptions.					

Class 5 Capital Cost Estimate for Biosolids Management Alternative 4-A: Dewatering + Belt Dryer				
Item	Unit Costs	Quantity	Class 5 Total	Notes
4-A: Dewatering + Belt Dryer				
Sludge Storage				
Cake Receiving Installation	\$3 /gallon	5,520 gallon	\$16,560	assumes 4 hrs of storage for each tank
Dryer Equipment	\$4,129,500 /package 20% percent	1 package	\$4,129,500 \$825,900	
Andritz Belt Dryers BDS40 Installation of dryers Dryer Building	\$5,390,543 /package 20% percent \$325 /sf	1 package 4000 sf	\$5,390,543 \$1,078,109 \$1,300,000	Vendor Quote, cake pump, silos, hoppers and conveyance included
Subtotal A			\$12,740,000	
Piping	15% of "A"		\$1,911,000	
Site Civil	10% of "A"		\$1,274,000	
Misc. Demolition	5% of "A"		\$637,000	
Electrical, Instrumentation & Controls	30% of Subtotal A minus building construction of Materials and Processing		\$3,432,000	
Shipping and Handling	2% Equipment		\$190,732	
Subtotal B			\$20,200,000	
Startup and Construction Sequencing	2% of "B"		\$404,000	
General Conditions	15% of "B"		\$3,030,000	
Contractor Overhead and Profit	15% of "B"		\$3,030,000	
Sales Tax	5.50% of "B"		\$1,111,000	
Bonds and Insurance	2.5% of "B"		\$505,000	
Subtotal C Construction Costs			\$28,300,000	
Engineering	10% of total construction costs		\$2,830,000	
Construction Management	10% of total construction costs		\$2,830,000	
Subtotal Project Costs			\$34,000,000	
Estimating Contingency	30% of subtotal Project Costs		\$10,200,000	
Total Project Cost			\$44,200,000	

Note: Refer to title sheet for additional assumptions.

Class 5 Capital Cost Estimate for Biosolids Management Alternative 4-B: Dewatering + Drum Dryer					
Item	Unit Costs		Quantity	Class 5 Total	Notes
4-B: Dewatering + Drum Dryer					
Sludge Storage					
Cake Receiving					
Installation	\$3 /gallon		5,520 gallon	\$16,560	assumes 4 hrs of storage for each tank
	\$4,129,500 /package 40% percent		1 package	\$4,129,500	
				\$1,651,800	
Dryer Equipment					
Andritz DDS80 Drum Dryers	\$10,966,215 /package 20% percent		1 package	\$10,966,215	Vendor Quote, cake pump, silos, hoppers and conveyance included
Installation of dryers	\$325 /sf		4000 sf	\$1,300,000	
Dryer Building					
Subtotal A				\$20,260,000	
Piping	15% of "A"			\$3,039,000	
Site Civil	10% of "A"			\$2,026,000	
Misc. Demolition	5% of "A"			\$1,013,000	
Electrical, Instrumentation & Controls	30% of Subtotal A minus building construction of Materials and Processing			\$5,688,000	
Shipping and Handling	2% Equipment			\$302,246	
Subtotal B				\$32,300,000	
Startup and Construction Sequencing	2% of "B"			\$646,000	
General Conditions	15% of "B"			\$4,845,000	
Contractor Overhead and Profit	15% of "B"			\$4,845,000	
Sales Tax	5.50% of "B"			\$1,776,500	
Bonds and Insurance	2.5% of "B"			\$807,500	
Subtotal C Construction Costs				\$45,200,000	
Engineering	10% of total construction costs			\$4,520,000	
Construction Management	10% of total construction costs			\$4,520,000	
Subtotal Project Costs				\$54,200,000	
Estimating Contingency	30% of subtotal Project Costs			\$16,260,000	
Total Project Cost				\$70,500,000	

Note: Refer to title sheet for additional assumptions.

Class 5 Capital Cost Estimate for Biosolids Management Alternative 4-C: THP + MAD + Belt Dryer				
Item	Unit Costs	Quantity	Class 5 Total	Notes
4-C: THP + MAD + Belt Dryer				
Sludge Storage				
Digester	\$3 /gallon	5,520 gallon	\$16,560	assumes 4 hrs of storage for each tank
Digesters	\$3 /gal	990000 unit	\$2,970,000	
Control Building & Ancillary Equipment	\$3 /gal	990000 unit	\$2,970,000	
Digested Sludge Storage	\$3 /gal	990000 unit	\$2,970,000	
Waste Gas Burner				
Waste Gas Burner	\$285,000 /unit	1 unit	\$285,000	assumes to be the same cost of new flare
Gas flare concrete, assumes 18in thick slab	\$800 /cy	0.50 cy	\$400	Assumed 18 inch slab, costs from Dan Goddard, includes installation, 3x3 ft
Gas Conditioning	\$3,583 /scfm	588 scfm	\$2,107,068	assumes Hydrogen Sulfride removal and moisture
Cake Receiving				
Installation	\$4,129,500 /package 20% percent	1 package	\$4,129,500	
Cambi THP				
Installation	\$29,500,000 /package	1 package	\$29,500,000	Vendor quote
Dewatering Units				
Dewatering Centrifuges	\$864,000 /unit 20% percent	4 unit	\$3,456,000	assumes n+1
Installation of dewatering centrifuges	\$420,895 /unit 20% percent	4 unit	\$1,683,580	assumes 1 system per centrifuge
Polymer units	\$1,080 /lf	100 lf	\$336,716	assumes 100 lf for regional facilities
Installation of polymer				
Cake Conveyance				
Dryer Equipment				
Andritz BDS 40 Belt Dryers	\$3,057,730 /package 20% percent	1 package	\$3,057,730	Vendor Quote, cake pump, silos, hoppers and conveyance included
Installation of dryers	\$325 /sf	4300 sf	\$611,546	
Dryer Building			\$1,397,500	
Subtotal A			\$57,120,000	
Piping	15% of "A"		\$8,568,000	
Site Civil	10% of "A"		\$5,712,000	
Misc. Demolition	5% of "A"		\$2,856,000	
Electrical, Instrumentation & Controls	30% of Subtotal A minus building construction of Materials and Processing		\$15,825,750	
Shipping and Handling	2% Equipment		\$900,717	
Subtotal B			\$91,000,000	
Startup and Construction Sequencing	2% of "B"		\$1,820,000	
General Conditions	15% of "B"		\$13,650,000	
Contractor Overhead and Profit	15% of "B"		\$13,650,000	
Sales Tax	5.50% of "B"		\$5,005,000	
Bonds and Insurance	2.5% of "B"		\$2,275,000	
Subtotal C Construction Costs			\$127,400,000	
Engineering	10% of total construction costs		\$12,740,000	
Construction Management	10% of total construction costs		\$12,740,000	
Subtotal Project Costs			\$152,900,000	
Estimating Contingency	30% of subtotal Project Costs		\$45,870,000	
Total Project Cost			\$198,800,000	

Note: Refer to title sheet for additional assumptions.

Attachment D: Net Present Cost Calculations



Life Cycle Alternative Cost Analysis (\$)

Year of analysis	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	
2026	2,000,000																				

Risk adjustments (+/- percent):

Start of NPV: 4.20% Benefits: 0%

Escalation rate: 4.20% Capital costs: 0%

Discount rate: 2.20% Running costs: 0%

Alternative 1.A: Dewatering Only

Expressed in 2033 dollars, unescalated - dollars	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	
Capital Outlays																					
Capital outlay 1																					
Capital outlay 2																					
Capital outlay 3																					
Capital outlay 4																					
Capital outlay 5																					
Capital outlay 6																					
Capital outlay 7																					
Capital outlay 8																					
Total capital outlays	2,000,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Benefits:	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	
Benefit 1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Benefit 2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Benefit 3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Benefit 4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Benefit 5	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Benefit 6	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Benefit 7	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Benefit 8	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total benefits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Annual Running Costs:	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	
Hauled solids	\$121,392	\$122,115	\$122,839	\$123,562	\$124,284	\$125,007	\$125,730	\$126,453	\$127,176	\$127,899	\$128,622	\$129,345	\$130,068	\$130,791	\$131,514	\$132,237	\$132,960	\$133,683	\$134,406	\$135,129	\$135,852
Electrical demand	\$7,099	\$7,110	\$7,121	\$7,132	\$7,143	\$7,154	\$7,165	\$7,176	\$7,187	\$7,198	\$7,209	\$7,220	\$7,231	\$7,241	\$7,252	\$7,263	\$7,274	\$7,285	\$7,296	\$7,307	\$7,317
NG demand (lbw)	\$14,324	\$14,346	\$14,368	\$14,390	\$14,413	\$14,435	\$14,458	\$14,480	\$14,503	\$14,525	\$14,548	\$14,570	\$14,593	\$14,615	\$14,638	\$14,660	\$14,683	\$14,705	\$14,728	\$14,750	\$14,772
Labor	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual O&M 6	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual O&M 7	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual O&M 8	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total running costs	143,339	143,771	144,202	144,633	145,064	145,495	145,926	146,357	146,788	147,219	147,650	148,081	148,512	148,943	149,374	149,805	150,236	150,667	151,098	151,529	151,960

Annual Risk Costs (optional):	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	
Annual Risk Costs 1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual Risk Costs 2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual Risk Costs 3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual Risk Costs 4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual Risk Costs 5	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total risk costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

R&R Costs:	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	
R&R 1	\$16,306	\$16,306	\$16,306	\$16,306	\$16,306	\$16,306	\$16,306	\$16,306	\$16,306	\$16,306	\$16,306	\$16,306	\$16,306	\$16,306	\$16,306	\$16,306	\$16,306	\$16,306	\$16,306	\$16,306	\$16,306
R&R 2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
R&R 3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
R&R 4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
R&R 5	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
R&R 6	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
R&R 7	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
R&R 8	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total refurbishments	16,306	16,306	16,306	16,306	16,306	16,306	16,306	16,306	16,306	16,306	16,306	16,306	16,306	16,306	16,306	16,306	16,306	16,306	16,306	16,306	16,306

Net Benefit/(cost)	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	
Net Benefit/(cost)	(3,059,656)	(199,877)	(160,088)	(160,319)	(160,541)	(160,762)	(160,983)	(161,204)	(161,425)	(161,646)	(161,868)	(162,089)	(162,310)	(162,531)	(162,752)	(162,973)	(163,194)	(163,415)	(163,637)	(163,858)	(164,079)

Expressed in escalated dollars with sensitivity adjustments

Capital Outlays	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	
Capital outlay 1	3,250,952	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total capital outlays	3,250,952	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Benefits:	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	
Benefit 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 4	0	0	0																		

polymer use	16,206	16,913	17,650	18,420	19,223	20,061	20,936	21,848	22,800	23,794	24,831	25,913	27,043	28,221	29,451	30,734	32,073	33,471	34,929	36,451	
Labor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual O&M 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual O&M 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual O&M 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total turning costs	162,181	169,264	176,634	184,336	192,373	200,760	209,512	218,645	228,176	238,122	248,501	259,331	270,633	282,427	294,734	307,576	320,976	334,962	349,556	364,784	
Annual Risk Costs (optional):																					
Annual Risk Costs 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual Risk Costs 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual Risk Costs 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual Risk Costs 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual Risk Costs 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total risk costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R Costs:																					
R&R 1	16,448	19,223	20,030	20,971	21,748	22,651	23,613	24,605	25,658	26,715	27,837	29,006	30,225	31,494	32,817	34,195	35,651	37,126	38,687	40,312	
R&R 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total refurbishments	16,448	19,223	20,030	20,971	21,748	22,651	23,613	24,605	25,658	26,715	27,837	29,006	30,225	31,494	32,817	34,195	35,651	37,126	38,687	40,312	
Net escalated benefit(cost)	(3,461,991)	(188,477)	(196,694)	(206,207)	(214,121)	(223,421)	(233,126)	(243,259)	(253,815)	(264,837)	(276,338)	(288,337)	(300,856)	(313,921)	(327,551)	(341,771)	(356,609)	(372,090)	(388,245)	(405,095)	
Life cycle cost analysis																					
PV% in 2023	(3,242,822)	(172,764)	(176,389)	(180,089)	(183,867)	(187,723)	(191,660)	(195,679)	(199,782)	(203,971)	(208,247)	(212,612)	(217,069)	(221,618)	(226,263)	(231,004)	(235,844)	(240,769)	(245,830)	(250,979)	
NPV as of 2023	(7224,992)																				

polymer use	16,206	16,613	17,650	18,420	19,223	20,061	20,936	21,848	22,800	23,794	24,831	25,913	27,043	28,221	29,451	30,734	32,073	33,477	34,929	36,457
Labor	86,352	80,117	94,047	98,148	102,427	106,893	111,553	116,415	121,480	126,766	132,272	138,009	144,086	150,376	156,928	163,766	170,901	178,347	186,117	194,229
Annual O&M 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total turning costs	414,223	431,918	450,367	469,604	489,663	510,578	532,396	556,125	578,633	603,656	629,236	656,219	684,242	713,465	743,936	775,708	808,837	843,360	879,393	916,964
Annual Risk Costs (optional):																				
Annual Risk Costs 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total risk costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R Costs:																				
R&R 1	47,647	49,648	51,734	53,906	56,170	58,530	60,988	63,549	66,218	68,000	71,936	74,917	78,064	81,343	84,759	88,319	92,028	95,893	99,924	104,118
R&R 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total refurbishments	47,647	49,648	51,734	53,906	56,170	58,530	60,988	63,549	66,218	68,000	71,936	74,917	78,064	81,343	84,759	88,319	92,028	95,893	99,924	104,118
Net escalated benefit(cost)	(12,114,942)	(481,666)	(602,101)	(529,511)	(546,933)	(569,107)	(593,373)	(618,674)	(645,054)	(672,557)	(701,234)	(731,132)	(762,395)	(794,807)	(829,655)	(864,027)	(900,865)	(939,272)	(979,319)	(1,021,071)
Life cycle cost analysis																				
NPV in 2023	(1,134,928)	(441,421)	(450,336)	(459,431)	(468,703)	(478,175)	(487,832)	(497,663)	(507,734)	(517,997)	(528,447)	(538,117)	(548,004)	(558,109)	(568,439)	(578,998)	(589,789)	(600,815)	(612,081)	(623,591)
NPV as of 2023	(2,150,019)																			

AH-C Life Cycle Alternative Cost Analysis (\$)

Year of analysis: 2026
 Start of NPV: 2026
 Escalation rate: 4.20%
 Discount rate: 2.20%

Risk adjustments (+/- percent): 0%
 Benefits: 0%
 Capital costs: 0%
 Running costs: 0%
 Ruling costs: 0%

Alternative 1.C: Raw Sludge Thin Film Dryer	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Capital Outlays	10,500,000																			
Capital outlay 1	10,500,000																			
Capital outlay 2																				
Capital outlay 3																				
Capital outlay 4																				
Capital outlay 5																				
Capital outlay 6																				
Capital outlay 7																				
Capital outlay 8																				
Total capital outlays	10,500,000																			
Benefits:																				
Benefit 1																				
Benefit 2																				
Benefit 3																				
Benefit 4																				
Benefit 5																				
Benefit 6																				
Benefit 7																				
Benefit 8																				
Total benefits																				
Annual Running Costs:																				
Hauled solids																				
electrical demand																				
NG demand (lbw)																				
labor rate																				
Labor																				
Annual O&M 6																				
Annual O&M 7																				
Annual O&M 8																				
Total running costs																				
Annual Risk Costs (optional):																				
Annual Risk Costs 1																				
Annual Risk Costs 2																				
Annual Risk Costs 3																				
Annual Risk Costs 4																				
Annual Risk Costs 5																				
Total risk costs																				
R&R Costs:																				
R&R 1																				
R&R 2																				
R&R 3																				
R&R 4																				
R&R 5																				
R&R 6																				
R&R 7																				
R&R 8																				
Total refurbishments																				
Net Benefits/(cost)																				
Capital Outlays																				
Capital outlay 1																				
Capital outlay 2																				
Capital outlay 3																				
Capital outlay 4																				
Capital outlay 5																				
Capital outlay 6																				
Capital outlay 7																				
Capital outlay 8																				
Total capital outlays																				
Benefits:																				
Benefit 1																				
Benefit 2																				
Benefit 3																				
Benefit 4																				
Benefit 5																				
Benefit 6																				
Benefit 7																				
Benefit 8																				
Total benefits																				
Annual Running Costs:																				
Hauled solids																				
electrical demand																				
NG demand (lbw)																				

polymer use	16,513	17,650	18,420	19,223	20,061	20,936	21,848	22,800	23,794	24,831	25,913	27,043	28,221	29,451	30,734	32,073	33,477	34,929	36,451
Labor	86,352	94,047	98,148	102,427	106,993	111,853	116,915	122,180	126,766	132,712	138,978	144,596	150,576	156,928	163,766	170,901	178,347	186,117	194,225
Annual O&M 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total turning costs	414,223	431,918	450,367	469,604	489,663	510,578	532,386	556,125	603,656	629,236	656,719	684,242	713,465	743,936	775,708	808,837	843,360	879,393	916,954

Annual Risk Costs (optional):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total risk costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

R&R Costs:	47,652	49,549	51,630	53,798	56,058	58,412	60,866	63,422	66,081	68,847	71,723	74,707	77,807	81,179	84,589	88,142	91,844	95,701	103,809
R&R 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total refurbishments	47,652	49,549	51,630	53,798	56,058	58,412	60,866	63,422	66,081	68,847	71,723	74,707	77,807	81,179	84,589	88,142	91,844	95,701	103,809

Net escalated benefit(cost)	(12,114,847)	(481,467)	(591,997)	(522,402)	(546,720)	(568,990)	(593,251)	(618,547)	(644,921)	(672,419)	(701,089)	(730,982)	(762,149)	(794,644)	(829,255)	(865,850)	(904,680)	(933,081)	(979,119)
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Life cycle cost analysis	(1,134,200)	(441,329)	(450,243)	(459,336)	(468,613)	(478,076)	(487,731)	(497,561)	(507,629)	(517,880)	(528,338)	(539,007)	(549,891)	(560,994)	(572,322)	(583,878)	(595,667)	(607,694)	(619,964)
NPV as of 2023	(2,147,983)																		

Life Cycle Alternative Cost Analysis (\$)

Year of analysis: 2023
 Start of NPV: 2026
 Escalation rate: 4.20%
 Discount rate: 2.20%

Risk adjustments (+/- percent): 0%
 Capital costs: 0%
 Running costs: 0%

Alternative 2.A: Raw Sludge Thin Film Dredg	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
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Expressed in 2023 dollars, unescalated - dollars

Capital Outlays

Capital outlay 1																					
Capital outlay 2																					
Capital outlay 3																					
Capital outlay 4																					
Capital outlay 5																					
Capital outlay 6																					
Capital outlay 7																					
Capital outlay 8																					
Total capital outlays	9,600,000																				

Benefits

Benefit 1																					
Benefit 2																					
Benefit 3																					
Benefit 4																					
Benefit 5																					
Benefit 6																					
Benefit 7																					
Benefit 8																					
Total benefits																					

Annual Running Costs

Hauled solids	\$150,893	\$151,226	\$151,459	\$151,692	\$151,925	\$152,158	\$152,391	\$152,624	\$152,857	\$153,090	\$153,323	\$153,556	\$153,788	\$154,021	\$154,254	\$154,487	\$154,720	\$154,953	\$155,186	\$155,419	
electrical demand	\$238,805	\$238,805	\$238,805	\$238,805	\$238,805	\$238,805	\$238,805	\$238,805	\$238,805	\$238,805	\$238,805	\$238,805	\$238,805	\$238,805	\$238,805	\$238,805	\$238,805	\$238,805	\$238,805	\$238,805	
NG demand (lb/h)	\$10,131	\$10,131	\$10,131	\$10,131	\$10,131	\$10,131	\$10,131	\$10,131	\$10,131	\$10,131	\$10,131	\$10,131	\$10,131	\$10,131	\$10,131	\$10,131	\$10,131	\$10,131	\$10,131	\$10,131	
labor	\$195,000	\$195,000	\$195,000	\$195,000	\$195,000	\$195,000	\$195,000	\$195,000	\$195,000	\$195,000	\$195,000	\$195,000	\$195,000	\$195,000	\$195,000	\$195,000	\$195,000	\$195,000	\$195,000	\$195,000	
Labor	\$76,323	\$76,433	\$76,543	\$76,653	\$76,763	\$76,873	\$76,983	\$77,093	\$77,203	\$77,313	\$77,423	\$77,533	\$77,643	\$77,753	\$77,863	\$77,973	\$78,083	\$78,193	\$78,303	\$78,413	
Annual O&M 6																					
Annual O&M 7																					
Annual O&M 8																					
Total running costs	710,228	711,910	713,592	715,275	716,957	718,640	719,322	719,441	720,123	720,805	721,488	722,170	722,852	723,534	724,217	724,899	725,581	726,263	726,945	727,627	

Annual Risk Costs (optional):

Annual Risk Costs 1																					
Annual Risk Costs 2																					
Annual Risk Costs 3																					
Annual Risk Costs 4																					
Annual Risk Costs 5																					
Total risk costs																					

R&R Costs:

R&R 1	\$36,805	\$36,805	\$36,805	\$36,805	\$36,805	\$36,805	\$36,805	\$36,805	\$36,805	\$36,805	\$36,805	\$36,805	\$36,805	\$36,805	\$36,805	\$36,805	\$36,805	\$36,805	\$36,805	\$36,805	
R&R 2																					
R&R 3																					
R&R 4																					
R&R 5																					
R&R 6																					
R&R 7																					
R&R 8																					
Total refurbishments	38,805	38,805	38,805	38,805	38,805	38,805	38,805	38,805	38,805	38,805	38,805	38,805	38,805	38,805	38,805	38,805	38,805	38,805	38,805	38,805	

Net Benefit/(cost)

(10,847,034)	(747,816)	(748,888)	(749,960)	(751,032)	(752,104)	(753,176)	(754,248)	(755,320)	(756,392)	(757,464)	(758,536)	(759,608)	(760,680)	(761,752)	(762,824)	(763,896)	(764,968)	(766,040)	(767,112)	(768,184)
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Expressed in escalated dollars with sensitivity adjustments

Capital Outlays

Capital outlay 1																					
Capital outlay 2																					
Capital outlay 3																					
Capital outlay 4																					
Capital outlay 5																					
Capital outlay 6																					
Capital outlay 7																					
Capital outlay 8																					
Total capital outlays	10,887,114																				

Benefits

Benefit 1																					
Benefit 2																					
Benefit 3																					
Benefit 4																					
Benefit 5																					
Benefit 6																					
Benefit 7																					
Benefit 8																					
Total benefits																					

Annual Running Costs:

Hauled solids	178,278	180,002	181,684	183,366	185,048	186,730	188,412	190,094	191,776	193,458	195,140	196,822	198,504	200,186	201,868	203,550	205,232	206,914	208,596	210,278	
electrical demand	270,176	270,176	270,176	270,176	270,176	270,176	270,176	270,176	270,176	270,176	270,176	270,176	270,176	270,176	270,176	270,176	270,176	270,176	270,176	270,176	270,176
NG demand (lb/h)	190,878	191,002	191,126	191,250	191,374	191,498	191,622	191,746	191,870	191,994	192,118	192,242	192,366	192,490	192,614	192,738	192,862	192,986	193,110	193,234	

polymer use	85,294	89,013	92,695	96,945	101,172	105,563	110,186	114,999	120,001	125,232	130,690	136,386	142,300	148,533	155,005	161,759	168,807	176,162	183,837	191,846	
Labor	86,352	90,117	94,047	98,148	102,427	106,863	111,553	116,415	121,450	126,766	132,312	138,078	144,066	150,375	156,928	163,766	170,901	178,347	186,117	194,225	
Annual O&M 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual O&M 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual O&M 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total turning costs	803,628	838,188	874,363	912,088	951,439	992,466	1,035,303	1,079,966	1,126,554	1,175,161	1,225,842	1,278,719	1,333,875	1,391,408	1,451,421	1,514,021	1,579,319	1,647,431	1,718,473	1,792,688	
Annual Risk Costs (optional):																					
Annual Risk Costs 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual Risk Costs 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual Risk Costs 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual Risk Costs 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual Risk Costs 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total risk costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R Costs:																					
R&R 1	41,640	43,389	45,212	47,111	49,089	51,151	53,289	55,558	57,970	60,501	63,222	66,173	69,344	72,735	76,347	80,181	84,236	88,504	92,984	97,674	
R&R 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total refurbishments	41,640	43,389	45,212	47,111	49,089	51,151	53,289	55,538	57,970	60,501	63,222	66,173	69,344	72,735	76,347	80,181	84,236	88,504	92,984	97,674	
Net escalated benefit(cost)	(11,706,283)	(881,888)	(919,979)	(959,196)	(999,538)	(1,040,000)	(1,081,602)	(1,124,354)	(1,168,354)	(1,213,602)	(1,260,219)	(1,308,206)	(1,357,573)	(1,408,320)	(1,460,457)	(1,514,000)	(1,569,056)	(1,625,634)	(1,683,746)	(1,743,394)	
Life cycle cost analysis																					
PV6 in 2023	(10,895,457)	(808,094)	(824,770)	(841,786)	(859,166)	(876,964)	(894,975)	(913,439)	(932,282)	(951,514)	(971,140)	(991,171)	(1,011,614)	(1,032,477)	(1,053,769)	(1,075,499)	(1,097,676)	(1,120,310)	(1,143,409)	(1,166,982)	
NPV as of 2023	(28,533,405)																				

Life Cycle Alternative Cost Analysis (\$)

Year of analysis 2023
 Start of NPV 2026
 Escalation rate 4.20%
 Discount rate 2.20%

Risk adjustments (+/- percent):
 Benefits 0%
 Capital costs 0%
 Running costs 0%

Alternative 2.B: MAD + Dowaterberg

Expressed in 2023 dollars, unescalated – dollars

Capital Outlays	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	
Capital outlay 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total capital outlays	12,500,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Benefits	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	
Benefit 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total benefits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Annual Running Costs	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	
Hauled solids	\$387,423	\$388,620	\$388,618	\$389,216	\$390,216	\$390,411	\$390,607	\$391,607	\$392,602	\$392,802	\$393,400	\$393,699	\$394,295	\$395,103	\$395,741	\$396,398	\$396,986	\$397,754	\$398,182	\$398,779	
electrical demand	\$233,908	\$234,175	\$234,441	\$234,708	\$235,242	\$235,775	\$235,775	\$236,042	\$236,309	\$236,309	\$236,576	\$236,842	\$237,109	\$237,376	\$237,643	\$237,909	\$238,176	\$238,443	\$238,710	\$238,977	
labor	\$45,815	\$45,815	\$45,815	\$45,720	\$45,720	\$45,815	\$45,815	\$46,079	\$46,079	\$46,079	\$46,343	\$46,343	\$46,343	\$46,598	\$46,598	\$46,598	\$46,853	\$46,853	\$46,853	\$46,853	
labor	\$182,651	\$182,885	\$183,122	\$183,357	\$183,593	\$183,828	\$184,064	\$184,299	\$184,533	\$184,767	\$185,006	\$185,241	\$185,477	\$185,712	\$185,948	\$186,183	\$186,419	\$186,654	\$186,890	\$187,125	
Annual O&M 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual O&M 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual O&M 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total running costs	\$19,948	\$20,868	\$21,808	\$22,858	\$23,877	\$24,887	\$25,887	\$26,887	\$27,887	\$28,887	\$29,887	\$30,887	\$31,887	\$32,887	\$33,887	\$34,748	\$35,609	\$36,470	\$37,331	\$38,192	\$41,230

Annual Risk Costs (optional):	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	
Annual Risk Costs 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total risk costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

R&R Costs:	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	
R&R 1	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150
R&R 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total refurbishments	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150	\$75,150

Net Benefit/(cost)	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	
Net Benefit/(cost)	(13,384,646)	(895,216)	(896,886)	(888,197)	(889,327)	(890,497)	(891,667)	(892,837)	(894,006)	(895,176)	(896,346)	(897,516)	(898,686)	(899,856)	(901,026)	(902,196)	(903,366)	(904,536)	(905,706)	(906,876)	(916,880)

Expressed in escalated dollars with sensibility adjustments

Capital Outlays	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	
Capital outlay 1	14,422,076	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total capital outlays	14,422,076	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Benefits	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	
Benefit 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total benefits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Annual Running Costs	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	
Hauled solids	438,317	457,431	477,377	488,132	519,913	542,950	566,234	590,918	616,876	643,956	671,936	700,877	731,421	763,295	796,557	831,206	867,485	905,280	944,720	985,716	1,028,048
electrical demand	264,335	276,055	287,887	300,224	313,388	326,951	341,048	355,775	371,137	387,162	403,978	421,516									

polymer use	51,464	53,740	56,016	58,292	60,568	62,844	65,120	67,396	69,672	71,948	74,224	76,500	78,776	81,052	83,328	85,604	87,880	90,156	92,432	94,708	96,984	99,260	101,536	103,812	106,088	108,364	110,640	112,916	115,192	
Labor	172,704	180,255	188,004	196,295	204,894	213,765	222,105	230,895	239,231	247,980	256,424	264,223	272,236	280,231	288,191	296,106	304,056	312,021	320,001	327,986	335,976	343,971	351,971	359,976	367,986	375,991	383,996	391,996	399,996	
Annual O&M 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual O&M 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual O&M 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total turning costs	927,160	967,470	1,009,641	1,053,439	1,099,245	1,147,039	1,196,910	1,248,946	1,303,241	1,359,895	1,419,008	1,480,689	1,545,046	1,612,199	1,682,246	1,755,375	1,831,656	1,911,262	1,994,302	2,080,955										
Annual Risk Costs (optional):																														
Annual Risk Costs 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual Risk Costs 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual Risk Costs 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual Risk Costs 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual Risk Costs 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total risk costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R Costs:																														
R&R 1	85,022	88,593	92,314	96,191	100,231	104,441	108,828	113,398	118,161	123,124	128,295	133,683	139,288	145,149	151,245	157,597	164,216	171,113	178,300	185,769										
R&R 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total refurbishments	85,022	88,593	92,314	96,191	100,231	104,441	108,828	113,398	118,161	123,124	128,295	133,683	139,288	145,149	151,245	157,597	164,216	171,113	178,300	185,769										
Net escalated benefit(cost)	(15,154,248)	(1,056,093)	(1,101,895)	(1,149,631)	(1,199,476)	(1,251,460)	(1,305,797)	(1,362,344)	(1,421,402)	(1,483,019)	(1,547,203)	(1,614,372)	(1,684,344)	(1,757,347)	(1,833,511)	(1,912,972)	(1,995,874)	(2,082,366)	(2,172,602)	(2,266,744)										
Life cycle cost analysis																														
PV% in 2023	(14,196,814)	(988,024)	(988,257)	(1,008,911)	(1,029,995)	(1,051,518)	(1,073,489)	(1,095,917)	(1,118,812)	(1,142,183)	(1,166,041)	(1,190,389)	(1,215,255)	(1,240,633)	(1,266,536)	(1,292,982)	(1,319,977)	(1,347,522)	(1,375,661)	(1,404,374)										
NPV as of 2023	(36,035,005)																													

polymer use	51,464	53,740	56,016	58,292	61,060	63,743	66,522	69,422	72,443	75,606	78,901	82,340	85,923	89,673	93,580	97,638	101,913	106,353	110,987	115,822
Labor	172,704	180,235	188,004	196,295	204,884	213,765	223,105	232,831	242,860	253,171	264,223	276,105	288,911	302,750	317,636	327,552	341,963	356,896	372,234	388,451
Annual O&M 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total turning costs	927,160	967,470	1,009,641	1,053,439	1,099,245	1,147,039	1,196,910	1,248,946	1,303,241	1,359,695	1,419,008	1,480,689	1,545,046	1,612,199	1,682,246	1,756,375	1,831,656	1,911,262	1,994,302	2,080,955
Annual Risk Costs (optional):																				
Annual Risk Costs 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total risk costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R Costs:																				
R&R 1	85,022	88,593	92,314	96,191	100,231	104,441	108,828	113,398	118,161	123,124	128,295	133,683	139,288	145,149	151,245	157,597	164,216	171,113	178,300	185,789
R&R 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total refurbishments	85,022	88,593	92,314	96,191	100,231	104,441	108,828	113,398	118,161	123,124	128,295	133,683	139,288	145,149	151,245	157,597	164,216	171,113	178,300	185,789
Net escalated benefit(cost)	(85,449,679)	(1,056,693)	(1,101,815)	(1,149,631)	(1,199,476)	(1,251,460)	(1,305,737)	(1,362,344)	(1,421,402)	(1,483,019)	(1,547,203)	(1,614,372)	(1,684,344)	(1,757,347)	(1,833,511)	(1,912,972)	(1,995,674)	(2,082,366)	(2,172,602)	(2,266,744)
Life cycle cost analysis																				
PV% in 2023	(23,841,283)	(988,024)	(988,257)	(1,008,911)	(1,029,995)	(1,051,518)	(1,073,489)	(1,096,917)	(1,119,812)	(1,144,183)	(1,169,041)	(1,194,389)	(1,220,255)	(1,246,633)	(1,269,536)	(1,292,962)	(1,316,977)	(1,347,532)	(1,375,661)	(1,404,374)
NPV as of 2023	(46,337,779)																			

AI/2D Life Cycle Alternative Cost Analysis (\$)

Year of analysis: 2026 - 2027 - 2028 - 2029 - 2030 - 2031 - 2032 - 2033 - 2034 - 2035 - 2036 - 2037 - 2038 - 2039 - 2040 - 2041 - 2042 - 2043 - 2044 - 2045

Start of NPV: 2026
 Escalation rate: 4.20%
 Discount rate: 2.20%

Risk adjustments (+/- percent): Benefits: 0%
 Capital costs: 0%
 Running costs: 0%

Alternative 2.D - Baseline

Expressed in 2033 dollars, unescalated - dollars	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
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Capital Outlays

Capital outlay 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total capital outlays	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Benefits

Benefit 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total benefits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Annual Running Costs

Hauled solids	609,684	561,075	511,415	461,756	412,097	362,438	312,779	263,120	213,461	163,802	114,143	64,484	14,825	0	0	0	0	0	0	0
electrical demand	35,495	35,605	35,715	35,825	35,935	36,045	36,155	36,265	36,375	36,485	36,595	36,705	36,815	36,925	37,035	37,145	37,255	37,365	37,475	37,585
NG demand (lb/h)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Labor	17,821	17,833	17,845	17,857	17,869	17,881	17,893	17,905	17,917	17,929	17,941	17,953	17,965	17,977	17,989	18,001	18,013	18,025	18,037	18,049
Annual O&M 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total running costs	716,769	717,556	718,342	719,128	720,914	722,701	724,487	726,273	728,059	729,845	731,631	733,417	735,203	736,989	738,775	740,561	742,347	744,133	745,919	747,705

Annual Risk Costs (optional)

Annual Risk Costs 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total risk costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

R&R Costs

R&R 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total refurbishments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Net Benefit/(cost)

Net Benefit/(cost)	(716,759)	(717,656)	(718,552)	(719,449)	(720,346)	(721,243)	(722,139)	(723,036)	(723,933)	(724,830)	(725,726)	(726,623)	(727,520)	(728,417)	(729,313)	(730,210)	(731,107)	(732,004)	(732,900)	(733,797)	(734,694)	(735,591)	(736,488)	(737,385)
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Expressed in escalated dollars with sensitivity adjustments

Capital Outlays

Capital outlay 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total capital outlays	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Benefits

Benefit 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total benefits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Annual Running Costs

Hauled solids	609,719	719,796	751,183	783,337	815,717	853,765	891,006	929,847	970,380	1,012,677	1,056,815	1,102,874	1,150,938	1,201,084	1,253,433	1,306,050	1,358,433	1,424,517	1,486,978	1,551,340
electrical demand	40,158	41,939	43,337	45,544	47,654	49,711	51,878	54,140	56,499	58,962	61,532	64,214	66,912	69,633	72,380	75,149	77,948	82,941	88,555	90,322
NG demand (lb/h)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total running costs	649,877	761,735	794,520	828,881	865,591	905,743	955,884	1,015,987	1,087,760	1,172,354	1,269,347	1,379,686	1,494,842	1,616,117	1,743,813	1,878,199	2,019,421	2,168,466	2,326,973	2,492,662

Expressed in escalated dollars with sensitivity adjustments

Capital Outlays

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polymer use	81,029	84,563	88,250	92,088	96,113	100,304	104,676	109,240	114,001	118,970	124,156	129,897	135,214	141,106	147,266	153,671	160,367	167,354	174,645	182,253	
Labor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual O&M 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual O&M 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual O&M 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total turning costs	810,907	848,289	883,770	921,679	961,864	1,003,799	1,047,560	1,093,226	1,140,881	1,190,609	1,242,603	1,296,665	1,353,164	1,412,133	1,473,668	1,537,861	1,604,889	1,674,812	1,747,778	1,823,918	
Annual Risk Costs (optional):																					
Annual Risk Costs 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual Risk Costs 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual Risk Costs 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual Risk Costs 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual Risk Costs 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total risk costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R Costs:																					
R&R 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R&R 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total refurbishments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Net escalated benefit(cost)	(610,907)	(846,289)	(883,770)	(921,679)	(961,864)	(1,003,799)	(1,047,560)	(1,093,226)	(1,140,881)	(1,190,609)	(1,242,603)	(1,296,665)	(1,353,164)	(1,412,133)	(1,473,668)	(1,537,861)	(1,604,889)	(1,674,812)	(1,747,778)	(1,823,918)	
Life cycle cost analysis																					
PV in 2023	(759,656)	(775,719)	(792,118)	(808,862)	(825,987)	(843,412)	(861,234)	(879,450)	(898,060)	(916,977)	(936,245)	(956,119)	(976,309)	(996,922)	(1,017,969)	(1,039,457)	(1,061,397)	(1,083,797)	(1,106,666)	(1,130,019)	
NPV as of 2023	(16,686,377)																				

polymer use	238,823	249,237	260,105	271,446	283,281	295,632	308,520	321,959	336,004	350,650	365,933	381,882	398,524	415,891	434,014	452,926	472,660	493,254	514,743	537,167
Labor	172,704	180,255	188,094	196,295	204,884	213,785	223,105	232,851	242,960	253,571	264,723	276,465	288,811	300,780	313,386	327,552	341,903	356,896	372,235	388,451
Annual O&M 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total turning costs	1,766,763	1,843,440	1,923,439	2,006,936	2,093,991	2,184,851	2,279,649	2,378,557	2,481,751	2,589,418	2,701,751	2,818,883	2,941,233	3,068,813	3,201,921	3,340,796	3,485,689	3,636,869	3,794,673	3,959,133
Annual Risk Costs (optional):																				
Annual Risk Costs 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total risk costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R Costs:																				
R&R 1	142,892	148,270	154,810	161,312	168,087	175,147	182,503	190,168	198,155	206,478	215,150	224,188	233,602	243,413	253,636	264,289	275,389	286,956	299,008	311,566
R&R 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total refurbishments	142,892	148,270	154,810	161,312	168,087	175,147	182,503	190,168	198,155	206,478	215,150	224,188	233,602	243,413	253,636	264,289	275,389	286,956	299,008	311,566
Net escalated benefit(cost)	(94,718,964)	(1,992,010)	(2,078,249)	(2,168,218)	(2,262,078)	(2,359,998)	(2,462,152)	(2,568,725)	(2,679,906)	(2,795,896)	(2,916,901)	(3,043,139)	(3,174,835)	(3,312,226)	(3,455,557)	(3,606,085)	(3,761,079)	(3,923,816)	(4,093,697)	(4,270,899)
Life cycle cost analysis																				
PV% in 2023	(92,524,757)	(1,825,946)	(1,863,898)	(1,902,819)	(1,942,456)	(1,982,916)	(2,024,216)	(2,066,373)	(2,109,404)	(2,153,328)	(2,198,164)	(2,243,800)	(2,290,645)	(2,338,320)	(2,387,002)	(2,436,685)	(2,487,358)	(2,539,160)	(2,592,001)	(2,645,857)
NPV as of 2023	(74,955,467)																			

Year of analysis: 2026
 Start of NPV: 4.20%
 Escalation rate: 2.20%

Risk adjustments (+/-) percent:
 Capital costs: 0%
 Running costs: 0%

Life Cycle Alternative Cost Analysis (\$)

Alternative 3.B: MAD + Dewatering

	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
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Expressed in 2033 dollars, unescalated – dollars

Capital Outlays

Capital outlay 1	17,700,000																			
Capital outlay 2																				
Capital outlay 3																				
Capital outlay 4																				
Capital outlay 5																				
Capital outlay 6																				
Capital outlay 7																				
Capital outlay 8																				
Total capital outlays	17,700,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Benefits:

Benefit 1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Benefit 2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Benefit 3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Benefit 4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Benefit 5	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Benefit 6	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Benefit 7	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Benefit 8	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total benefits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Annual Running Costs:

Hauled solids	\$1,084,783	\$1,086,457	\$1,088,130	\$1,089,804	\$1,091,478	\$1,093,151	\$1,094,825	\$1,096,498	\$1,098,172	\$1,099,846	\$1,101,519	\$1,103,193	\$1,104,867	\$1,106,540	\$1,108,214	\$1,109,888	\$1,111,561	\$1,113,235	\$1,114,908	\$1,116,582
electrical demand	\$296,984	\$297,749	\$298,513	\$299,277	\$299,441	\$299,605	\$299,769	\$299,933	\$300,097	\$300,261	\$300,425	\$300,589	\$300,753	\$300,917	\$301,081	\$301,245	\$301,409	\$301,573	\$301,737	\$301,901
NG demand (lbw)	\$127,442	\$127,835	\$128,228	\$128,621	\$129,013	\$129,406	\$129,799	\$130,192	\$130,585	\$130,978	\$131,371	\$131,764	\$132,157	\$132,550	\$132,943	\$133,336	\$133,729	\$134,122	\$134,515	\$134,908
labor rate	\$152,051	\$152,886	\$153,722	\$154,557	\$155,393	\$156,228	\$157,064	\$157,900	\$158,735	\$159,571	\$160,406	\$161,242	\$162,077	\$162,913	\$163,748	\$164,584	\$165,419	\$166,255	\$167,090	\$167,926
Labor	\$152,051	\$152,886	\$153,722	\$154,557	\$155,393	\$156,228	\$157,064	\$157,900	\$158,735	\$159,571	\$160,406	\$161,242	\$162,077	\$162,913	\$163,748	\$164,584	\$165,419	\$166,255	\$167,090	\$167,926
Annual O&M 7	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual O&M 6	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual O&M 5	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual O&M 4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual O&M 3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual O&M 2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual O&M 1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total running costs	1,683,269	1,684,310	1,685,351	1,686,392	1,687,433	1,688,474	1,689,515	1,690,556	1,691,597	1,692,638	1,693,679	1,694,720	1,695,761	1,696,802	1,697,843	1,698,884	1,699,925	1,700,966	1,702,007	1,703,048

Annual Risk Costs (optional):

Annual Risk Costs 1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual Risk Costs 2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual Risk Costs 3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual Risk Costs 4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual Risk Costs 5	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total risk costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

R&R Costs:

R&R 1	\$106,913	\$106,913	\$106,913	\$106,913	\$106,913	\$106,913	\$106,913	\$106,913	\$106,913	\$106,913	\$106,913	\$106,913	\$106,913	\$106,913	\$106,913	\$106,913	\$106,913	\$106,913	\$106,913	\$106,913
R&R 2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
R&R 3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
R&R 4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
R&R 5	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
R&R 6	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
R&R 7	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
R&R 8	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total R&R costs	106,913	106,913	106,913	106,913	106,913	106,913	106,913	106,913	106,913	106,913	106,913	106,913	106,913	106,913	106,913	106,913	106,913	106,913	106,913	106,913
Net Benefits/(cost)	(19,468,772)	(1,771,242)	(1,773,712)	(1,776,182)	(1,778,652)	(1,781,122)	(1,783,592)	(1,786,062)	(1,788,532)	(1,791,002)	(1,793,472)	(1,795,942)	(1,798,412)	(1,800,882)	(1,803,352)	(1,805,822)	(1,808,292)	(1,810,762)	(1,813,232)	(1,815,702)

Expressed in escalated dollars with sensitivity adjustments

Capital Outlays

Capital outlay 1	20,025,180																			
Capital outlay 2																				
Capital outlay 3																				
Capital outlay 4																				
Capital outlay 5																				
Capital outlay 6																				
Capital outlay 7																				
Capital outlay 8																				
Total capital outlays	20,025,180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Benefits:

Benefit 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total benefits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Annual Running Costs:

Hauled solids

polymer use	144,183	150,471	157,032	163,879	171,024	178,460	186,201	194,331	202,854	211,696	220,923	230,551	240,599	251,084	262,025	273,443	285,357	297,760	310,763	324,301
Labor	172,704	180,235	188,084	196,295	204,894	213,785	223,105	232,831	242,980	253,571	264,623	276,156	288,191	300,750	313,856	327,532	341,893	356,956	372,734	388,451
Annual O&M 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total turning costs	1,890,172	1,962,051	2,047,691	2,138,647	2,229,630	2,326,759	2,423,000	2,537,765	2,644,067	2,759,164	2,879,265	3,004,888	3,138,359	3,277,1814	3,414,201	3,562,777	3,717,811	3,878,853	4,048,383	4,224,624
Annual Risk Costs (optional):																				
Annual Risk Costs 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total risk costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R Costs:																				
R&R 1	120,957	126,038	131,331	136,847	142,595	148,564	154,824	161,327	168,102	175,163	182,520	190,185	198,173	206,497	215,169	224,206	233,623	243,438	253,660	264,313
R&R 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total refurbishments	120,957	126,038	131,331	136,847	142,595	148,564	154,824	161,327	168,102	175,163	182,520	190,185	198,173	206,497	215,169	224,206	233,623	243,438	253,660	264,313
Net escalated benefit(cost)	(22,026,309)	(2,088,088)	(2,178,822)	(2,273,494)	(2,372,275)	(2,476,343)	(2,582,894)	(2,695,092)	(2,812,169)	(2,934,327)	(3,061,785)	(3,194,774)	(3,333,832)	(3,478,311)	(3,629,371)	(3,786,984)	(3,951,434)	(4,123,016)	(4,302,048)	(4,488,837)
Life cycle cost analysis																				
PV% in 2023	(20,634,267)	(1,914,015)	(1,994,192)	(1,995,209)	(2,037,063)	(2,078,852)	(2,123,473)	(2,168,027)	(2,213,510)	(2,259,844)	(2,307,248)	(2,355,741)	(2,405,145)	(2,455,580)	(2,507,068)	(2,559,631)	(2,613,291)	(2,668,071)	(2,723,994)	(2,781,084)
NPV as of 2023	(64,786,903)																			

polymer use	144,183	150,471	157,032	163,879	171,024	178,460	186,261	194,381	202,864	211,696	220,923	230,581	240,599	251,034	262,026	273,443	285,357	297,760	310,763	324,301
Labor	345,407	360,470	376,188	392,591	409,708	427,570	446,210	465,652	485,960	507,142	529,246	552,313	576,383	601,501	627,712	655,053	683,505	713,069	744,869	776,901
Annual O&M 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total turning costs	1,578,669	1,647,020	1,718,338	1,792,742	1,870,365	1,951,345	2,035,829	2,123,967	2,215,917	2,311,646	2,411,921	2,516,928	2,628,246	2,738,977	2,857,422	2,981,093	3,110,112	3,244,710	3,385,128	3,531,618
Annual Risk Costs (optional):																				
Annual Risk Costs 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total risk costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R Costs:																				
R&R 1	237,153	247,118	257,495	268,309	279,578	291,321	303,586	316,306	329,590	343,433	357,857	372,897	388,549	404,888	421,972	439,951	458,054	477,292	497,338	518,226
R&R 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total refurbishments	237,153	247,118	257,495	268,309	279,578	291,321	303,586	316,306	329,590	343,433	357,857	372,897	388,549	404,888	421,972	439,951	458,054	477,292	497,338	518,226
Net escalated benefit(cost)	(49,446,327)	(1,894,198)	(1,975,833)	(2,061,052)	(2,149,943)	(2,242,665)	(2,339,385)	(2,440,272)	(2,545,505)	(2,655,279)	(2,769,779)	(2,889,213)	(3,013,795)	(3,143,745)	(3,279,254)	(3,420,694)	(3,568,199)	(3,722,002)	(3,882,466)	(4,049,844)
Life cycle cost analysis																				
PV% in 2023	(46,321,365)	(1,736,231)	(1,772,131)	(1,808,771)	(1,846,166)	(1,884,332)	(1,922,285)	(1,961,041)	(2,000,610)	(2,041,028)	(2,082,280)	(2,130,429)	(2,174,454)	(2,219,387)	(2,265,245)	(2,312,048)	(2,359,815)	(2,408,567)	(2,458,323)	(2,509,104)
NPV as of 2023	(88,228,629)																			

Life Cycle Alternative Cost Analysis (\$)
Alt3-D

Year of analysis: 2026
Start of NPV: 2026
Escalation rate: 4.20%
Discount rate: 2.20%

Risk adjustments (+/- percent): 0%
Capital costs: 0%
Running costs: 0%

Alternative 3.D_Baseline

Expressed in 2023 dollars, unescalated – dollars

	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
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Capital Outlays	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Capital outlay 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total capital outlays	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Benefits	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Benefit 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total benefits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Annual Running Costs	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Hauled solids	\$1,706,976	\$1,708,609	\$1,712,243	\$1,717,510	\$1,724,144	\$1,732,041	\$1,741,212	\$1,751,666	\$1,763,405	\$1,776,438	\$1,790,776	\$1,806,520	\$1,822,680	\$1,839,258	\$1,856,256	\$1,873,674	\$1,891,522	\$1,909,800	\$1,928,508	\$1,947,646
electrical demand	\$99,387	\$99,540	\$99,694	\$100,194	\$100,707	\$101,225	\$101,747	\$102,273	\$102,803	\$103,336	\$103,873	\$104,413	\$104,956	\$105,503	\$106,053	\$106,606	\$107,162	\$107,721	\$108,282	\$108,845
NG demand (lbw)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
labor rate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Labor	\$200,430	\$200,847	\$201,189	\$201,745	\$202,306	\$202,873	\$203,445	\$204,021	\$204,601	\$205,185	\$205,772	\$206,363	\$206,957	\$207,554	\$208,154	\$208,756	\$209,361	\$209,968	\$210,578	\$211,190
Annual O&M 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total running costs	\$2,006,800	\$2,009,997	\$2,013,093	\$2,016,189	\$2,019,286	\$2,022,382	\$2,025,478	\$2,028,574	\$2,031,671	\$2,034,767	\$2,037,863	\$2,040,960	\$2,044,056	\$2,047,152	\$2,050,249	\$2,053,345	\$2,056,441	\$2,059,537	\$2,062,634	\$2,065,730

Annual Risk Costs (optional)	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Annual Risk Costs 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total risk costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

R&R Costs	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
R&R 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total refurbishments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Net Benefit/(cost)	(2,006,800)	(2,009,997)	(2,013,093)	(2,016,189)	(2,019,286)	(2,022,382)	(2,025,478)	(2,028,574)	(2,031,671)	(2,034,767)	(2,037,863)	(2,040,960)	(2,044,056)	(2,047,152)	(2,050,249)	(2,053,345)	(2,056,441)	(2,059,537)	(2,062,634)	(2,065,730)
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Expressed in escalated dollars with sensitivity adjustments

Capital Outlays	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Capital outlay 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total capital outlays	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Benefits	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Benefit 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefit 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total benefits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Annual Running Costs	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Hauled solids	1,937,244	2,015,430	2,103,313	2,195,023	2,290,727	2,390,597	2,494,816	2,603,572	2,717,063	2,835,493	2,958,048	3,083,864	3,222,627	3,363,064	3,509,613	3,662,540	3,822,121	3,983,647	4,152,418	4,330,751
electrical demand	12,443	117,247	122,664	127,603	133,176	138,190	142,268	145,268	147,999	150,944	153,644	156,094	158,904	161,604	164,594	167,494	170,294	173,094	175,894	178,694
NG demand (lbw)	0	0	0																	

polymer use	238,881	238,775	247,000	257,674	268,117	280,650	293,094	305,871	319,204	333,117	347,636	362,788	378,593	395,097	412,314	430,280	448,027	466,591	485,006	510,309
Labor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total turning costs	2,270,639	2,369,662	2,472,877	2,580,701	2,689,220	2,810,638	2,933,169	3,067,034	3,194,468	3,333,706	3,479,009	3,630,684	3,788,860	3,953,973	4,126,271	4,306,067	4,493,688	4,689,473	4,893,777	5,106,971
Annual Risk Costs (optional):																				
Annual Risk Costs 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total risk costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R Costs:																				
R&R 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total refurbishments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net escalated benefit(cost)	(2,270,639)	(2,369,662)	(2,472,877)	(2,580,701)	(2,689,220)	(2,810,638)	(2,933,169)	(3,067,034)	(3,194,468)	(3,333,706)	(3,479,009)	(3,630,684)	(3,788,860)	(3,953,973)	(4,126,271)	(4,306,067)	(4,493,688)	(4,689,473)	(4,893,777)	(5,106,971)
Life cycle cost analysis																				
PV in 2023	(2,270,639)	(2,172,014)	(2,217,631)	(2,294,812)	(2,312,980)	(2,361,553)	(2,411,454)	(2,462,403)	(2,514,423)	(2,567,536)	(2,621,765)	(2,677,133)	(2,733,664)	(2,791,382)	(2,850,313)	(2,910,461)	(2,971,912)	(3,034,653)	(3,098,674)	(3,164,052)
NPV as of 2023	(62,665,955)																			

Ald-A Life Cycle Alternative Cost Analysis (\$)

Year of analysis	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	
Start of NPV	2026																				
Escalation rate	4.20%																				
Discount rate	2.20%																				
Risk adjustments (+/- percent):	0%																				
Capital costs	0%																				
Running costs	0%																				

Alternative J.A.: Raw Sludge Belt Drive
Expressed in 2033 dollars, unescalated - dollars

Capital Outlays

Capital outlay 1																					
Capital outlay 2																					
Capital outlay 3																					
Capital outlay 4																					
Capital outlay 5																					
Capital outlay 6																					
Capital outlay 7																					
Capital outlay 8																					
Total capital outlays	44,200,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Benefits

Benefit 1																					
Benefit 2																					
Benefit 3																					
Benefit 4																					
Benefit 5																					
Benefit 6																					
Benefit 7																					
Benefit 8																					
Total benefits																					

Annual Running Costs

Hauled solids																					
electrical demand																					
NG demand (lbw)																					
chemical rate																					
Labor																					
transferred cake																					
Annual O&M 7																					
Annual O&M 8																					
Total running costs	3,868,314	3,871,903	3,876,661	3,881,420	3,886,178	3,890,937	3,895,696	3,900,455	3,905,214	3,909,973	3,914,732	3,919,491	3,924,250	3,929,009	3,933,768	3,938,527	3,943,286	3,948,045	3,952,804	3,957,563	3,962,322

Annual Risk Costs (optional)

Annual Risk Costs 1																					
Annual Risk Costs 2																					
Annual Risk Costs 3																					
Annual Risk Costs 4																					
Annual Risk Costs 5																					
Total risk costs																					

R&R Costs:

R&R 1																					
R&R 2																					
R&R 3																					
R&R 4																					
R&R 5																					
R&R 6																					
R&R 7																					
R&R 8																					
Total refurbishments	190,401	190,401	190,401	190,401	190,401	190,401	190,401	190,401	190,401	190,401	190,401	190,401	190,401	190,401	190,401	190,401	190,401	190,401	190,401	190,401	190,401
Net Benefit/(cost)	(47,886,719)	(3,781,934)	(3,767,682)	(3,753,430)	(3,739,178)	(3,724,926)	(3,710,674)	(3,696,422)	(3,682,170)	(3,667,918)	(3,653,666)	(3,639,414)	(3,625,162)	(3,610,910)	(3,596,658)	(3,582,406)	(3,568,154)	(3,553,902)	(3,539,650)	(3,525,398)	(3,511,146)

Expressed in escalated dollars with sensibility adjustments

Capital Outlays

Capital outlay 1																					
Capital outlay 2																					
Capital outlay 3																					
Capital outlay 4																					
Capital outlay 5																					
Capital outlay 6																					
Capital outlay 7																					
Capital outlay 8																					
Total capital outlays	50,006,381	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Benefits:

Benefit 1																					
Benefit 2																					
Benefit 3																					
Benefit 4																					
Benefit 5																					
Benefit 6																					
Benefit 7																					
Benefit 8																					
Total benefits																					

Annual Running Costs:

Hauled solids																					
electrical demand																					
NG demand (lbw)																					
chemical rate																					
Labor																					
transferred cake																					
Annual O&M 7																					
Annual O&M 8																					
Total running costs	1,366,827	1,426,222	1,486,617	1,547,012	1,607,407	1,667,802	1,728,197	1,788,592	1,848,987	1,909,382	1,969,777	2,030,172	2,090,567	2,150,962	2,211,357	2,271,752	2,332,147	2,392,542	2,452,937	2,513,332	2,573,727

Appendix A, Page 23 of 30

polymer use	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Labor	345,407	360,470	376,188	392,591	409,708	427,570	446,210	465,652	485,967	507,142	529,246	552,313	576,383	601,501	627,712	655,053	683,505	713,069	744,859	778,901	0	0	0	0
transferred costs	595,750	590,600	616,149	643,010	671,046	700,392	730,852	762,691	795,937	830,630	866,834	904,613	944,037	985,177	1,028,107	1,077,905	1,119,053	1,166,435	1,219,339	1,272,459	0	0	0	0
Annual O&M 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total running costs	4,034,807	4,210,388	4,393,595	4,584,768	4,784,248	4,992,397	5,209,592	5,436,224	5,672,704	5,919,458	6,176,933	6,445,894	6,725,926	7,018,436	7,322,633	7,642,127	7,974,435	8,321,173	8,682,974	9,060,487	0	0	0	0
Annual Risk Costs (optional):																								
Annual Risk Costs 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total risk costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R Costs:																								
R&R 1	215,413	224,460	233,698	243,711	253,947	264,613	275,726	287,307	299,374	311,948	325,049	338,701	352,927	367,750	383,195	399,259	416,050	433,554	451,743	470,716	0	0	0	0
R&R 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total refreshments	215,413	224,460	233,698	243,711	253,947	264,613	275,726	287,307	299,374	311,948	325,049	338,701	352,927	367,750	383,195	399,259	416,050	433,554	451,743	470,716	0	0	0	0
Net escalated benefit(cost)	(64,256,601)	(64,434,646)	(64,657,483)	(64,928,479)	(65,257,095)	(65,653,116)	(66,126,596)	(66,687,397)	(67,345,472)	(68,111,082)	(68,985,293)	(69,978,058)	(71,090,433)	(72,332,472)	(73,714,739)	(75,248,352)	(76,944,471)	(78,804,259)	(80,838,777)	(83,058,101)	(85,472,274)	(88,092,351)	(90,931,202)	
Life cycle cost analysis																								
PV% in 2023	(60,827,634)	(61,065,135)	(61,350,004)	(61,687,454)	(62,080,381)	(62,542,703)	(63,079,531)	(63,696,874)	(64,399,741)	(65,194,153)	(66,077,132)	(67,055,778)	(68,138,133)	(69,324,241)	(70,614,148)	(72,009,002)	(73,509,854)	(75,117,755)	(76,834,755)	(78,661,904)	(80,610,343)	(82,681,214)	(84,876,668)	
NPV as of 2023	(144,524,465)																							

Life Cycle Alternative Cost Analysis (\$)

Year of analysis: 2026
 Start of NPV: 2026
 Escalation rate: 4.20%
 Discount rate: 2.20%

Risk adjustments (+/- percent): 0%
 Capital costs: 0%
 Running costs: 0%

Alternative A.D. Baseline	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
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Expressed in 2033 dollars, unescalated - dollars

Capital Outlays

Capital outlay 1																				
Capital outlay 2																				
Capital outlay 3																				
Capital outlay 4																				
Capital outlay 5																				
Capital outlay 6																				
Capital outlay 7																				
Capital outlay 8																				
Total capital outlays	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Benefits

Benefits 1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Benefits 2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Benefits 3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Benefits 4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Benefits 5	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Benefits 6	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Benefits 7	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Benefits 8	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total benefits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Annual Running Costs

Hauled solids	\$543,363	\$544,202	\$545,040	\$545,878	\$546,717	\$547,555	\$548,393	\$549,232	\$550,070	\$550,908	\$551,747	\$552,585	\$553,423	\$554,261	\$555,100	\$555,938	\$556,776	\$557,615	\$558,453	\$559,291
electrical demand	\$629,810	\$629,810	\$629,810	\$629,810	\$629,810	\$629,810	\$629,810	\$629,810	\$629,810	\$629,810	\$629,810	\$629,810	\$629,810	\$629,810	\$629,810	\$629,810	\$629,810	\$629,810	\$629,810	\$629,810
NG demand (lb/y)	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290
labor rate	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290	\$271,290
Labor	\$516,810	\$486,211	\$455,632	\$425,043	\$394,454	\$363,865	\$333,276	\$302,687	\$272,098	\$241,509	\$210,920	\$180,331	\$149,742	\$119,153	\$88,564	\$57,975	\$27,386	\$-2,203	\$-32,194	\$-62,105
Annual O&M 6	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual O&M 7	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual O&M 8	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total running costs	2,097,982	2,068,512	2,040,431	2,011,851	1,982,871	1,954,081	1,925,311	1,896,530	1,867,750	1,838,970	1,810,190	1,781,409	1,752,629	1,723,849	1,695,069	1,666,289	1,637,509	1,608,729	1,579,949	1,551,169

Annual Risk Costs (optional)

Annual Risk Costs 1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual Risk Costs 2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual Risk Costs 3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual Risk Costs 4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual Risk Costs 5	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total risk costs	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

R&R Costs

R&R 1	\$1,062,909	\$1,062,909	\$1,062,909	\$1,062,909	\$1,062,909	\$1,062,909	\$1,062,909	\$1,062,909	\$1,062,909	\$1,062,909	\$1,062,909	\$1,062,909	\$1,062,909	\$1,062,909	\$1,062,909	\$1,062,909	\$1,062,909	\$1,062,909	\$1,062,909	\$1,062,909
R&R 2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
R&R 3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
R&R 4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
R&R 5	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
R&R 6	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
R&R 7	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
R&R 8	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total refurbishments	1,062,909	1,062,909	1,062,909	1,062,909	1,062,909	1,062,909	1,062,909	1,062,909	1,062,909	1,062,909	1,062,909	1,062,909	1,062,909	1,062,909	1,062,909	1,062,909	1,062,909	1,062,909	1,062,909	1,062,909

Net Benefit/(cost)

	(\$1,697,807)	(\$1,132,120)	(\$1,103,340)	(\$1,074,560)	(\$1,045,780)	(\$1,017,000)	(\$988,220)	(\$959,440)	(\$930,660)	(\$901,880)	(\$873,100)	(\$844,320)	(\$815,540)	(\$786,760)	(\$757,980)	(\$729,200)	(\$700,420)	(\$671,640)	(\$642,860)	(\$614,080)
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Expressed in escalated dollars with sensitivity adjustments

Capital Outlays

Capital outlay 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital outlay 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total capital outlays	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Benefits

Benefits 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefits 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefits 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefits 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefits 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefits 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefits 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefits 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total benefits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Annual Running Costs

Hauled solids	614,743	641,550	669,355	698,178	729,183	760,973	794,148	828,767	864,864	902,953	941,933	982,895	1,025,825	1,070,828	1,117,178	1,165,557	1,216,655	1,269,663	1,324,178	1,382,700
electrical demand	711,927	741,975	772,862	805,532	839,550	876,004	915,566	959,690	1,008,060	1,060,390	1,117,480	1,180,040	1,250,840	1,329,840	1,418,240	1,516,640	1,625,640	1,746,040	1,880,040	2,030,040
NG demand (lb/y)	159,914	162,713	169,608	177,212	184,939	193,002	201,418	210,198	219,350	228,920	238,988	249,590	260,775	272,580	285,040	298,200	312,120	326,840	342,400	358,840

polymer use	308,936	320,323	334,231	346,887	364,077	379,950	396,514	413,800	431,837	450,660	470,302	490,800	512,189	534,510	557,601	581,077	607,470	633,337	661,555	690,215
Labor	588,475	573,188	559,042	544,583	528,903	508,850	484,078	458,254	430,032	398,306	363,156	324,349	281,643	234,778	183,479	127,457	66,405	0	0	(150,257)
Annual O&M 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual O&M 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total turning costs	2,373,697	2,439,359	2,506,459	2,574,832	2,644,832	2,715,729	2,788,112	2,861,785	2,936,723	3,012,917	3,090,237	3,168,824	3,248,672	3,328,928	3,411,446	3,494,372	3,578,246	3,663,001	3,748,683	3,834,851

Annual Risk Costs (optional):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Risk Costs 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total risk costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

R&R Costs:	1,202,639	1,253,046	1,305,673	1,360,512	1,417,693	1,477,195	1,539,237	1,603,865	1,671,248	1,741,440	1,814,451	1,890,493	1,970,207	2,052,955	2,139,179	2,229,025	2,322,644	2,420,195	2,521,843	2,627,761
R&R 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R&R 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total refurbishments	1,202,639	1,253,046	1,305,673	1,360,512	1,417,693	1,477,195	1,539,237	1,603,865	1,671,248	1,741,440	1,814,451	1,890,493	1,970,207	2,052,955	2,139,179	2,229,025	2,322,644	2,420,195	2,521,843	2,627,761

Net escalated benefit(cost)	(3,276,136)	(3,692,605)	(4,112,132)	(4,535,404)	(4,962,395)	(5,392,924)	(5,827,349)	(6,266,670)	(6,710,976)	(7,161,358)	(7,617,809)	(8,085,417)	(8,564,276)	(9,053,494)	(9,554,068)	(10,066,097)	(10,589,681)	(11,124,920)	(11,671,923)	(12,230,799)
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Life cycle cost analysis	(3,250,127)	(3,584,286)	(3,919,113)	(4,253,694)	(4,598,320)	(4,953,997)	(5,322,977)	(5,706,342)	(6,105,023)	(6,518,086)	(6,945,531)	(7,387,467)	(7,843,904)	(8,314,942)	(8,800,683)	(9,301,228)	(9,816,686)	(10,347,057)	(10,892,341)	(11,452,539)
PV% in 2023	(3,250,127)	(3,584,286)	(3,919,113)	(4,253,694)	(4,598,320)	(4,953,997)	(5,322,977)	(5,706,342)	(6,105,023)	(6,518,086)	(6,945,531)	(7,387,467)	(7,843,904)	(8,314,942)	(8,800,683)	(9,301,228)	(9,816,686)	(10,347,057)	(10,892,341)	(11,452,539)
NPV as of 2023	(73,965,087)	(73,965,087)	(73,965,087)	(73,965,087)	(73,965,087)	(73,965,087)	(73,965,087)	(73,965,087)	(73,965,087)	(73,965,087)	(73,965,087)	(73,965,087)	(73,965,087)	(73,965,087)	(73,965,087)	(73,965,087)	(73,965,087)	(73,965,087)	(73,965,087)	(73,965,087)

Attachment E: Suggested Sampling Protocol for Pilots of PFAS Treatment Technologies



Suggested Sampling Protocol for Pilots of PFAS Treatment Technologies

1.1 Introduction

To better understand the fate and transport of PFAS through each of these technologies, it is recommended that a PFAS sampling plan be developed. Typically, a sampling plan is developed to investigate PFAS levels at key inputs and outputs to a system, which are considered individual sampling locations. At each sampling location, samples are taken in triplicate, meaning that four samples should be taken per sampling run, with a total of 3 runs. It is important that the samples taken capture the PFAS levels in all phases, gas, solid, and liquid, of emissions and end products. If there are multiple phases to test at each sampling location, three samples should be taken of each phase of end product or emission. For PFAS sampling, it is recommended that these be 4-hour composite samples, and that field and proof blanks be taken on ten percent of the samples collected. An example of sampling procedures for pyrolysis systems is included in section 1.3. Although this is specific to pyrolysis, the PFAS sampling protocol for other equipment follows a similar process, with minor changes to sampling locations.

There are several publicly available sources which include a more involved description PFAS sampling and general guidance, including:

- ASTM D4448-01. “Standard Guide for Sampling Ground-Water Monitoring Wells”
- ASTM D6452-99. “Guide for Purging Methods for Wells Used for Ground-Water Quality Investigations”
- EGLE, Groundwater Perfluoroalkyl and Polyfluoroalkyl (PFAS) Sampling Guidance
- EGLE, MDEQ PFAS Sampling Quick Reference Field Guide
- EGLE, Residential Well Perfluoroalkyl and Polyfluoroalkyl (PFAS) Sampling Guidance
- Interstate Regulatory Technology Council (ITRC). “Site Characterization Considerations, Sampling Precautions, and Laboratory Analytical Methods for Per- and Polyfluoroalkyl Substances (PFAS).”

PFAS sampling is an expensive process. Each sample analysis of solid or liquid substances costs roughly \$500, for a total of (3 x 4 x \$500) \$6,000 per sampling location. Air emissions is even more cost prohibitive. One round of air emissions testing costs roughly \$50,000 for a three-run sampling event. Therefore, it is important to follow PFAS sampling methods and protocols as closely as possible, so as not to waste any samples.

1.2 General Guidelines

Sample contamination presents a real concern given the ubiquity of PFAS in the environment and consumer products, but also because of the low levels being measured. The list below includes basic guidance.

- Samples should be stored in coolers with ice in zip lock style bags. Use of synthetic cooling packs is prohibited.
- Field documentation should be restricted to plain paper and ball point pens. Waterproof paper, felt tip markers, sticky notes, or other components suspect of containing PFAS should not be used.
- Sampling personnel should not wear water resistant clothing.
- Nitrile gloves are acceptable and should always be worn during sample collection.
- Food or beverages should not be consumed while sampling, other than water. Sampling staff should thoroughly wash hands after meal breaks.
- Personal care products should not be used on the day of sampling.



1.3 Pyrolysis Sampling Procedure

Sampling protocols for both full-scale and laboratory-scale pyrolysis systems are similar to each other. First, the sampling points of the system are identified. These include the inputs and output locations of the system in all of their phases, gas, solid, and liquid. For a typical pyrolysis system, this includes five locations. PFAS exist in volatile, semi-volatile, and non-volatile forms so the sampling approach aims to characterize these classes in the specific phases.

1. Dewatered biosolids
2. Dryer combustion air
3. Dried biosolids
4. Biochar
5. Pyrolysis combustion air
6. Flue gas emissions

1.3.1 Dewatered Biosolids

The main PFAS load to the pyrolysis systems will enter with the dewatered biosolids, or cake. During a full-scale sampling event, three composite dewatered biosolids samples are collected. Because the dryers operate as a batch system and require a multi-day processing time, dewatered biosolids samples should be taken several days in advance of the main sampling event. One of the larger pyrolysis suppliers (BFT) has indicated that a single dryer's worth of biosolids can feed the pyrolysis system for 28–34 hours, and possibly up to 48 hours if dewatering achieves 20 percent TS. Dewatered biosolids are sampled during the loading of the dryer which generally takes 3–4 hours.

1.3.2 Dryer Combustion Air

Combustion processes require oxygen, usually supplied from an air stream. Dryer furnaces combust natural gas fuel to directly heat a process airstream (consisting of leak air and recycled, conditioned dryer exhaust) drawn through the drum dryer system to convey heat and product through downstream separation devices. Combustion air to the furnace represents a small fraction of the process airstream (5 – 10%) and likely contains little to no PFAS but requires sampling as an input for confirmation. The sampling location should be assumed to be representative for the dryer system leak air as well.

1.3.3 Cooling Water (Plant Water and Potable)

Some dryers, such as drum dryer systems, use cooling water in a saturator and venturi scrubber to remove evaporated water and pollutants from the process airstream. At typical testing sites, the majority of the cooling water is provided by secondary effluent from the WRRF process, or plant water, which provides a practically free supply of water. This water will contain some PFAS as the WRRF liquid stream processes do not significantly transform the PFAS content. Plant water exists as a two-phase sample, containing some, but likely less than 30 mg/L TSS depending on the liquid stream and dedicated screening system performance. A small fraction of potable, or protected, water is used in the venturi scrubber for fine misting nozzles.

1.3.4 Saturator and Scrubber Drain

The cooling water supply, condensate, and captured particulate drains from the saturator and venturi scrubber to a plant drain for discharge to the local WRRF. This drain may contain several thousand milligrams per liter of TSS due to captured particulates. The drain from the venturi scrubber will have less



particulates as most are expected to be removed in the saturator upstream. Each drain will contain PFAS from the cooling water but also potentially PFAS escaping the dryer in moisture droplets entrained in the dryer exhaust that would be captured by the scrubbing process.

1.3.5 Exhaust Emissions

Airstream exhaust emissions are arguably the most critical output to be evaluated as there is no published data on whether PFAS can be transferred to the gas-phase and consequently be discharged to the environment. In a drum drying WRRF study example, exhaust emissions were studied at two points: (1) dryer exhaust directly after the dried product is separated in the pre-separator and poly-cyclone to identify whether PFAS are present in the direct gas-phase discharge and (2) after the saturator, venturi scrubber, and RTO to determine whether the APC train can remove the PFAS that may exist in the direct exhaust stream.

1.3.6 Dried Biosolids

The drying step removes the bulk of water from the dewatered biosolids. The drying step targets roughly 80 percent TS for a full-scale operation for a relatively single-phase matrix. Samples from the system are taken on the same day as the gas-phase and biochar sampling. The sampling site should aim to dedicate a single dryer for feeding the pyrolysis reactors during the sampling event. At 20 percent TS, technology providers expect 48 hours of operation possible which would cover the sampling schedule necessary for gas phase sampling. These samples shall represent the dried dewatered biosolids sampled several days prior. Three samples of the laboratory dried dewatered biosolids should be taken associated with each experimental run.

1.3.7 Biochar

The pyrolysis process intentionally leaves a portion of the combustible matter present in the biosolids as a solid residual along with the non-combustible fraction, known as biochar. The biochar differs from ash generated during a combustion process by the combustible fraction still present. Biochar sampling from the system should occur on the same day as gas-phase and dried biosolid sample collection. The short retention time, roughly 20 minutes, of pyrolysis reactors allows coincidental sampling. A sample should be collected from each experimental run.

1.3.8 Combustion Air

Combustion processes require oxygen, usually supplied from an air stream. While air likely contains little to no PFAS, the load to the thermal oxidizer warrants sampling. Both full-scale and laboratory-scale sampling events would collect combustion air samples in concert with each flue gas emission sample.

1.3.9 Flue Gas Emissions

Flue gas emissions are arguably the most critical output of the process because they are directly discharged to the environment. Samples should be taken of flue gas after the thermal oxidizer and prior to the wet scrubber.

1.3.10 Solid-Phase Samples

Samples of dewatered biosolids, dried biosolids, and biochar should be collected by taking representative samples of the material fed to, or resulting from, the process run. Samples should be stored at 4°C.



Subsequent laboratory extraction should occur within 14 days and subsequent analysis within 28 days, or up to one year if extracts are frozen.

1.3.11 Gas-Phase

Gas phase sampling should include flue gas and combustion air. Flue gas sampling should include Modified Method OTM-45 for semi-volatile and non-volatile compounds and Fourier-transform infrared spectroscopy (FTIR) for specific volatile compounds. All sampling should be conducted in triplicate.

1.3.12 Quality Assurance and Control

A series of duplicates and blanks should be taken to provide quality control for the sampling process. A total of three field duplicates should be collected, one each of the dewatered biosolids, dried biosolids, and biochar. Blind field duplicates should be subjected to the polar targeted analysis. The collected samples should represent roughly 20 percent of the samples taken. The duplicate samples should be prepared in the same way as the base samples. Extracts should be held for additional analyses if results warrant.



Boston

200 Brickstone Square, Suite 403
Andover, MA, 01810
T 978.794.0336



APPENDIX C

JUNIPER RIDGE LANDFILL OPERATING SERVICES AGREEMENT

OPERATING SERVICES AGREEMENT

This OPERATING SERVICES AGREEMENT (this "Agreement") is made as of this 5th day of February, 2004, by and between CASELLA WASTE SYSTEMS, INC., a Delaware corporation with a place of business at 25 Greens Hill Lane, Rutland, Vermont 05702 ("Casella"), and the STATE OF MAINE, acting by and through its Executive Department, State Planning Office (the "State").

WITNESSETH:

WHEREAS, the State has contemporaneously with the execution and delivery hereof and payment of the amounts due hereunder acquired the solid waste landfill located in Old Town, Maine and more fully described below, previously owned by Fort James Operating Company, a Delaware corporation ("FJ"); and

WHEREAS, the State desires that Casella operate and develop the Landfill pursuant to the terms and conditions contained herein;

NOW, THEREFORE, in consideration of the mutual promises and agreements hereinafter contained, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Casella and the State agree as follows:

SECTION 1 DEFINITIONS

Capitalized words and phrases used but not otherwise defined herein shall have the following meanings:

1.1 "Affiliates" shall mean any corporation or other business entity controlling, controlled by, or under common control with the subject corporation, business enterprise or person.

1.2 "Acceptable Waste" shall mean such material as may from time to time be legally

accepted at the Landfill in accordance with applicable MDEP permits and other applicable laws and regulations, excluding, however, all Excluded Waste.

1.3 “Biomass Ash” shall mean the ash resulting from the operation of the Biomass Generating Facility to the extent the same is disposable at the Landfill under the Existing Permit and meets the definition of “special waste” as defined under Maine Environmental Law.

1.4 “Biomass Generating Facility” shall mean the electric generating facility fueled principally with biomass fuel, to be installed at the Old Town Mill.

1.5 “Capacity Credit” is defined in Section 2.8(d).

1.6 “Cash Application” is defined in Section 2.8(d).

1.7 “CERCLA” means the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. §§ 9602 et seq.

1.8 “Closure” shall mean those acts and activities required by applicable law and regulations which result in a permanent cessation of use of a solid waste landfill or portion thereof, as those requirements and regulations may be amended or modified from time to time, and which result in a stabilized solid waste Landfill which is not in active use, excluding those acts and activities which are required for Post-Closure Care.

1.9 “Damages” shall mean liability, loss, costs and expenses of every nature and type and howsoever arising that a Person may incur (including, without limitation, costs of investigation and defense and reasonable attorneys’, paralegals and other professionals’ fees and expenses).

1.10 “Disposal Application” is defined in Section 2.8(d).

1.11 “Effective Date” shall mean the date hereof.

1.12 “Environmental Law” shall mean any federal, state or local law, statute, rule,

order, directive, judgment, Governmental Approval or regulation or the common law relating to the environment (including the ambient air, surface water, groundwater, land surface or subsurface strata), or exposure of persons or property to Materials of Environmental Concern, including any statute, regulation, administrative decision or order pertaining to: (i) the presence of or the treatment, storage, disposal, generation, transportation, handling, distribution, manufacture, processing, use, or recycling, of Materials of Environmental Concern or documentation related to the foregoing; (ii) air, water and noise pollution; (iii) groundwater and soil contamination; (iv) the release, threatened release, or accidental release into the environment, or other areas of Materials of Environmental Concern, including emissions, discharges, injections, spills, escapes or dumping of Materials of Environmental Concern; (v) transfer of interests in or control of real property; (vi) land use, subdivision and zoning; (vii) community or worker right-to-know disclosures with respect to Materials of Environmental Concern; (viii) the protection of wild life, aquatic and marine life and wetlands, and endangered and threatened species; and (ix) storage tanks, vessels, containers, abandoned or discarded barrels and other open or closed receptacles. As used above, the term “release” shall have the meaning set forth in CERCLA, and to the extent it is more extensive or comprehensive, as defined in Maine Environmental Law. Without limiting the foregoing, the term “Environmental Law” shall include the Maine Forest Practices Act, 12 M.R.S.A. §§8867-A et seq.

1.13 “Environmental Matters” shall mean any liability or obligation arising under Environmental Law, whether arising under theories of contract, tort, negligence, successor or enterprise liability, strict liability or other legal or equitable theory, including (i) any failure to comply with an applicable Environmental Law and (ii) any liability or obligation arising from the presence of, release or threatened release of, or exposure of persons or property to, Materials

of Environmental Concern at the Premises or associated with the Premises. As used above, the term “release” shall have the meaning set forth in CERCLA, and to the extent it is more extensive or comprehensive, as defined in Maine Environmental Law.

1.14 “Escrow Agent” means Lawyers Title Insurance Corporation, appointed as escrow agent to hold and administer the Improvement Fund under Section 2.2(b) of the Acquisition Agreement pursuant to a separate Escrow Agreement between FJ and the State.

1.15 “Existing Permit” means Maine Department of Environmental Protection Permit # S 020700 7A-A-N, issued July 28, 1993, as amended or revised.

1.16 “Expansion Permit” shall mean any and all federal, state, local and other governmental permits, permit modifications, operation plan modifications, other modifications, statutory amendments and legislation, licenses, approvals, authorizations or amendments necessary for the expansion of the Landfill beyond the licensed footprint as of the date hereof.

1.17 “Excluded Waste” shall mean (a) any Acceptable Waste or any other waste of any nature generated outside of the State of Maine, (b) any waste as of the date of Casella’s response to the RFP under contract for delivery to another disposal facility or processing facility unless agreed to in writing by such facility’s waste generator or responsible party, and (c) any other waste or material excluded from disposal in the Landfill by applicable laws or regulations, or excluded by any of the terms and conditions of any permits, licenses, authorizations or approvals obtained with respect to the construction or operation of the Landfill, provided that Excluded Waste shall not include any waste that would otherwise constitute Excluded Waste hereunder if such category of waste is accepted at another disposal facility in the State of Maine owned or operated by the State, subject in all instances to the prior receipt of any and all required licenses or permits for such category of waste. Notwithstanding the foregoing, the parties acknowledge

and agree that, subject to applicable laws and regulations and such certifications as the State may reasonably require, Casella may bring construction and demolition waste generated outside the State of Maine for processing within the State of Maine solely for purposes of allowing Casella to generate biomass fuel required in connection with the provision of biomass fuel to FJ or its successor or assigns under the C&D Fuel Agreement in the form attached hereto as Exhibit B. Casella agrees to use its best efforts to ensure that any such construction and demolition waste generated outside the State of Maine and processed in the State of Maine is free of putrescible waste. This term shall also include such other wastes and materials as Casella determines, in the reasonable exercise of its commercial judgment, pose a risk or danger to the operation or safety of the Landfill or to the human or natural environment or are otherwise reasonably unacceptable to Casella provided, however, that in no event may FJ Waste be excluded or otherwise deemed Excluded Waste unless such exclusion is required by applicable law, regulation, permit, license, authorization or approval.

1.18 Intentionally omitted.

1.19 Intentionally omitted.

1.20 "FJ Waste" is defined in Section 2.8(a).

1.21 "Force Majeure" shall mean any act, event or condition affecting the Landfill or to the extent that it materially and adversely affects the ability of either party to perform or comply with any obligation, duty or agreement required of the party under this Agreement, provided such act, event or condition is beyond the reasonable control of the party or its agents relying thereon and is not the result of the willful or negligent act or omission of the party relying thereon. Force Majeure includes, without limitation but by way of illustrating the actions, events and conditions constituting a Force Majeure hereunder: (a) an act of God, epidemic, landslide,

lightning, earthquake, fire, explosion, storm, flood or similar occurrence; (b) an act of the public enemy, war, blockage, insurrection, riot, general arrest or restraint of government and people, civil disturbance or disobedience, sabotage or similar occurrence; or (c) a strike, work slowdown, or similar industrial or labor action.

1.22 “Governmental Approval” means any and all approvals, licenses, permits, authorizations (or the transfer thereof) required by any Governmental Authority for the design, construction, improvement, alteration, ownership or operation of the Landfill and all related projects, improvements or land use or the transfer thereof.

1.23 “Governmental Authority” means any federal, state or local governmental subdivision, board, body or regulatory authority.

1.24 “Hazardous Waste” shall mean any pollutant, contaminant, chemical, industrial, toxic or other waste or material that constitutes hazardous waste or material as defined pursuant to the Resource Conservation and Recovery Act, 42 U.S.C. §9601, et seq., or similar Maine laws, or the regulations adopted thereunder, or any successor laws regulating the same or similar substances, and Materials of Environmental Concern.

1.25 “Landfill” shall mean the solid waste landfill located in Old Town, Maine, that the State proposes to acquire from FJ pursuant to the Acquisition Agreement and all of the assets and properties acquired by the State from FJ in connection with said landfill, including any expansion of the solid waste landfill located at the Premises, whether such expansion is effected under the Existing Permit or under a new, amended or additional Governmental Approval, and any associated land, buildings, appurtenances, equipment and fixtures, the full benefit of all utility arrangements, licenses, approvals and permits to the extent transferable, including rights of assignment to the extent any such licenses and permits are assignable (but subject to any third

party consents, when required).

1.26 “Letter of Credit” means an irrevocable, unconditional, direct pay letter of credit in the form of Exhibit E attached to the Acquisition Agreement issued by a financial institution acceptable to FJ, in its discretion, (i) issued to FJ in the face amount of \$12,500,000 under Section 2.2(a)(ii) of the Acquisition Agreement, and (ii) issued to the Escrow Agent in the face amount of \$1,000,000 under Section 2.2(a)(iii) of the Acquisition Agreement.

1.27 “License Amendment” shall mean any and all federal, state, local and other governmental permits, permit modifications, operation plan modifications, other modifications, statutory amendments and legislation, licenses, approvals, authorizations or amendments necessary for the development of the Landfill within the currently permitted footprint for an additional 7 million cubic yards.

1.28 “License Application” shall mean the application for License Amendment submitted to the MDEP on October 30, 2003.

1.29 “Lincoln” shall mean Lincoln Pulp & Paper Co., Inc.

1.30 “Lincoln Agreement” means the Biomass Ash Disposal Agreement between FJ and Lincoln Pulp and Paper, Co., Inc. dated September 30, 2003.

1.31 “Lincoln’s Biomass Ash” means the ash resulting from the operation of the Lincoln biomass boiler located in Lincoln, Maine.

1.32 “Leachate” shall mean the liquid or semi-solid residue from waste deposited at the Landfill and either collected within a liner system to be installed at the Landfill, or otherwise collected for disposal.

1.33 “Materials of Environmental Concern” shall mean any: pollutants, contaminants or hazardous substances (as such terms are defined under CERCLA, the Maine Protection and

Improvement of Waters Act, 38 M.R.S.A. § 361-A, or the Maine Uncontrolled Hazardous Substances Sites Law, 38 M.R.S.A. § 1362.1), pesticides (as such term is defined under the Federal Insecticide, Fungicide and Rodenticide Act, 7 U.S.C. §§ 136 et seq.), solid wastes and hazardous wastes (as such terms are defined under the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901 et seq., and Maine's Hazardous Waste, Septage and Solid Waste Management Act, 38 M.R.S.A. §§ 1301 et seq.), chemicals, other hazardous, radioactive or toxic materials, oil, petroleum and petroleum products (and fractions thereof), asbestos and asbestos-containing materials, polychlorinated biphenyls ("PCBs") or PCB-containing materials, or any other material (or article containing such material) listed or subject to regulation under any law, statute, rule, regulation, order, Governmental Approval, or directive due to its potential, directly or indirectly, to harm the environment or the health of humans or other living beings.

1.34 "MDEP" shall mean the Maine Department of Environmental Protection, and any successor agency or department of the State of Maine.

1.35 "Mill Waste" shall mean waste from the Old Town Mill of a composition consistent with the waste FJ (or its successors or assigns) is permitted to dispose of at the Landfill under the Existing Permit, provided it meets the definition of "special waste" as currently defined by Maine Environmental Law.

1.36 "Old Town Mill" shall mean the pulp and paper mill owned and operated by FJ located in Old Town, Maine, and all related facilities and improvements.

1.37 "Post-Closure Care" shall include those acts and activities which are required under applicable laws, regulations and permits for post-closure care of a solid waste landfill or portion thereof, including monitoring, reporting and maintenance for the time set forth in the relevant laws, regulations and permits.

1.38 “Premises” means the real estate, together with all buildings and improvements thereon, situated in Alton and Old Town, Maine and more particularly described in Exhibit A attached hereto and incorporated herein by reference, including the Landfill.

1.39 “Prime Rate” means the fluctuating interest rate per annum equal to the rate of interest published in The Wall Street Journal as the Prime Rate or the base rate on corporate loans posted by at least 75% of the nation’s thirty (30) largest banks, as it may vary. In the event The Wall Street Journal ceases to publish the Prime Rate, the parties shall select a comparable substitute interest rate index.

1.40 “RFP” means the ‘Request For Proposals: Contract for Landfill Operations’, as issued on June 13, 2003, by the Maine State Planning Office, Waste Management & Recycling Program.

1.41 “Special Waste” shall mean any discarded waste and solid material, other than those which are typically found in household, commercial or municipal refuse, including, without limitation, materials such as industrial waste (but not including Mill Waste or Biomass Ash), institutional waste, animal manure, petroleum contaminated soil of a nonhazardous nature, ash, residue from incineration, waste treatment plant sludge, food processing wastes, dredging wastes, asbestos, or waste which requires special or exceptional handling or approval from MDEP, but only to the extent the foregoing is permitted for disposal in the Landfill under applicable MDEP permits, and shall not include any Excluded Waste, any solid waste generated by sources other than household and typical commercial establishments that exists in such an unusual quantity or in such a chemical or physical state, or any combination thereof, that may disrupt or impair effective waste management or threaten the public health, human safety or the environment and requires special handling, transportation and disposal procedures. Special

Waste includes, but is not limited to: (a) ash; (b) industrial and industrial process waste; (c) sludge and dewatered septage; (d) debris from nonhazardous chemical spills and cleanup of those spills; (e) contaminated soils and dredge materials; (f) asbestos and asbestos-containing waste; (g) sand blast grit and non-liquid paint waste; (h) high and low pH waste; (i) spent filter media residue; and (j) shredder residue.

1.42 “Shut-Down Period” is defined in Section 2.8(d).

1.43 “SPO” means the State Planning Office, an Executive Department of the State.

1.44 “State/FJ Agreement” or the “Acquisition Agreement” means the Agreement Regarding Solid Waste Disposal Facility Acquisition and Operation between the State and FJ pursuant to which the State has acquired the Landfill.

1.45 “Term” shall mean that period of time commencing on the Effective Date and ending on the earlier to occur of (i) thirty (30) years after the Effective Date, or (ii) the date this Agreement is terminated by one or more of the parties as provided for herein.

1.46 “Tipping Fees” shall mean the aggregate of all fees, charges, levies and assessments charged by Casella for the disposal of waste at the Landfill, including any contractors, subcontractors or other service providers employed by Casella, excluding any transportation costs associated with delivery of waste to the Landfill.

SECTION 2 LANDFILL OPERATION AND MANAGEMENT

2.1 Operation, Management and Exclusive Use—General. The State grants to Casella during the Term and subject to the terms and conditions hereof and all applicable laws, regulations and permits, the exclusive right, license and privilege to occupy, operate, maintain, repair, design, redesign, construct and utilize the Landfill, including, without limitation, the right to take possession of, occupy and have the exclusive use of the Landfill, subject to the terms and conditions of this Agreement. Without limiting the generality of the foregoing and subject in all

instances to the terms and conditions hereof, these rights include the following:

2.1.1 The right to take possession of and use all of the Landfill. Casella shall prominently post the hours of operation and other limitations and conditions of access at the entrance to the Landfill. Casella shall have the right to post additional signage at the Landfill indicating its operation of the Landfill and any other information it deems necessary or desirable, subject in all instances to applicable laws and regulations.

2.1.2 The exclusive right to operate and dispose of Acceptable Waste at the Landfill and, subject to the terms hereof, to create and implement rules and policies pertaining to disposal at, and operation of, the Landfill, provided that in no event shall such rules and policies cause a default by the State of its obligations under the State/FJ Agreement or otherwise violate or restrict Casella's obligations under Section 2.8.

2.1.3 To the extent permitted by applicable law, the right to use the permits, licenses, approvals and authorizations issued in the State's name and the right, with the consent of the State (which consent will not be unreasonably withheld), to seek any modifications, transfers or renewals of the same, consistent with this Agreement.

2.1.4 The right to take and use any landfill gas generated at the Landfill, all in accordance with applicable laws and regulations.

2.2 Construction.

(a) Subject to the terms of all applicable laws, regulations and permits, Casella shall have the right to design, locate, permit, construct and remove at the Landfill such buildings and fixed resources as it deems necessary for the operation of the Landfill, including, without limitation, garages, office

buildings, recycling facilities and other structures, fixtures, appurtenances, and improvements, provided that Casella's actions shall in no event impair or limit Casella's obligation to satisfy the capacity commitment to FJ under Section 2.8. The use of the Landfill shall be restricted to development and operation of a solid waste landfill, or other facilities providing for the disposal or recycling of solid waste or other management of solid waste or, with the prior written consent of the State which may be granted or withheld in the State's sole discretion, other uses that do not prohibit or impair the operation of a solid waste landfill of sufficient size, nature, scope and limitation as is required to satisfy Casella's capacity commitment to FJ under Section 2.8 during the term hereof. Casella shall be prohibited from constructing any facility or improvement at the Landfill that would prohibit or impair the construction and operation of a solid waste landfill of sufficient size, nature, scope and location as is required to satisfy Casella's capacity commitment to FJ under Section 2.8. Any capital improvements to or at the Landfill shall be and remain the property of the State upon termination of this Agreement without any compensation to Casella.

- (b) Subject to the issuance of all necessary State and local licenses permits and approvals, Casella shall construct a new sewer line to convey leachate to the Old Town Waste Water Treatment Plant on or before five years from the Effective Date.

2.3 Operation.

2.3.1 Casella shall have full control, both physical and managerial, of the

Landfill, subject in all instances to the terms and conditions of this Agreement.

2.3.2 Subject in all instances to the terms and conditions hereof and all applicable laws, regulations, licenses and permits, Casella shall be responsible for, and shall have sole authority over, the day-to-day operation of the Landfill, including weighing of waste pursuant to Section 2.4, testing of waste, preparation of waste for disposal, Landfill construction as provided in Section 2.2, establishment of Tipping Fees pursuant to Section 2.11, acceptance and disposal of Acceptable Waste, preparation and application of daily interim and final cover, construction of temporary roads and other temporary access, and installation and monitoring of groundwater wells. Notwithstanding the foregoing or anything to the contrary herein, Casella agrees to operate the Landfill gate and scale house in such manner, and on such terms so as to provide no price or entry discrimination or benefit (consistent with Section 2.11) in favor of its affiliated haulers or otherwise as to disadvantage haulers that are not Affiliates or who do not have business relations with Casella or its Affiliates.

2.3.3 Subject in all instances to the terms and provisions hereof and all applicable laws, regulations, licenses and permits, Casella shall be responsible for providing at its own cost and expense and shall have sole authority regarding:

- (a) all engineering and other services necessary for the design, permitting, construction and operation of the Landfill (with the exception of those construction services for those portions of the Landfill which have already been constructed); and
- (b) the employment of all personnel needed to operate the Landfill; and
- (c) all services incidental to the business of the Landfill, including security,

accounting, legal, fire prevention and pollution control.

2.3.4 Without limiting the foregoing, Casella shall have the right to detain and inspect the contents of all vehicles delivering waste to the Landfill. Casella shall have the right to refuse or reject any Excluded Waste in its sole discretion or, if not detected prior to entering the Landfill, and Casella becomes aware that Excluded Waste has been disposed of at the Landfill, Casella shall immediately notify MDEP and manage the treatment of such Excluded Waste as MDEP may require. In addition, Casella may proceed against the hauler and/or generator for removal and proper disposal costs and other costs incurred by Casella. Subject in all instances to its obligations under Section 2.8 and Subsection 2.3.2, Casella shall have the right to ban haulers from disposing at the Landfill until such time as the expenses for reimbursement for the removal of any such Excluded Waste are paid to Casella. Subject in all instances to its obligations under Section 2.8 and Subsection 2.3.2, Casella shall have the right to ban any and all haulers which violate any of the rules and policies it establishes for the Landfill. Casella shall not allow members of the general public access to the Landfill for the discharge of solid waste.

2.3.5 Casella shall have the right to operate the Landfill during hours of its selection in accordance with any relevant permits, approvals, licenses, orders or agreements, and shall not discriminate against haulers who do not have business relations with Casella or its Affiliates.

2.3.6 Casella shall not accept any Excluded Waste at the Landfill.

2.4 Weighing. In connection with Casella's operation of the Landfill hereunder, Casella shall weigh all vehicles containing waste to be delivered to the Landfill pursuant to this

Agreement. Casella shall utilize scales approved by the State to weigh all waste delivered to the Landfill. The State or its authorized representative shall have the right at the State's expense to test the accuracy of scales used by Casella in the performance of its obligations hereunder, provided that such tests are conducted at reasonable times and do not unreasonably interfere with Casella's operation of the scales or the Landfill.

2.5 Revenues. Subject in all instances to payment of all governmental taxes, fees and charges and without limiting its payment obligations hereunder, all revenue, income and other financial benefits generated by, at, or related to operation of, the Landfill during the Term, shall be collected by Casella and shall be the property of Casella.

2.6 Inspection. The State shall have the right to inspect the Landfill during reasonable business hours to confirm compliance with the provisions of this Agreement, that policies are in place to provide that only Acceptable Waste will be received at the Landfill, and that the Landfill is being operated in conformity with state and federal environmental laws and regulations and other applicable laws.

2.7 Maintenance Responsibilities. Casella shall be responsible for, and shall have the sole authority regarding, all necessary maintenance of the Landfill.

2.8 FJ Waste Disposal Capacity. Casella agrees to provide FJ with the following waste disposal capacity at the Landfill during the Term:

- (a) Casella will provide disposal capacity at the Landfill to FJ for all Mill Waste and all Biomass Ash (excluding for purposes of clarification and the avoidance of doubt, Lincoln's Biomass Ash) (collectively "FJ Waste"). Casella further hereby assumes FJ's and/or the State's responsibilities to provide for the disposal of Lincoln's Biomass Ash at the Facility under and in

accordance with the terms and provisions of the Lincoln Agreement.

(b) The Tipping Fees charged to FJ for disposal of FJ Waste will be fixed at the following levels:

(i) For the first 50,000 tons per year of FJ Waste, Tipping Fees will be fixed at a maximum of \$10 per ton for the first five (5) years of the Term. On the sixth anniversary of this Agreement, and thereafter on each anniversary of this Agreement throughout the Term, Tipping Fees shall be adjusted upward or downward annually by a percentage equal to the percentage change in the Consumer Price Index (U.S.-national) ("CPI") from the date of the immediately preceding anniversary of this Agreement through the then current anniversary of this Agreement. In no event shall the CPI adjustment be less than one percent (1%) per year or in excess of five percent (5%) per year.

(ii) For FJ Waste in excess of 50,000 tons per year, but less than 75,000 tons per year, Tipping Fees shall be fixed at a maximum of \$40.00 per ton for the first 5 years of the Term. On the sixth anniversary of this Agreement, and thereafter on each anniversary of the Agreement throughout the Term, the Tipping Fees shall be adjusted upward or downward annually by a percentage equal to the percentage change in the CPI from the immediately preceding anniversary of this Agreement through the then current anniversary of this Agreement. In no event shall the CPI adjustment be less than one percent (1%) per year or in excess of five percent (5%) per year.

- (iii) Tipping Fees for FJ Waste in excess of 75,000 tons per year will be assessed at the then prevailing market rate.

For purposes of this Section 2.8, reference to a year means the period of twelve (12) months extending from the Effective Date to the first anniversary thereof, or from one anniversary of the Effective Date of this Agreement to another, as applicable.

- (c) Casella shall provide for the disposal of up to six thousand (6,000) tons per year of Lincoln's Biomass Ash at the Landfill for four (4) years from the Effective Date at no cost, and thereafter shall provide for the disposal at the Landfill of Lincoln's Biomass Ash at the same pricing and on the same terms as for FJ Waste.

- (d) Casella shall provide FJ with a "Capacity Credit" for unused disposal capacity during the Term in the event FJ Waste disposed of at the Landfill is less than 50,000 tons in any year during which the Mill has operated its commercial pulping facility. The Capacity Credit will be at the rate of one (1) ton of future disposal at the Tipping Fee in effect for the first 50,000 tons of FJ Waste for the year in which the Capacity Credit is utilized by FJ. This Capacity Credit will be provided to FJ by allowing FJ to choose, at its option, one of the following alternatives:

- (i) During any year when FJ disposes of more than 50,000 tons of FJ Waste, apply any Capacity Credit accumulated during the preceding three (3) years to FJ Waste in excess of the first 50,000 tons disposed of that year ("Disposal Application"); or
- (ii) Payment in cash by Casella to FJ of an amount equal to the

monetary value of the Capacity Credit accumulated over the previous three (3) years and not applied to actual disposal under subsection (i) above. In determining the monetary value of the Capacity Credit, each ton of Capacity Credit shall be valued at the Tipping Fee per ton applicable during the year in which the Capacity Credit is cashed out (the "Cash Application"). Cash Application amounts shall be paid to FJ in cash within thirty (30) days following the date of exercise of the Cash Application option.

FJ may exercise its option to apply Capacity Credits through Disposal Application at any time during a year when the volume of FJ Waste disposal exceeds 50,000 tons. FJ may exercise its option to apply Capacity Credits through Cash Application at any time following the end of the year in which the Capacity Credit has been generated. FJ shall exercise its option by written notice to Casella with a copy to the State. In the event FJ has not provided written notice of its choice of option by the end of the third year following the year in which a Capacity Credit is earned, then FJ shall be deemed to have exercised its option to receive the Capacity Credit through Cash Application as of the last day of such year.

For purposes of calculation of the Capacity Credit, the 50,000 ton per year threshold shall be adjusted downward to account for any period in which the Old Town Mill is not operated for a period of fifty-three (53) or more days during any calendar year (a "Shut-Down Period"). The adjustment shall be a reduction in the 50,000 ton threshold by a per diem of 135 tons per day for each day the Old Town Mill is not operated in excess of the initial fifty-three (53) days in a calendar year.

(e) Notwithstanding anything to the contrary herein, if, despite the best efforts of

Casella in preparing, amending, submitting, resubmitting and prosecuting the same, the Expansion Permit does not issue as a direct result of a material change in law, made after the date hereof, that is generally applicable to landfills in the State of Maine and that by its terms prohibits the expansion and/or permitting of landfills for a period of more than two consecutive years, and if as a result thereof disposal capacity at the Landfill is thereby limited to the 10,000,000 cubic yards available under the Existing Permit and, when issued, the License Amendment (a "Capacity Limiting Event"), then (i) Casella's obligation to provide disposal capacity for FJ Waste under subsections (a), (b) and (d) above shall be limited to a period of fifteen (15) years unless and until such law is repealed (in which case, if Casella or any of its Affiliates is still the operator at the Landfill, its disposal capacity obligation shall be reinstated for the balance of this Agreement) ("Reduced Capacity Commitment"); and (ii) FJ shall, subject to the provisions of this Subsection 2.8(e), forfeit its disposal capacity (including any claim for Capacity Credits and Cash Application) in excess of the Reduced Capacity Commitment (that is, disposal capacity otherwise available to FJ hereunder on and after the fifteenth (15th) anniversary hereof) to the extent necessary to allow Casella to operate the Landfill at a level of five hundred thousand (500,000) tons of waste disposal per year through the twentieth (20th) anniversary of the Effective Date hereof.

Casella agrees that regardless of the occurrence of a Capacity Limiting Event,

it shall be obligated to accept the FJ Waste at the Landfill, at the price and on the terms specified herein, for a period of at least fifteen (15) years and thereafter until the disposal capacity at the Landfill is exhausted. Upon exhaustion of the disposal capacity at the Landfill as aforesaid, Casella will make available to FJ disposal capacity for FJ Waste for a price and on the terms specified above at any other landfill in the State of Maine owned and/or operated by Casella or any Affiliate that is licensed to accept FJ Waste for up to an additional fifteen (15) years (for a total commitment of thirty (30) years) or such earlier time as disposal capacity at such landfill(s) is exhausted; provided, however, that FJ shall pay any and all costs of transporting FJ Waste to such site.

In the event of a Capacity Limiting Event and if Casella or any Affiliate is not able to satisfy the thirty (30) year commitment to FJ (or its successors or assigns) as aforesaid at the Landfill or any alternative landfills in the State of Maine, the State will make available to FJ disposal capacity for FJ Waste for the price and on the terms specified above at any other landfill in the State of Maine owned and/or operated by the State that is licensed to accept FJ Waste until the first to occur of the thirtieth (30th) anniversary of the date hereof or when disposal capacity at such landfill(s) for FJ Waste has been exhausted; provided, however, that FJ shall pay any and all costs of transporting FJ Waste to such site.

The parties and FJ intend the provisions of this subsection (e) to be ~~construed~~

narrowly and to apply only to the specific and generally applicable laws enacted after the Effective Date that by their terms prohibit the expansion of landfills and thereby the issuance of the Expansion Permit and leave Casella only with the disposal capacity at the Landfill provided under the Existing Permit and License Amendment . For purposes of clarification and illustration, a moratorium prohibiting the licensing of an expansion of landfills in the State of Maine for in excess of two (2) years represents the type of change in law triggering the application of this subsection (e), while a change in law that modifies operating requirements for landfills, the qualifications or requirements for operators, the expense of operating landfills or other requirements associated with the operation, management or permitting of landfills would not excuse performance of Casella's obligations under this Agreement.

- (f) Casella's commitment to provide disposal capacity described in this Section 2.8 shall apply to FJ, its successors and assigns, including without limiting the generality of the foregoing any subsequent owner, lessor or operator of the Old Town Mill.
- (g) The foregoing Tipping Fees are exclusive of any fees, charges, levies or assessments ("Waste Disposal Fees") which may be imposed by the State after the date hereof for the disposal of waste at landfills. The parties acknowledge that Section 5.2 of the Acquisition Agreement exempts FJ from Waste Disposal Fees. However, in the event FJ Waste is subjected to Waste Disposal Fees notwithstanding the Section 5.2 exemption, (i) Casella shall not

be obligated to pay any such Waste Disposal Fees, and (ii) FJ shall have exclusive liability for such Waste Disposal Fees.

2.9 Other Tipping Fees on FJ Waste. Other than as specifically provided in Section 2.8 hereof, Casella will not charge or assess any Tipping Fees on FJ Waste, or Lincoln's Biomass Ash, whether related to disposal in existing built Landfill space or space constructed in the future.

2.10 Maintenance of Capacity for FJ Waste. Casella agrees throughout the Term that it will maintain fully permitted/licensed, fully constructed, unused capacity at the Landfill in the amount sufficient to satisfy the obligation of the State to FJ regarding disposal capacity under the Acquisition Agreement and Casella's obligations to FJ and with respect to Lincoln Biomass Ash under Section 2.8 hereof, including without limitation at all times after October 1, 2004 (which date shall be extended to the final resolution of any appeals with respect to the License Amendment), one million five hundred thousand (1,500,000) tons of fully constructed available capacity at the Landfill dedicated to and reserved for FJ Waste minus fifty thousand (50,000) tons on each anniversary of the Effective Date. This capacity shall be reserved by Casella solely to satisfy its obligations under Section 2.8 with respect to FJ Waste and Lincoln Biomass Ash and the corresponding obligation of the State to FJ under the Acquisition Agreement. Upon request from the State, executive officers of Casella shall periodically certify to the State Casella's compliance with this subsection and the State may inspect the Landfill to confirm the same. Casella's agreement to satisfy the State's obligation to FJ as per Subsection 2.8 and the Acquisition Agreement represent a material condition of the State's agreement to enter into this Agreement.

2.11 Tipping Fees on Non-FJ Waste.

(a) Casella shall charge Tipping Fees for disposal of waste that is not FJ Waste or Lincoln's Biomass Ash according to the following schedule:

- Certain Special Wastes, including without limitation bottom ash / fly from municipal solid waste incinerators and sandblast grit. \$48.00 / Ton
- Oversized, bulky waste from municipal solid waste incinerators, that are unacceptable at municipal solid waste incinerators. \$58.00 / Ton
- Front-end residue from municipal solid waste incinerators. \$48.00 / Ton
- Municipal solid waste, including municipal solid waste designated as "by pass" on an infrequent basis. \$58.00 / Ton
- Construction and demolition debris, free of putrescible waste. \$58.00 / Ton

Subject in all instances to Casella's obligations under Section 2.3.2 hereof, the foregoing Tipping Fees are "not to exceed" fees (it being understood that Casella may, in its sole discretion charge lower fees), are exclusive of any Tipping Fees which may be imposed by the State under laws enacted or regulations promulgated after the Effective Date, and shall be subject to annual adjustment in accordance with changes in the CPI and changes in law which materially affect the cost of landfill design, construction, operations or closure. The fee schedule above is inclusive

of all charges, including the Host Community Benefit Package costs referred to in Casella's response to the RFP.

(b) The State reserves the right to direct solid waste to the Landfill, as may be required by changes in State law or in MDEP rules and regulations. The Tipping Fees established by Casella for the waste stream most closely matching these directed wastes shall apply. Prior to redirection of these wastes, the State shall notify Casella as to the reason for the redirection and an estimate of the expected volume/tonnage of wastes. In no event shall the State's exercise of its rights under this subsection restrict or impair the capacity reserved for FJ under Section 2.8.

2.12 Costs. Casella shall bear all costs, expenses, and liabilities associated with the operation and maintenance of the Landfill and the fulfillment of Casella's other responsibilities hereunder during the term of this Agreement including, without limitation, any liabilities for claims of employees performing activities under this Agreement that arise out of any provision of the workers' compensation law or otherwise.

2.13 Waste Management Hierarchy. Casella agrees to use its best efforts to achieve the following goals:

- (a) to operate the Landfill following the State's solid waste management hierarchy (reduce, reuse, recycle, compost, incinerate, landfill);
- (b) to implement the Public/Private Partnership agreement with the Municipal Review Committee (MRC);
- (c) to draw upon Casella's FCR Division to analyze and develop the best collection, processing and marketing options for all MRC member

communities;

- (d) to implement Green Mountain Glass's technology for recovery and recycling of all color glass containers;
- (e) to work with the MRC to analyze and help develop organics recycling programs that enhance or expand current practices of MRC communities;
- (f) to work with the MRC members in developing program to collect, store and process (where applicable) Universal Wastes and mercury containing products;
- (g) to work with MRC members in developing programs to identify, collect and properly dispose of household hazardous wastes;
- (h) to work with the MRC and appropriate research facilities to assess the viability of using Maine developed ablation technology as a source of air emission control for biomass boilers combusting up to 50% clean C&D wood as a fuel source, such as being proposed by GP;
- (i) to expand C&D processing capability of Casella and its Affiliates to achieve an increase in C&D waste volume requiring disposal with a focus on recovering the clean C&D wood waste that would assist in meeting the biomass fuel commitment to FJ. Other recyclable materials would be separated and utilized in other applications, including aggregate and metals.

2.14 Real and Personal Property Taxes. Casella shall be responsible for the payment of all real and personal property taxes with respect to the Landfill during the Term.

SECTION 3 CONTRACTS WITH THIRD PARTIES

3.1

- (a) During the Term hereof, but after the issuance of the License Amendment,

Casella shall, subject to the terms and conditions hereof, have the exclusive right and authority to negotiate and enter into various contracts regarding the Landfill. These contracts may include, among others, (i) long-term contracts for the disposal of waste at the Landfill, (ii) a long-term contract for the disposal of Leachate generated at the Landfill, (iii) long-term contracts for the disposal of local municipal solid waste at the Landfill, and (iv) long-term host community agreement with the City of Old Town, all on terms and conditions reasonably acceptable to Casella. Casella shall provide the State with notice of and adequate time to review and comment on such contracts and agreements prior to their execution. These contracts will not bind State without the State's prior written consent, and shall be expressly subject to the Unwind Provisions described in Section 5.3 (a).

- (b) Casella agrees to assume the leachate trucking agreement between FJ and Thornton's Construction and the Landfill operations agreement between FJ and J.A. Buchanan, or, if such contracts cannot be assumed without the consent of the other contract party, to use its best efforts to secure such consents. If Casella is unable to secure such consents, Casella shall use its best efforts to negotiate the termination of such agreements with no impact on FJ or the State. Casella shall further be solely responsible for any liabilities associated with assignment or termination of such contracts, including any contract buyout obligations or termination fees or damages arising from the termination or breach thereof, and hereby indemnifies and holds the State and FJ harmless for any liabilities arising from or relating to the assumption or

termination of such contracts.

SECTION 4 PERMITTING MODIFICATIONS AND COOPERATION

4.1 Cooperation. The State agrees (a) to cooperate reasonably with Casella in obtaining and, where applicable, in maintaining in the State's name (i) the Existing Permit and License Amendment, and (ii) all permits, licenses, statutory amendments and legislation, approvals and authorizations reasonably requested by Casella and agreed to by the State for the operation of the Landfill in accordance with the terms hereof, including without limitation the Expansion Permit, but at no cost or expense to the State and (b) to provide reasonable assistance to Casella but at no cost to the State, in dealing with all federal, state and local agencies to obtain the issuance, modification, transfer or amendment of all permits reasonably requested by Casella and agreed to by the State. The parties shall diligently pursue in good faith the acquisition of all such permits, licenses, approvals and authorizations, and any modifications or amendments thereto, for the Landfill as contemplated by and subject to the terms of this Agreement. The parties, however, recognize that the MDEP is an independent permitting authority before which the State must appear as any other person. Therefore, the parties acknowledge that any commitment of the State to cooperate with and seek a governmental approval is not a guaranty of issuance of such approval or the terms of such approval.

4.2 Permit Responsibility.

(a) Casella shall use its best and most diligent efforts to maintain in full force and effect the Existing Permit and, when issued, License Amendment. Casella shall not take any action or suffer any omission that causes, or provides a basis for, the revocation, suspension or restriction of the Existing Permit and, when issued, License Amendment, or limit or restrict Casella's or the State's ability to operate the Landfill.

(b) Casella shall use its best and most diligent efforts to, at its own cost and expense, apply for, seek and maintain in full force and effect (i) the License Amendment, (ii) the Expansion Permit, and (iii) such other federal, state and local permits, licenses and authorizations as otherwise required in connection with Casella's obligations under this Agreement, including, without limitation, any required zoning, subdivision and site plan approval. Without limiting the generality of the foregoing, Casella shall prepare on or before the third anniversary of the Effective Date an application for the Expansion Permit and shall conduct geologic and engineering studies and bear the cost of any consulting services related to all such permit/license and approval efforts. Subject to the foregoing, Casella shall determine the timing of the submission and the content of any such applications to the appropriate regulatory entities. Casella currently contemplates an application for the Expansion Permit for ten million (10,000,000) cubic yards of additional capacity, but, following exhaustion of all appeals of any approval of the Expansion Permit authorizing a lesser disposal capacity, Casella hereby agrees to accept any such approval so issued in connection with any application for the Expansion Permit, provided that, taken together, the initial application so submitted by Casella for the Expansion Permit shall provide that the Existing Permit, the License Amendment and the Expansion Permit will collectively provide sufficient capacity to dispose of at least 500,000 tons of waste per year over twenty (20) years of operation. If issued, Casella shall not take any action or suffer any omission that causes, or provides a basis for the revocation, suspension or

restriction of the Expansion Permit, or limit or restrict Casella's or the State's ability to operate the Landfill.

SECTION 5 PAYMENT AND BONDS; UNWIND PROVISIONS

5.1 Payments to the State. Contemporaneously with the execution of this Agreement, Casella shall pay to the State, and the State directs Casella to pay FJ, a total of Twenty-six Million Dollars (\$26,000,000) as follows: (a) \$12,500,000 in cash or by certified or bank cashier's check or by wire transfer to an account designated by the State; (b) \$12,500,000 by issuance of a Letter of Credit in such amount; and (c) \$1,000,000 by issuance of a Letter of Credit in such amount to the Escrow Agent for deposit into the Improvement Fund (as defined in the Acquisition Agreement). The aforesaid Letters of Credit may be fully drawn by FJ and the Escrow Agent, as applicable, in the event that, within five (5) business days following the receipt of the License Amendment that is materially consistent with the License Application, Casella fails to pay the amounts of the Letters of Credit to FJ and the Escrow Agent, respectively, in cash or by certified or bank cashier's check or by wire transfer. In the event that Casella pays the amounts of the Letters of Credit to the respective beneficiaries as aforesaid, the State shall cause the Letters of Credit to be immediately revoked and returned to Casella. There shall be no requirement that any appeal period expire or that any appeal of the issuance of the License Amendment be resolved prior to drawing under the Letters of Credit.

5.2 Bonds.

- (a) Casella's obligation to perform its obligations hereunder shall be secured by a Four Million Dollar (\$4,000,000) payment and performance bond in the form attached hereto as Exhibit C, which shall be delivered within five (5) business days from the date hereof.

(b) On the Effective Date Casella shall post, and thereafter shall maintain, closing and post-closing bonds in substitution for those provided by FJ in such amounts and on such terms as MDEP and federal law may require. Copies of the proposed closing and post-closing bonds shall be provided to the State within ten (10) business days of the Effective Date.

5.3 (a) Unwind Provisions. In the event that the License Amendment is (i) not received by June 30, 2004, or (ii) received by June 30, 2004 but is materially inconsistent with the License Application, or (iii) received by June 30, 2004 but successfully challenged on appeal such that a final judgment or court order either invalidates the License Amendment or results in the License Amendment being materially inconsistent with the License Application, Casella shall have the right to terminate this Agreement and rescind the transaction, at a simultaneous closing complying with the terms of Section 2.10 of the Acquisition Agreement. The closing shall occur within thirty (30) days of the exercise by Casella of its right to terminate and rescind hereunder, or such later date when the parties obtain MDEP authority to transfer the Existing Permit. At the closing, FJ shall promptly refund the \$12,500,000 paid by Casella pursuant to Section 5.1, and FJ shall return or cause to be returned the cash or the Letters of Credit (as the case may be) described in Section 5.1. Appropriate provision shall be made for the closure and post-closure bonds identified in Section 5.2(b) in accordance with applicable law, and Casella shall undertake any remedial action as a result of its activities hereunder required by applicable regulatory authorities. Casella agrees to cooperate with the State and FJ in connection with the reconveyance of the Landfill described in Section 2.10 of the Acquisition Agreement, including filing necessary applications for transfer of all federal, state and local permits and approvals for operation of the Landfill as a generator-owned landfill (provided that FJ shall have the option to

assume the License Amendment, if any, and to the extent allowable under applicable law and so long as Casella and the State are released from any liability for post-assignment activities), and undertaking all other actions required to unwind the transaction described in the Acquisition Agreement and place the parties as nearly as reasonably possible in the same positions they were in prior to said transaction, with the exception that each party shall be responsible for its own out-of-pocket costs associated with said transaction and effecting the foregoing unwind provisions. Casella's right to terminate this Agreement and rescind the transaction hereunder must be exercised within thirty (30) days after the last to occur of the three events described in the first sentence of this Section 5.3(a). Any dispute regarding rights or obligations under this Section 5.3 shall be resolved by binding arbitration in accordance with the Commercial Arbitration Rules of the American Arbitration Association, provided that the arbitrators shall be directed to make an arbitration award within ninety (90) days, and that Casella shall continue to operate the Landfill pursuant to the terms hereof until the issuance of a final arbitration award.

(b) The State shall have no liability or obligation to Casella with respect to the repayment of the cash or return of the Letters of Credit as described in Section 5.3(a), and Casella agrees to look solely to FJ for the repayment of such cash and return of the Letters of Credit and hereby waives and releases the State of any liability arising thereunder or relating thereto, howsoever arising.

SECTION 6 EQUIPMENT

Casella shall be responsible for all operating, repair and maintenance costs associated with any equipment used in the operation of the Landfill, and shall maintain and replace such equipment as it deems necessary.

SECTION 7 COMPLIANCE WITH LAW

Except as otherwise provided in this Agreement, and subject to Section 8 hereof, Casella shall be responsible for all costs and expenses related to Landfill regulatory compliance. Notwithstanding the foregoing, Casella shall have the right, at its own cost and expense, to contest or review by legal or administrative proceedings the validity or legality of any law, order, ordinance, rule, regulation, direction or certificate of occupancy, and, to the extent permitted by law, during such contest Casella may refrain from complying therewith, subject, however, to the terms and conditions hereof.

SECTION 8 INDEMNIFICATION

8.1 Indemnification.

(a) Casella will indemnify, defend, and hold the State and FJ, their respective Affiliates and their respective officers, directors, employees, agents and Affiliates harmless from and against any and all Damages that arise from or related to any past, current or future design, construction, improvement, ownership or operation of the Landfill or any other activities associated therewith, or any breach of Casella's obligations under this Agreement, including without limiting the generality of the foregoing, any and all Damages resulting from:

(i) groundwater or surface water contamination caused by the Landfill, whether or not such liability results from operation of the

Landfill by FJ or any third parties;

(ii) on-Premises or off-Premises contamination;

(iii) violation of any Environmental Law at or in connection with the Landfill or Premises;

(iv) any fine, penalty, judgment, award, or settlement of any legal or administrative proceeding relating in any way to Environmental Matters relating to the Landfill or the Premises;

(v) any compliance, corrective or remedial measure required under any Environmental Law or other requirement including any clean-up, removal, containment or other remediation or response actions associated with the Landfill or the Premises; and

(vi) any and all Environmental Matters.

8.2 Limitations. Anything in this Section 8 to the contrary notwithstanding, in the event that this Agreement is terminated pursuant to Section 15 below, Casella's indemnity obligations hereunder shall survive termination hereof and the unwind of the transaction described in Section 5.3 (a) but shall be limited to Environmental Matters and other Damages arising from or relating to breaches, conditions, events, transactions or occurrences which occurred at any time prior to the termination of this Agreement or the unwind of the transaction but regardless of when the same shall be discovered or become manifest. Furthermore, Casella's indemnity obligations hereunder shall not extend to Damages arising from breaches of FJ's representations and warranties under Article 3 of the Acquisition Agreement.

SECTION 9 SUBCONTRACTING

In the performance of its obligations hereunder, Casella shall have the unrestricted right to subcontract those services that it deems appropriate in its sole discretion, including, without

limitation, construction, engineering, design, permitting, operation, maintenance, management and administration; provided, that Casella shall remain fully responsible for the performance of any and all obligations subcontracted hereunder.

SECTION 10 RECORDS, AUDITS AND CONFIDENTIALITY

10.1 Annual Report; Inspection Rights. In addition to other reports that Casella may be required to maintain under applicable law, Casella shall prepare and provide to the State an annual report summarizing in reasonable detail the business and technical operation of the Landfill during the preceding calendar year or portion thereof and such other records and information as the State may reasonably require, including certifications regarding the as built and available disposal capacity reserved for FJ (or its successor or assign). Casella shall maintain accurate records, books and data with respect to the amount of all Acceptable Waste disposed of at the Landfill during any period that Casella is the operator of the Landfill. The State shall have the right at reasonable times and upon not less than three (3) business days prior notice to inspect and examine Casella's books and records related to the operation of the Landfill to confirm Casella's compliance with this Agreement and applicable permits and environmental laws and regulations. The State shall further have the right to visit and enter upon the Landfill to confirm, among other matters, satisfaction by Casella of its obligations under Sections 2.8 and 2.10 hereof. The parties shall cooperate in good faith to develop a list of the books, records and data which shall be available for such inspection and examination by the State. Casella shall maintain any such books, records or other data for so long as Casella's indemnity obligations under Section 8 shall continue in effect. Upon termination of this Agreement, the State shall have the right to review and copy, and shall have a permanent, irrevocable, exclusive license to make use of all of Casella's technical information, data, studies, engineering, operational records and other materials and information of any nature related to the Landfill and/or the design,

construction, licensing or operation of the Landfill, including without limitation, all testing results, design materials, engineering studies and other engineering work, all applications for Governmental Approvals related to the Landfill and any and all such other data and materials as relate in any way to the premises and/or the development of the Landfill.

SECTION 11 NO JOINT VENTURE

Without limiting Casella's obligations hereunder (including the obligation to satisfy the State's obligation to FJ under the Acquisition Agreement), the parties acknowledge and agree that nothing contained in this Agreement is intended to nor shall be construed to create a partnership or joint venture between Casella and the State or make Casella and the State partners or joint venturers, or make either party in any way liable or otherwise responsible for the debts, actions, obligations or losses of the other party.

SECTION 12 SPECIAL PROVISIONS CONCERNING THE STATE

12.1 Appropriations. The State's obligations and liabilities hereunder are subject to available budgetary appropriations and shall not create any obligation of payment on behalf of the State in excess of such appropriations and other funds and assets available to the State for the performance of its obligations. Notwithstanding any other provision of this Agreement, if the State does not receive sufficient funds to fund this Agreement and the State's obligations hereunder and other obligations of the State, if funds are deappropriated, or if the State does not receive legal authority to expend funds from the Maine State Legislature or Maine courts, then the State is not obligated to make any payment otherwise due under this Agreement. The SPO hereby represents that it reasonably believes that funds will be made available through appropriation by the Legislature to make all payments required hereunder and to fund all obligations of performance hereunder by the State. Without limiting the foregoing, the SPO hereby covenants and agrees that it will exercise all reasonable efforts to obtain, maintain and

properly request and pursue appropriation of funds and other revenue sources from which all payments to be made hereunder shall be satisfied, and through which all obligations of performance will be funded, including, without limitation, making provisions for such payments in any and all budgets submitted for the purposes of obtaining appropriations and/or funding, using all reasonable efforts to have such portion of the budget approved. Without limiting the foregoing, it is the State's intent to make all payments required hereunder and perform all of its obligations hereunder if funds are legally available therefor.

12.2 No Waiver of Sovereign Immunity. Casella acknowledges and agrees that the Legislative Resolve authorizing this Agreement specifically provides that nothing in this Agreement, or the execution and delivery of this Agreement, or the agreement by the State to perform its obligations hereunder constitutes or is intended to constitute abrogation of the sovereign immunity of the State with respect to each and every term of this Agreement. In this regard, the State expressly reserves its right of sovereign immunity with respect to its obligations hereunder, and the execution and delivery of this Agreement by the State, and its undertakings herein in no way waive, partially waive, imply a waiver, limit or restrict the State's unconditional right to exercise its right of, or to assert sovereign immunity with respect to any matter, term or issue arising under or relating to this Agreement.

SECTION 13 CERTAIN REPRESENTATIONS, WARRANTIES AND COVENANTS OF CASELLA

Casella represents and warrants to the State as follows:

13.1 Casella is a corporation duly organized and existing under the laws of the State of Delaware with the full legal right, power and authority to enter into and fully and timely perform its obligations under this Agreement.

13.2 Casella has duly authorized, executed and delivered this Agreement, and this

Agreement constitutes a legal, valid and binding obligation, enforceable against Casella in accordance with its terms, subject to bankruptcy, insolvency and other laws affecting creditors' rights generally.

13.3 Neither the execution or delivery by Casella of this Agreement nor the performance by Casella of its obligations in connection with the transactions contemplated hereby or Casella's fulfillment of the terms and conditions hereof conflicts with, violates or results in a breach of any law or governmental regulation applicable to Casella or materially conflicts with, violates or results in a breach of, any term or condition of any order, judgment or decree or any agreement or instrument to which Casella is a party or by which Casella or any of its properties or assets is bound, or otherwise constitutes a default thereunder.

13.4 No approval, authorization, order, consent, declaration, registration or filing with any federal, state or local governmental authority or agency is required for the valid execution and delivery by Casella of this Agreement or the performance by Casella of its obligations hereunder.

13.5 Casella covenants and agrees to operate Landfill and otherwise conduct all aspects of its business at the Landfill in compliance with all applicable laws and regulations and permits. Casella further agrees to maintain, and not to take any action or fail to take any action that would cause denial or revocation of the Existing Permit or the License Amendment, or, if issued, the Expansion Permit or any other license or permit issued during the Term relating to the Landfill. Casella further agrees to assume responsibility for all closure and post-closure aspects of the Landfill arising during the Term and to close those portions of the Landfill which reach final grade in accordance with approved plans and specifications.

13.6 Casella agrees to make all contributions to the State of Maine's Solid Waste

Management Fund (or any successor fund) or other payments required under applicable laws and regulations as if the Landfill were a commercial landfill under applicable law.

13.7 Casella shall maintain in full force and effect throughout the Term and for one year following termination, the \$4,000,000 payment and performance bond in the form attached hereto as Exhibit C during the term hereof and the closure and post-closure bonds required hereunder upon closure of the Landfill with financially sound and reputable sureties and/or insurers qualified to issue sureties and bonds in the State, reasonably acceptable to the State. The State acknowledges that Evergreen National Indemnity Company is a financially sound and reputable surety as of the date hereof.

13.8 Casella agrees that all improvements to the Landfill of every nature and type shall be the property of and ownership of the same shall vest in the State on termination of this Agreement.

13.9 Throughout the term hereof, Casella agrees to participate in, and support to the best of its ability, the joint citizen advisory committee, comprised of representatives from the City of Old Town and the Town of Alton, as created by the Legislative Resolve permitting the State Planning Office to purchase the Landfill and cause it to be operated, all at no cost or expense to the State.

13.10 Casella shall perform its obligations under the C&D Fuel Agreement and shall not amend the same without the prior written consent of the State, which consent will not be unreasonably withheld

SECTION 14 SURVIVAL OF REPRESENTATIONS, WARRANTIES AND COVENANTS

All representations and warranties and covenants made herein or in any schedules attached hereto, or in any instruments or documents delivered by or on behalf of either party

pursuant to this Agreement, shall remain in effect during the Term and shall survive termination hereof to the extent specifically contemplated herein. The indemnity commitment described in Section 8 hereof shall continue until the expiration of the longest of the statutes of limitations applicable to Environmental Matters subject to the indemnification thereunder.

SECTION 15 TERMINATION

15.1 Events. This Agreement may be terminated at any time:

- (a) By mutual written agreement of the parties;
- (b) By either party if, prior to the Effective Date, litigation is filed or threatened, or any governmental authority institutes an action or investigation, intended to prohibit or prevent consummation of any of the transactions contemplated hereby or by the Acquisition Agreement, or any governmental authority does anything by the Effective Date which in a party's reasonable commercial judgment renders such consummation imprudent.
- (c) By Casella if:
 - (i) Casella exercises its right to terminate under Section 5.3, subject to the limitations and qualifications set forth in said Section 5.3.
 - (ii) an Expansion Permit has not issued as a result of a Capacity Limiting Event and the licensed and permitted capacity of the Landfill (in excess of the capacity reserved for FJ Waste pursuant to Section 2.8) has been exhausted, provided that Casella cannot exercise its right to terminate under this clause (i) until on or after the fifteenth (15th) anniversary hereof.
 - (iii) An Event of Default by the State occurs as set forth in Section 16, which default remains uncured beyond any applicable period for cure

thereof;

Without in any respect limiting the foregoing or affecting other terms and provisions hereof, and solely for purposes of illustration, Casella shall not have the right to terminate this Agreement in the event:

(A) The application for the Expansion Permit is denied under State law in effect as of the date of this Agreement;

(B) The construction, engineering, design, permitting, licensing, operation, maintenance, management and administration of the Landfill is more expensive under the terms of the Expansion Permit as granted than as anticipated by Casella;

(C) The application for the Expansion Permit is granted but restricted such that the new capacity, when added to the then permitted capacity, is insufficient to allow Casella to dispose of 500,000 tons of waste a year for a period of twenty (20) years;

(D) Casella is unable or fails to comply with the terms and conditions under which the Landfill is permitted and licensed;

(E) There is a change in Federal or State law after the Effective Date of this Agreement that increases the cost of the construction, engineering, design, permitting, licensing, operation, maintenance, management and administration of the Landfill; or

(F) The Expansion Permit is revoked or modified.

(d) By the State if:

(i) an Event of Default by Casella occurs as defined in Section 16.1,

which default remains uncured beyond any applicable period for cure thereof; or

(ii) any of the conditions to closing in the Acquisition Agreement for either the State's or FJ's benefit shall not have been satisfied or waived and such Agreement shall have been terminated in accordance with terms thereof; or

(iii) any representation or warranty made by Casella hereunder is not true, accurate and complete in any material respect when made or becomes untrue, inaccurate or incomplete in any material respect during Term; or

(iv) FJ exercises its right of reverter under Article 10 of the Acquisition Agreement and the underlying breach is not cured within the applicable cure period or Casella breaches its obligations under the C&D Fuel Agreement and the underlying breach is not cured within the applicable cure period; or

(v) if the State reasonably determines that the issuer of the payment and performance bond attached hereto as Exhibit C is not financially sound or reputable, notifies Casella of the same and Casella fails to secure an alternative bond in form and content reasonably satisfactory to the State issued by a financially sound and reputable surety reasonably acceptable to the State and licensed to issue surety bonds and/or insurance policies within ninety (90) days.

15.2 Effects of Termination.

- (a) If this Agreement is terminated pursuant to Subsections 15.1(a) or (b), this Agreement shall terminate and neither party shall have any further or continuing obligation hereunder.
- (b) If the State terminates this Agreement pursuant to subsection 15.1(d), in addition to whatever other rights or remedies it may have (none of which are waived), the State (a) may remove Casella and its agents from, and on demand Casella and its agents shall, vacate the Landfill, and (b) and/or make demand under the payment and performance bond.
- (c) Upon termination of this Agreement for any reason, the State shall own all fixed capital improvements to the Landfill and all other buildings, fixtures and other improvements without any obligation to pay Casella.
- (d) Termination of this Agreement for any reason shall not relieve a party of its obligations arising prior to the termination date or those obligations that survive termination, including certain of Casella payment obligations under Section 5.2 and Casella's obligations under Section 8.

SECTION 16 DEFAULT AND REMEDIES

16.1 Notice/Cure. If either party fails to perform a material obligation under this Agreement, then the other party shall give notice of such alleged material failure, describing the alleged material failure and the action required to cure such material failure, if any. If the party receiving such notice fails to cure any such material failure to perform pursuant to Section 17 hereof, then an "Event of Default" shall be deemed to have occurred and the other party shall have the rights and remedies set forth in subsection 15.1 above and 16.2 below.

16.2 Remedies. If any Event of Default occurs (as defined in subsection 16.1 above), then (i) this Agreement may be terminated by the non-defaulting party by giving notice of

termination to the defaulting party, and/or (ii) the non-defaulting party shall have the right to take whatever action at law or in equity it deems necessary or desirable to collect any amounts then due or thereafter to become due under this Agreement or to enforce performance of any covenant or obligation of the defaulting party under this Agreement, including as to the State the right to make demand on the payment and performance bond securing Casella's obligations under this Agreement.

SECTION 17 RIGHT TO CURE BREACH

Upon its receipt of a notice of alleged material failure to perform a material obligation under this Agreement issued under subsection 16.1 hereof, the receiving party shall either:

17.1 Cure the material failure to perform within thirty (30) days of receipt of the written notice from the other party, provided that there shall be no cure period for a breach by Casella of its obligations under section 13.7 and 21.2; or

17.2 Continuously demonstrate, for those defaults for which cure periods exist, within such thirty (30) day cure period that it is actively pursuing a course of action which reasonably can be expected to lead to a cure of the material failure to perform (and the cure period shall be extended for so long as the curing party is actively and continuously pursuing such course of action) within a commercially reasonable period of time not to exceed ninety (90) days; provided, however, that with respect to a default by Casella under Section 2.10, the aforesaid period of time shall be extended to one (1) year on the condition that Casella has established and is maintaining a capital improvement plan designed to bring Casella into compliance with and maintain Casella's compliance with the requirements of Section 2.10; alternatively, Casella shall have the right to cure such a default by posting a performance bond in the amount of the insufficient capacity, calculated at the rate of \$2.90 per ton; provided further that, in the event of the failure of either party to pay the other party any amount required to be paid hereunder when

due, cure shall consist of payment in full which shall be made within ten (10) business days of written demand from the party entitled to the payment, together with interest accruing from the date the payment was due at a per annum rate equal to the Prime Rate, unless said sums are being contested.

SECTION 18 NON-BINDING MEDIATION

18.1 Non-Binding Mediation. The parties agree that in the event of any dispute, controversy or claim arising under or relating to this Agreement or any alleged breach thereof, other than a breach by Casella of its payment obligations or its obligations under Sections 13.7, 21.1 or 21.2 hereof, the parties shall attempt to come to a reasonable settlement of any dispute (i) by having their authorized representatives attempt to negotiate a resolution of the dispute for a period of thirty (30) days, and, if not resolved by the authorized representatives (ii) by having other more senior members of each party's management, who have no previous involvement in the dispute, but who have the authority to resolve the dispute, attempt to negotiate a resolution of the dispute for an additional fifteen (15) days.

18.2 Waiver of Jury Trial. THE STATE AND CASELLA AGREE THAT NEITHER OF THEM NOR ANY ASSIGNEE OR SUCCESSOR SHALL (A) SEEK A JURY TRIAL IN ANY LAWSUIT, PROCEEDING, COUNTERCLAIM OR ACTION ARISING UNDER OR RELATING TO THIS AGREEMENT, OR (B) SEEK TO CONSOLIDATE ANY SUCH ACTION WITH ANY OTHER ACTION IN WHICH A JURY TRIAL CANNOT BE OR HAS NOT BEEN WAIVED. THE PROVISIONS OF THIS PARAGRAPH HAVE BEEN FULLY DISCUSSED BY THE STATE AND CASELLA, AND THESE PROVISIONS SHALL BE SUBJECT TO NO EXCEPTIONS. NEITHER THE STATE NOR CASELLA HAS AGREED WITH OR REPRESENTED TO THE OTHER THAT THE PROVISIONS OF THIS SECTION WILL NOT BE FULLY ENFORCED IN ALL INSTANCES.

18.3 Consent to Jurisdiction. The parties and their assigns submit to the jurisdiction of any state or federal court located in the State of Maine in connection with any proceeding or action arising from or relating to this Agreement or the agreements referred to herein. The parties consent to the jurisdiction and venue of any such court and waive any argument that venue in such forums is not convenient. In the event a party commences any action in another jurisdiction or venue under any tort or contract theory arising directly or indirectly from the relationship created by this Agreement, the other party at its option shall be entitled to have the case transferred to one of the jurisdictions and venues above-described, or if such transfer cannot be accomplished under applicable law, to have such case dismissed without prejudice.

SECTION 19 FORCE MAJEURE

If either party hereto is rendered unable, in whole or in part, to perform any of its obligations under this Agreement (other than an obligation to pay money when due) as a result of the occurrence of an event of Force Majeure, then the obligations of the affected party shall be suspended and its non-performance thereof excused during the continuation of the event of Force Majeure. At any time that a party intends to rely upon an event of Force Majeure to suspend its obligations or excuse its non-performance as provided in this Section 19, the affected parties shall notify the other party as soon as reasonably practicable (but in no event later than 72 hours following such event) describing in reasonable detail the circumstances of the event of Force Majeure and its ongoing efforts to mitigate the effects of such event of Force Majeure. Notice shall again be given when the effect of the event of Force Majeure has ceased. As a condition of invoking the protection afforded by this Section 19, the party relying upon an event of Force Majeure shall be required to exercise its best and most diligent efforts to eliminate the Force Majeure or devise a means of performance notwithstanding the Force Majeure and re-establish performance hereunder as rapidly as possible

Notwithstanding anything to the contrary herein, upon the occurrence of a force majeure, Casella will make available to FJ disposal capacity for FJ Waste and Lincoln Biomass Ash at the then prevailing market rate at any other landfill in the State of Maine owned and/or operated by Casella or any Affiliate that is licensed to accept FJ Waste and Lincoln Biomass Ash for a total commitment of thirty (30) years or such earlier time as disposal capacity at such landfill(s) is exhausted; provided, however, that FJ or Lincoln, as applicable, shall pay any and all costs of transporting FJ Waste and Lincoln Biomass Ash to such site. Except as aforesaid, Casella's obligations to provide disposal capacity for FJ Waste and Lincoln Biomass Ash shall be suspended during the pendency of any Force Majeure.

SECTION 20 EMINENT DOMAIN

The State agrees to cooperate with Casella in opposing any effort by any governmental authority to exercise its rights of eminent domain. In the event an eminent domain award is made, the amount of the award, after deducting amounts due FJ resulting from any breach of the Acquisition Agreement or Casella's obligations to FJ hereunder shall be apportioned between the State and Casella on the basis of the value of Casella's contractual and other interests under this Agreement, including without limitation, the value of any capital improvements made by Casella hereunder, and the value of lost revenue under any Landfill waste disposal capacity otherwise available to Casella hereunder.

SECTION 21 INSURANCE

21.1 General Insurance Requirements. Casella shall maintain liability, fire and workers' compensation insurance insuring both the State and Casella in the amounts set forth in Schedule 21 attached hereto, issued by financially sound and reputable insurance companies reasonably acceptable to the State that are authorized and licensed to issue such policies in the

State of Maine. Casella shall pay any premiums with respect to such policies as they come due. If Casella fails to pay any such premiums when due, the State shall have the right and option to pay any such premiums, whereupon the amount of any such premiums paid by the State shall be reimbursed by Casella to the State upon demand therefor. Upon request from the State, Casella shall promptly provide copies of such policies to the State.

21.2 Environmental Impairment. During the Term hereof, and annually thereafter for a period equal to the longest applicable statute of limitations (so long as such insurance is commercially available) for claims (including governmental actions) under Environmental Laws, Casella shall cause the Landfill to be insured for third party environmental impairment under a claims made policy carried by Casella. The policy shall provide a limit of not less than the greater of (a) the amount required under applicable laws and regulations from time to time in effect or required in connection with license and permits, or (b) \$1,000,000 primary coverage and a \$10,000,000 umbrella, increased annually by Two Hundred Twenty-five Thousand Dollars (\$225,000) on each anniversary date of the Effective Date. Such policies shall name the State and FJ as additional insureds and shall be reasonably acceptable to the State and FJ.

SECTION 22 COVENANT OF QUIET ENJOYMENT

The State covenants ~~and agrees~~ that Casella, upon its performance of its obligations hereunder, shall lawfully, peacefully and quietly hold, occupy and enjoy the Landfill during the Term without hindrance, objection or disturbance, subject in all instances to the terms and provisions hereof.

SECTION 23 THIRD-PARTY BENEFICIARY

23.1 Third Party Benefit to FJ. FJ is an intended third-party beneficiary of all agreements, commitments and promises of Casella under this Agreement that provide benefit to FJ, including without limiting the generality of the foregoing, the provisions of Sections 2.8, 2.9,

2.10, 3.1, 4.1, 4.2, 8, 13, 14, 19, 20, 21 and 23.2 hereof, including related definitions from Section 1 and Exhibits (collectively, the "FJ Commitments"). The parties acknowledge and agree that FJ has provided consideration for its status as a third-party beneficiary hereunder through the sale of the Landfill to the State contemporaneously herewith, and that FJ's status as a third-party beneficiary under this Agreement was a material inducement to FJ selling the Landfill to the State. FJ's status hereunder shall be fully vested and shall be absolute as of the date hereof and FJ shall be entitled to take whatever action, in law or in equity, as may be available to enforce FJ's rights hereunder against Casella or any Affiliate operating the Landfill. FJ's status hereunder as a direct, intended, fully vested, absolute third-party beneficiary shall not in any way limit, restrict, abrogate or otherwise alter its rights against the State under the Acquisition Agreement.

23.2 Third Party Benefit to Casella. Casella is an intended third party beneficiary of the Unwind Provisions set forth in Section 2.10, the Representations and Warranties of FJ set forth in Article 3, and the Reverter Option set forth in Section 10.1, of the Acquisition Agreement. The parties acknowledge that Casella has provided consideration for its status as a third party beneficiary through its undertakings hereunder, and that such status shall be fully vested and absolute as of the date hereof and that Casella shall be entitled to take whatever action, in law or equity, as may be available to enforce Casella's rights as a third party beneficiary.

23.3 Successors and Assigns. The provisions of this Section 23 shall inure to the benefit of, and be binding upon FJ and its respective successors and assigns. Casella shall not assign or otherwise transfer its obligations under the FJ Commitments without the express written consent of FJ.

SECTION 24 MISCELLANEOUS PROVISIONS

24.1 Assignment. This Agreement may not be assigned by either party without the prior written consent of the other, which consent may be granted or withheld by such party in its sole discretion; notwithstanding the foregoing, Casella shall have the right to assign this Agreement to any Affiliate provided that Casella remains fully liable hereunder and provides reasonable assurances of the same to State in connection with any such assignment; furthermore, until such time as the License Amendment is received and is substantially consistent with the terms and conditions of the License Application, Casella shall have the right to delegate or subcontract the operation of the Landfill to J.A. Construction, Inc., subject to the terms and conditions of this Agreement. Each party further agrees not to unreasonably withhold its consent to a collateral assignment of this Agreement by the other party of such party's rights under this Agreement.

24.2 Cumulative Remedies. The specified remedies available to a party under this Agreement are not exclusive of any other remedies or means of redress to which such party may be lawfully entitled in the event of any breach or threatened breach by the other party of any provision(s) of this Agreement.

24.3 Captions and Headings. Captions and headings contained in this Agreement are inserted for convenience and reference only and the words contained therein shall in no way be held or deemed to define, limit, describe, explain, modify, amplify or add to the interpretation, construction or meaning of any provision or of the scope or intent of this Agreement, nor in any way to affect this Agreement.

24.4 Amendments and Modifications. This Agreement shall not be amended, modified or changed, except pursuant to an agreement in writing signed by or on behalf of the party against whom enforcement of the amendment, modification or change is sought.

24.5 Notices. All notices or other communications required or permitted hereunder shall be in writing and may be given by personal delivery, by overnight express delivery, or by registered or certified U.S. mail, postage prepaid, return receipt requested, properly addressed as follows:

To the State:

Executive Department
State Planning Office
38 State House Station
Augusta, Maine 04333-0038
Attention: Director

With a copy to:

William H. Laubenstein III Esq.
Assistant Attorney General
State of Maine
Office of the Attorney General
6 State House Station
Augusta, ME 04333-0006

To Casella:

c/o Casella Waste Systems, Inc.
25 Greens Hill Lane
Rutland, VT 05702-0866

With a copy to:

Gordon F. Grimes, Esq.
Bernstein, Shur, Sawyer & Nelson, P.A.
100 Middle Street, P.O. Box 9729
Portland, Maine 04104

Either party may change the address to which notices are required to be sent by giving notice of such change in the manner provided in this Section 24.5. All notices shall be deemed to have been received on the date of delivery if service is made in person, on the day after sent by

overnight express delivery service, or on the third (3rd) business day after mailing in accordance with this Section 24.5, except that any notice of a change of address shall be effective only upon actual receipt.

24.6 Strict Performance. The failure of either party to insist on the strict performance of any of the terms, covenants and provisions of this Agreement or to exercise any right, remedy or option herein contained shall not be construed as a waiver or a relinquishment for the future of such term, covenant, condition, provision, right, remedy or option.

24.7 Severability. In the event that any one or more of the terms or provisions of this Agreement shall for any reason be held by a court or other tribunal of competent jurisdiction to be invalid, illegal or unenforceable in any respect, in whole or in part, such invalidity, illegality or unenforceability shall not affect any other terms or provisions of this Agreement, and this Agreement shall be construed as if such invalid, illegal or unenforceable term or provision had never been contained herein, provided that it is the intention of the parties that, in lieu of such term or provision held to be invalid, illegal or unenforceable, there shall be added by mutual agreement as a part of this Agreement a term or provision as similar in terms to such illegal, invalid or unenforceable term or provision as may be possible, valid, legal and enforceable.

24.8 Construction. Words connoting the singular number shall include the plural in each case, and vice versa, and words connoting persons shall include corporations, companies, firms or other entities. The terms "herein", "hereunder", "hereby", "hereof" and any similar terms shall refer to this Agreement; the term "heretofore" shall mean before the date of execution of this Agreement. This Agreement is the result of joint negotiations and drafting and no part of this Agreement shall be construed as the product of any one of the parties hereto.

24.9 Entire Agreement. This Agreement, including covenants in the Acquisition

Agreement incorporated or referred to herein and the other agreements contemplated hereby, the covenants of Casella in the C&D Fuel Agreement and all exhibits and schedules attached hereto and thereto, constitute the entire agreement between the State and Casella with respect to the subject matter hereof, and supersede all prior or contemporaneous negotiations, representations, understandings and agreements, whether written or oral, between the parties with respect to the subject matter hereof.

24.10 Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original for all purposes, but all of which together shall constitute one and the same agreement.

24.11 Governing Law. This Agreement shall be governed by and construed and enforced in accordance with the laws of the State of Maine, without regard to the conflicts of law principles of such State.

24.12 Binding Effect; No Third Party Rights. This Agreement shall be binding upon and shall inure to the benefit of the parties hereto and their respective legal representatives, successors (whether by sale, assignment, transfer, merger, other acquisition, operation of law, or court ruling) and/or permitted assigns without releasing Casella of its obligations herein and shall be binding on any entity or entities that acquire all or substantially all of the assets or business of Casella and/or its Affiliates, in one or more transactions, whether by sale of assets, stock, merger or otherwise. Subject to the foregoing, and except as otherwise expressly provided herein (including Subsections 23.1 and 25), nothing in this Agreement shall be construed to confer any benefit on, or create any obligation, duty or liability to, or create any standard of care with respect to, any person, firm or entity not a party to this Agreement.

24.13 Authority of Parties. Each party hereto represents and warrants that the individual

who has executed this Agreement on its behalf has the full and complete authority to sign on behalf of such party for the purpose of duly binding such party to this Agreement.

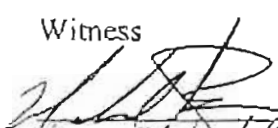
24.14 State Special Services Agreement. This Agreement is subject to certain provisions of Rider B to the State's standard form of Agreement for Special Services, which provisions are attached hereto as Exhibit D.

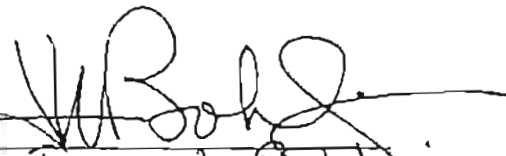
SECTION 25 C&D FUEL COMMITMENT

Contemporaneously with the execution of this Agreement, Casella and FJ shall enter into a C&D Fuel Agreement in the form attached hereto as Exhibit B.

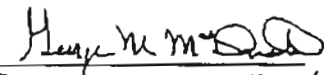
IN WITNESS WHEREOF, the parties have executed and delivered this Agreement as of the date first above written.

CASELLA WASTE SYSTEMS, INC.

Witness

Name: Michael Brennan
S.P. General Counsel


By: _____
Name: James W. Pashy
Its President

STATE OF MAINE, Acting by and
Through its Executive Department, State
Planning Office

Witness

Name: George H MacDonald

By: Martha E. Freeman
Name: Martha E. Freeman
Its Director

EXHIBITS

<u>Exhibit A</u>	Alton and Old Town, Maine real estate
<u>Exhibit B</u>	C&D Fuel Agreement
<u>Exhibit C</u>	Performance Bond
<u>Exhibit D</u>	Agreement for Special Services

Exhibit A

Parcel Description

Four parcels located at Old Town, Penobscot County, Maine, and described as follows (individually referred to as "Parcel" and collectively referred to as "Parcels"):

PARCEL ONE: A certain parcel of land with any buildings thereon, situated on the northeast side of Route 43, 3.4 + miles west of the intersection of Route 43 and Route 95, in the city of Old Town, County of Penobscot, State of Maine and being more particularly described as follows:

- 1) **BEGINNING** at a 3/4 inch rebar located on the northeast side of Route 43, at the northwest corner of land now or formerly of Scott E. Bergquist as described in deed recorded at the Penobscot County Registry of Deeds in Book 3608, Page 247. Said rebar is also located at the southwest corner of the "Cadorette Parcel" as shown on plan entitled "Perkins & Cadorette Parcels, Standard Boundary Survey (with exceptions)" by Squaw Bay Corp. of Cumberland, Maine, June, 1995, Ronald M. Carpentier, PLS #2042, recorded at the Penobscot County Registry of Deeds, Plan Book D46-95, to which reference is hereby made;
- 2) **THENCE** South 82° 12' 30" East, 1445.38 feet along the land of said Bergquist to a cedar post and the land now or formerly of James River Paper Company, Inc. as described in the deed recorded at the Penobscot County Registry of Deeds in Book 4870, Page 200;
- 3) **THENCE** North 4° 27' 20" East, 809.31 feet along the land of said James River Paper Company, Inc. to a point;
- 4) **THENCE** North 5° 59' 05" East, 15.69 feet along the land of said James River Paper Company, Inc. to a 5/8 inch rebar with plastic survey cap marked "RMC NO. 2042" and the land now or formerly of Alfred Perkins and Florine Perkins as described in the deed recorded at the Penobscot County Registry of Deeds in Book 1448, Page 22;
- 5) **THENCE** North 82° 46' 26" West, 2014.87 feet along the land of said Perkins to a 5/8 inch rebar with plastic survey cap marked "RMC NO. 2042" and the sideline of Route 43;
- 6) **THENCE** South 29° 43' 31" East, 1013.29 feet along Route 43 to a 3/4 inch rebar and point of beginning.

The above-described parcel contains 32.4 acres.

Being the same premises described in a Warranty Deed given by Francis R. Cadorette and Rhonda B. Cadorette to James River Paper Company, Inc., dated June 13, 1995, and recorded in said Registry in Book 5878, Page 272.

PARCEL TWO: A certain parcel of land with any buildings thereon situated on the northeast side of Route 43, 3.4+ miles west of the intersection of Route 43 and Route 95, in the City of Old Town, County of Penobscot, State of Maine, and being more particularly described as follows:

COMMENCING at a 5/8 inch rebar with survey cap marked "RMC NO. 2042" located at the intersection of the northeast sideline of Route 43, and the southerly boundary line of land now or formerly of Alfred Perkins and Florine Perkins as described in deed recorded at the Penobscot County Registry of Deeds in Book 1448, Page 22. Said rebar is also located at the northwest corner of the "Cadorette Parcel" as shown on plan entitled "Perkins & Cadorette Parcels, Standard Boundary Survey (with exceptions)" by Squaw Bay Corp. of Cumberland, Maine, June, 1995, Ronald M. Carpentier, PLS #2042. to be recorded at the Penobscot County Registry of Deeds to which reference is hereby made. Thence South 82° 46' 26" East, 1485.52 feet along the Cadorette parcel to the point of Beginning.

- 1) **THENCE** from the Point of Beginning South 82°46'26" East, 529.45 feet along the Cadorette Parcel to a 5/8 inch rebar with plastic survey cap marked "RMC NO. 2042" and the land now or formerly of James River Paper Company, Inc., as described in the deed recorded at the Penobscot County Registry of Deeds in Book 4870, Page 200;
- 2) **THENCE** North 5° 59' 05" East, 828.72 feet along the land of said James River Paper Company, Inc. to a cedar post and the land of Alfred J. Meister as described in the deed recorded at the Penobscot County Registry of Deeds in Book 3738, Page 197;
- 3) **THENCE** North 84° 06' 52" West, 529.33 feet along the land of said Meister to a 5/8 inch rebar with plastic survey cap marked "RMC NO. 2042" and the land now or formerly of said Perkins;
- 4) **THENCE** South 5° 59' 05" West, 816.33 feet along the land of said Perkins to a 5/8 inch rebar with plastic survey cap marked "RMC NO. 2042" and the Point of Beginning.

The above-described parcel contains 10 acres.

Being the same premises described in a Warranty Deed given by Alfred K. Perkins and Florine J. Perkins to James River Paper Company, Inc. dated June 13, 1995, and recorded in said Registry of Deeds in Book 5878, Page 278.

PARCEL THREE: Lots 1 through 9 and 14 through 22, inclusive, as shown on the survey "Tyron Tree Farm" dated February 23, 1988, recorded in the Penobscot County Registry of Deeds in Plan file C26-88, together with a strip of land fifty (50) feet wide leading from Bennoch Road to the northerly line of Lot 11 on said plan, which strip was conveyed to Patten Corporation – Downeast by deed of Lyman B. Feero and Rosalita Feero, dated June 4, 1988, and recorded in said Registry in Book 4244, Page 5, and together with a right of way for all purposes over the roads fifty (50) feet wide, the centerlines of which are shown on said plan, leading from the northerly line of Lot 11 to the lots hereby conveyed. This right of way includes, but is not limited to, the right to install, use, maintain, repair and replace utility lines, poles and cables.

Together with all right, title and interest in and to that portion of the discontinued roadway lying northerly of the above described Parcel Three and southerly of the Town of Alton southerly line.

Being the same premises described in a Warranty Deed given by James River Corporation to James River Paper Company, Inc. dated July 10, 1991, and recorded in said Registry in Book 4870, Page 200.

Exceptions

The Parcels are conveyed subject to the following exceptions:

ALL PARCELS:

1. State of Maine, Department of Environmental Protection, Site Location Findings of Fact and Order, dated August 24, 1995, and recorded in the Penobscot County Registry of Deeds in Book 5939, Page 147.
2. Declarations of Covenants and Restrictions by James River Paper Company, Inc., dated December 20, 1993, recorded in said Registry in Book 5518, Page 67; Corrected Declaration of Covenants and Restrictions, dated January 20, 1994, recorded in said Registry in Book 5549, Page 162; and Amendment to Declaration of Covenants and Restrictions, dated November 30, 1995, recorded in said Registry in Book 6044, Page 118.

PARCELS ONE AND TWO ONLY:

1. Such state of facts as shown on the plan entitled "Cadorette House Lots, Route 43, Old Town, Maine," prepared by Squaw Bay Corp., dated June 1995, and recorded in said Registry in Plan 1996-59.
2. Such statement of facts as shown on the plan entitled "Perkins & Cadorette Parcels, Route 43, Old Town, Maine," prepared by Squaw Bay Corp., dated June 1995, recorded in said Registry in Plan D46-95.

PARCEL THREE ONLY:

1. Rights of way acquired by the University of Maine System by deeds dated July 27, 1989, and recorded in said Registry in Book 4490, Page 322 and Book 4490, Page 325.
2. Restrictions and conditions set forth in the deed from Pattern Corporation to James River Corporation recorded in said Registry in Book 4654, Page 310.
3. Rights of way reserved in the deed from Camillis G. Kidder to Napoleon Parady, dated January 10, 1910, and recorded in said Registry in Book 750, Page 407.
4. Order of the Grantee of Maine, Department of Environmental Protection, dated October 3, 1988, recorded in said Registry in Book 4345, Page 19.
5. Such statement of facts, including easements and rights of way, as shown on the plan entitled "Tryon Tree Farm, Patten Corporation-Downeast," prepared by Raymond S. Silsby, dated February 23, 1988, and recorded in said Registry in C26-88.

NOTICE OF SOLID WASTE DISPOSAL FACILITY

Pursuant to Maine Department of Environmental Protection Solid Waste Management Regulation, Chapter 400 Appendix C.11, Grantor provides the following notice:

The Premises contains an active ~~secure~~ solid waste disposal facility (the "Facility"). The Facility was licensed by the Maine Board of Environmental Protection on July 28, 1993. The Facility began operations on December 2, 1996. The Facility is 68 acres and is located southern quadrant of Parcel Three of the Premises. The following non-hazardous wastes have been placed in the Facility to a maximum depth of approximately 30 feet:

- pulp and papermill wastewater treatment plant sludge,
- lime wastes and grit,
- woodwastes and inert debris,
- small quantities of soil and sawdust contaminated with process chemicals that are non-hazardous,
- virgin oily contaminated debris,
- soil rags, oil filters, absorbent materials, crushed grease drums and waste grease,
- ~~sand from sand filters,~~

- non-hazardous sand from sand blasting,
- multifuel fly ash and bottom ash from the Lincoln Pulp and Papermills, and
- wood ash from the City of Old Town

EXHIBIT B
FUEL SUPPLY AGREEMENT

This C&D FUEL AGREEMENT (this "Agreement") is made as of this _____ day of February, 2004, by and between CASELLA WASTE SYSTEMS, INC., a Maine corporation with a place of business at 25 Green Hill Lane, Rutland, Vermont 05702 ("Casella"), and the FORT JAMES OPERATING COMPANY, a Delaware corporation ("FJ").

Recitals

1. The State of Maine, acting by and through its Executive Department, State Planning Office ("State") and FJ entered into an Agreement Regarding Solid Waste Disposal Facility Acquisition and Operation dated November 20, 2003 ("Landfill P&S").
2. The State and Casella entered into an Operating Services Agreement dated _____, 2003 ("Operating Agreement").
3. Both the Landfill P&S and the Operating Agreement contemplate that FJ and Casella will formalize and agreement regarding the C&D fuel commitments described herein.

Agreement

In consideration of the foregoing, and the promises set forth herein, the parties agree as follows:

1. **Definitions.** Capitalized terms used but not defined herein shall have the meanings assigned to those terms in the Landfill P&S. Capitalized terms used but not defined herein or in the Landfill P&S shall have the meanings assigned to those terms in the Operating Agreement.

"C&D Fuel" means processed construction and demolition debris, which shall meet the following criteria:

- (a) Provides a minimum of at least 4,000 BTUs per pound (HHV) and an average of 6,800 BTUs per pound (HHV);
- (b) Meets such specifications as the DEP may require for legitimate fuel substitution;
- (c) Constitute "processed" C&D Fuel, in a form ready to burn in FJ's Biomass Generation Facility;
- (d) Restricted to the type of waste which the FJ's Biomass Generation Facility is licensed to burn; and
- (e) In no event shall C&D Fuel constitute or contain pentachlorophenol, arsenic or creosote-treated wood waste, except in such trace amounts as are consistent within the

DEP's current or future definition of "clean" C&D waste fuel and within the allowances for such substances set forth in the DEP permit for the Biomass Generation Facility.

2. **C&D Fuel Commitment.** (a) Casella hereby grants to FJ an option to purchase from Casella or its Affiliates, all or any portion of FJ's requirements for C&D Fuel ("C&D Fuel Option") for FJ's proposed Biomass Generating Facility in excess of any requirements satisfied by burning all available bark from FJ's pulping operations (estimated at a minimum of 100,000 tons per year) under the terms and conditions set forth below.

(b) The terms and conditions of the option be as follows:

(i) The term of the C&D Fuel Option shall extend for the shorter of: (x) the term, or any extended term, of the Operating Agreement or (y) a period of thirty (30) years following the date of commencement of operation of the Biomass Generation Facility ("Biomass Commencement Date").

(ii) The price charged to FJ for C&D Fuel will be fixed for the entire term of the C&D Fuel Option at the following levels:

(A) The price shall be fixed at the lesser of (x) market price or (y) \$4 per ton for the first five (5) years following the Biomass Commencement Date.

(B) On the sixth anniversary of the Biomass Commencement Date, the price shall be the lesser of (x) market price or (y) \$4 per ton, adjusted as set forth below. On the sixth anniversary of the Biomass Commencement Date, and thereafter on each anniversary of the Biomass Commencement Date throughout the remaining term of the C&D Fuel Option, the \$4 per ton shall be adjusted upward or downward annually by a percentage equal to the percentage change in the Consumer Price Index (U.S.-national) ("CPI") from the immediately preceding anniversary through the then current anniversary of the Biomass Commencement Date. In no event shall the CPI adjustment be less than one percent (1%) per year or in excess of five percent (5%) per year.

For purposes of this section, reference to a "year" means the period of twelve (12) months extending from the Biomass Commencement Date to the first anniversary thereof, or from one anniversary of the Biomass Commencement Date to another, as applicable.

(iii) The volume of C&D Fuel available at the pricing set forth above is 75,000 tons in the first year of operation of the Biomass Generating Facility, 90,000 tons in the second year, and 100,000 tons in the third year and thereafter for the remainder of the term of this C&D Fuel Option.

3. **Chip Fuel Option.** Casella hereby grants to FJ an option to purchase from Casella, or its Affiliates, all or any portion of FJ's requirements for green wood chip fuel for FJ's proposed Biomass Generating Facility in excess of any requirements satisfied by burning all available bark

from FJ's pulping operations and C&D Fuel under the terms and conditions set forth below ("Chip Fuel Option").

(i) In the event FJ is not able to obtain all necessary Governmental Approvals to burn C&D Fuel at the Biomass Generating Facility, and during any period in which such Governmental Approvals have not yet been obtained, lapse or are otherwise not in force, Casella will provide to FJ up to 75,000 tons of green wood chip fuel at a price of \$9 per ton for the first year following the Biomass Commencement Date, and thereafter adjusted upward or downward on each anniversary of the Biomass Commencement Date throughout the remaining term of this Chip Fuel Option by a percentage equal to the percentage change in the CPI from the date of the previous adjustment through the then current anniversary of the Biomass Commencement Date. In no event shall the CPI adjustment be less than one percent (1%) per year or in excess of five percent (5%) per year.

(ii) During the first year following the Biomass Commencement Date, Casella will provide FJ with up to 25,000 tons green wood chip fuel, if any, required by the Biomass Generating Facility to operate in normal mode to produce approximately 15 megawatts of electricity after utilization of FJ's available bark fuel and the C&D Fuel at a cost of \$9 per ton for the first year following the Biomass Commencement Date, and thereafter adjusted upward or downward on each anniversary of the Biomass Commencement Date throughout the remaining term of this Chip Fuel Option by a percentage equal to the percentage change in the CPI from the date of the previous adjustment through the then current anniversary of the Biomass Commencement Date. In no event shall the CPI adjustment be less than one percent (1%) per year or in excess of five percent (5%) per year. The foregoing obligation will be reduced to 18,000 tons during the second year following the Biomass Commencement Date, and 9,000 tons in the third and each successive year thereafter until the end of the thirty-year term of this Chip Fuel Option. FJ agrees to utilize all green wood chip fuel provided by the operator as fuel for the Biomass Generating Facility.

4. **Alternative Fuel Source.** For any period during which the combination of FJ's available bark fuel, the C&D Fuel provided under Section 2 and the green wood chip fuel provided under Section 3 do not result in a fuel mixture that enables the Biomass Generating Facility to produce 15 megawatts of power on a sustained basis, Casella and its Affiliates shall exercise their best and most diligent efforts to provide FJ with other more efficient sources of fuel that will enable the Biomass Generation Facility to produce at the level specified above at prevailing market rates.

5. **Terms of Payment.** Payment shall be made by FJ to Casella net 30 days from date of invoice for each delivery.

6. **Supply Terms.**

(a) **Timing and Volume.** FJ and Casella acknowledge and agree that they shall work cooperatively and in good faith to establish a supply schedule that will provide consistent supply

of fuel hereunder as required to meet FJ's requirements for efficient Biomass Generating Facility operation. FJ and Casella shall meet not less often than once per month to review FJ's projected supply requirements for the ensuing three (3) months and establish a mutually acceptable delivery schedule. The delivery schedule shall represent a firm order for the fuel designated therein for the first [month/weeks/week] reflected in the delivery schedule. The remainder of the schedule will be advisory only. FJ and Casella agree to periodically adjust the schedule between monthly meetings, as required to reflect FJ's actual requirements.

(b) All sales will be FOB FJ's Old Town Mill. Title and risk of loss shall pass to FJ upon delivery and acceptance of each shipment.

(c) FJ shall have a period of [10] days to inspect and test each delivery for conformity to specifications. FJ may reject all or any portion of a delivery that does not meet the specifications described herein by notification to Casella stating the reason for rejection. Casella shall cure any defect or remove any non-conforming delivery and promptly provide conforming product. Rejection of any individual delivery shall not constitute a termination of this Agreement. The foregoing is not intended to limit FJ's remedies at law for dealing with non-conforming deliveries.

7. Miscellaneous Provisions.

(a) This Agreement may not be assigned by either party without the prior written consent of the other, which consent may be granted or withheld by such party in its sole discretion; notwithstanding the foregoing, Casella shall have the right to assign this Agreement to any Affiliate provided that Casella remains fully liable hereunder.

(b) Captions and headings contained in this Agreement are inserted for convenience and reference only and the words contained therein shall in no way be held or deemed to define, limit, describe, explain, modify, amplify or add to the interpretation, construction or meaning of any provision or of the scope or intent of this Agreement, nor in any way to affect this Agreement.

(c) This Agreement shall not be amended, modified or changed, except pursuant to an agreement in writing signed by or on behalf of the party against whom enforcement of the amendment, modification or change is sought.

(d) Notices. All notices or other communications required or permitted hereunder shall be in writing and may be given by personal delivery, by overnight express delivery, or by registered or certified U.S. mail, postage prepaid, return receipt requested, properly addressed as follows:

To Casella:

Casella Waste Systems, Inc.
25 Green Hill Lane

Rutland, VT 05702-0866

To FJ:

Georgia-Pacific Corporation
Attention: General Counsel
133 Peachtree Street, N.E.
Atlanta, Georgia 30303

Either party may change the address to which notices are required to be sent by giving notice of such change in the manner provided in this Section 7(d). All notices shall be deemed to have been received on the date of delivery if service is made in person, on the day after sent by overnight express delivery service, or on the third (3rd) business day after mailing in accordance with this Section, except that any notice of a change of address shall be effective only upon actual receipt.

(e) The failure of either party to insist on the strict performance of any of the terms, covenants and provisions of this Agreement or to exercise any right, remedy or option herein contained shall not be construed as a waiver or a relinquishment for the future of such term, covenant, condition, provision, right, remedy or option.

(f) This Agreement, including provisions of the Landfill P&S and Operating Agreement incorporated herein constitute the entire agreement between the parties with respect to the subject matter hereof, and supersedes all prior or contemporaneous negotiations, representations, understandings and agreements, whether written or oral, between the parties with respect to the subject matter hereof.

(g) This Agreement may be executed in one or more counterparts, each of which shall be deemed an original for all purposes, but all of which together shall constitute one and the same agreement.

(h) This Agreement shall be governed by and construed and enforced in accordance with the laws of the State of Maine, without regard to the conflicts of law principles of such State.

(i) This Agreement shall be binding upon and shall inure to the benefit of the parties hereto and their respective legal representatives, successors (whether by sale, assignment, transfer, merger, other acquisition, operation of law, or court ruling) and/or permitted assigns. Subject to the foregoing, nothing in this Agreement shall be construed to confer any benefit on, or create any obligation, duty or liability to, or create any standard of care with respect to, any person, firm or entity not a party to this Agreement.

(j) Each party hereto represents and warrants that the individual who has executed this Agreement on its behalf has the full and complete authority to sign on behalf of such party for the purpose of duly binding such party to this Agreement.

(k) FJ and Casella agree that a breach of Casella's obligations under this Agreement shall constitute a failure to perform a material obligation under the Operating Agreement and shall be treated as such for purposes of declaring default and exercising remedies under Section 16 thereof.

IN WITNESS WHEREOF, the parties have executed and delivered this Agreement as of the date first above written.

FORT JAMES OPERATING COMPANY

Witness

Name:

By: _____

Name: _____

Its _____

CASELLA WASTE SYSTEMS, INC.

Witness

Name:

By: _____

Name: _____

Its _____

PAYMENT AND PERFORMANCE BOND

Bond No.: _____

KNOW ALL MEN BY THESE PRESENTS, that we CASSELLA WASTE SYSTEMS, INC., having a place of business at 25 Green Hills Lane, Rutland, Vermont 05702, (the "Principal"), and EVERGREEN NATIONAL INDEMNITY COMPANY, having a place of business at 6140 Parkland Boulevard, Suite 300, Cleveland, OH 44124, (the "Surety"), are held and firmly bound unto the STATE OF MAINE, acting by and through its Executive Department, State Planning Office, (the "Obligee"), in the penal sum of Four Million Dollars (\$4,000,000) for the payment of which we bind ourselves, our heirs, administrators, executors, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written Operating Services Agreement for the operation and maintenance of the solid waste landfill located in Old Town, Maine (the "Landfill") with the above mentioned Obligee, dated the _____ day of February, 2004, which agreement, as amended from time to time, is hereby incorporated herein by reference as if fully rewritten (the "Contract").

WHEREAS, it is a condition of the agreement of the Obligee to enter into the Contract that the Principal provide Obligee with a payment and performance bond in form and content satisfactory to Obligee to secure Principal's obligations thereunder;

NOW, THEREFORE, the condition of the above obligation is such that if the Principal shall promptly and faithfully perform this Contract, then this obligation shall be null and void; otherwise, it shall remain in full force and effect and Surety covenants to perform its obligations hereunder, subject, however, to and on the following conditions:

1. This Bond shall be maintained, in full force and effect throughout the Term (as defined in the Contract) and for one (1) year following Termination (as defined in the Contract). Notwithstanding the foregoing, if the Contract is terminated for any reason other than breach by Obligee prior to the date which is thirty (30) years after the Effective Date (as defined in the Contract) of the Contract, and Obligee makes a demand for payment and performance under this Bond prior to or within one (1) year following such Termination, the Bond shall continue to be maintained in full force and effect until the date which is thirty (30) years after the Effective Date (as defined in the Contract) as security for ongoing losses, liabilities and damages Obligee may incur.

2. If there is no material breach or default on the part of the Obligee, then the Surety's payment and performance obligation under this Bond shall arise as follows:
 - a. The Obligee shall notify the Principal and the Surety in writing at their respective addresses of the alleged breach with a reasonably detailed description thereof. The parties shall attempt to arrange a conference with the Principal and the Surety to be held not later than fifteen (15) days after receipt of such notice to discuss methods of performing the Contract. During the notice period Obligee shall make available to Surety all books, records, and accounts relevant to the Contract which may be reasonably requested by the Principal or Surety, subject to such reasonable confidentiality undertaking as Obligee may require.
 - b. The Principal shall be allowed time to cure the breach during the cure periods referenced in the Contract, if any; but such an agreement shall not waive the Obligee's right, if any, to subsequently declare a Principal default.
 - c. If the Principal does not cure such breach or default within the cure periods referenced in the Contract, if any, Obligee may perform or arrange for the performance of Principal's duties under the Contract for the balance of the Term and make a demand for payment and performance under this Bond, and Surety hereby irrevocably covenants to pay Obligee any and all Adverse Consequences of every nature and type that Obligee may incur arising from or relating to Principal's failure to perform its obligations under the Contract, including, without limitation, the costs and expenses of any substitute contractor or any costs and expenses associated with the satisfaction of any obligations owed by the Principal to Fort James Operating Company or Georgia Pacific, Inc. or their successors and assigns. Obligee may make multiple demands for payment and performance under this Bond according to the procedures stated above, and may make demand at one time for all Adverse Consequences it anticipates arising from or relating to Principal's breach of its obligations under the Contract, provided that in no event shall Surety's obligations hereunder exceed \$4,000,000. For purposes of this Bond, "Adverse Consequences" means all actions, suits, proceedings, hearings, investigations, charges, complaints, claims, demands, injunctions, judgments, orders, decrees, rulings, damages, dues, penalties, fines, costs, amounts paid in settlement, liabilities, obligations, taxes, liens, losses, expenses, and fees,

including court costs and reasonable attorneys' fees and expenses.

- d. The parties acknowledge that under the terms of the Contract, Principal may assign its obligations under the Contract to a wholly-owned subsidiary, without, however, releasing Principal of its obligations under the Contract. Surety acknowledges that its obligations hereunder survive regardless of whether the obligations of Principal under the Contract are or were to be performed by Principal or its successors or assigns.
3. No claim, action, suit or proceeding, except as herein set forth, shall be had or maintained against the Surety pursuant to this Bond unless the same be brought or instituted and process served upon the Surety within one (1) year after the completion or termination of the Contract.
4. The Bond may be extended for additional terms at the option of the Surety, by Continuation Certificate executed by the Surety.
5. Neither non-renewal by the Surety, nor failure, nor inability of the Principal to file a replacement bond shall constitute loss to the Obligee recoverable under this bond.
6. In no event shall the liability of the Surety hereunder exceed the penal sum hereof (namely, \$4,000,000).
7. Surety further acknowledges and agrees that (i) Obligee is independent of any agency of the State of Maine with regulatory authority over any aspect of the Landfill or performance of the Contract (an "Agency") such that, among other things, any act or inaction by any such Agency shall not be attributable to Obligee and shall not under any circumstances limit or excuse performance by Surety under this Bond and (ii) any approval, disapproval or conditioned approval by an Agency of a contractor tendered by Surety to perform the Contract is an act independent of the Obligee and shall not limit or excuse performance by Surety under this Bond and (iii) any security held or procured by any Agency with respect to the operation or closure of the Landfill shall not reduce or limit the obligation of Surety hereunder.
8. Surety agrees that the Contract may be amended from time to time without notice to or approval by the Surety.
9. The obligations of Surety and Principal hereunder are joint and several. No past or future act or omission of Principal shall excuse or limit the obligation of Surety to perform under this Bond.

10. Any claim or controversy relating in any way to this Bond shall be governed and interpreted exclusively in accordance with the laws of the State of Maine.
11. Surety's obligation under this Bond may not be assigned without obtaining the prior written consent of the Principal, the Surety and the Obligee.
12. The Bond shall not be amended, modified or changed in any way without obtaining the prior written consent of the Obligee, which consent may be granted or withheld in the sole discretion of Obligee.
13. Without limiting the terms of Section 11 hereof, this Bond shall be binding upon and shall inure to the benefit of the parties hereto and their respective legal representatives, successors (whether by sale, assignment, transfer, merger, other acquisition, operation of law, or court ruling) and/or permitted assigns.
14. Except as otherwise specified herein, Surety hereby waives any and all suretyship defenses.

(The remainder of this page is intentionally left blank.
The signature page follows this page.)

Signed, sealed and executed this _____ day of February, 2004.

Witness

CASELLA WASTE SYSTEMS, INC.

Name:

By: _____

Name: _____

Its _____

EVERGREEN NATIONAL SURETY
COMPANY

By: _____

Name:

By: _____

Name: _____

Its _____

SEEN AND AGREED TO

STATE PLANNING OFFICE

By: _____

Its: _____

EXHIBIT D

10. EQUAL EMPLOYMENT OPPORTUNITY. During the performance of this Agreement, Casella (hereinafter, the "Provider") agrees as follows:

- a. The Provider shall not discriminate against any employee or applicant for employment relating to this Agreement because of race, color, religious creed, sex, national origin, ancestry, age, physical or mental disability, unless related to a bona fide occupational qualification. The Provider shall take affirmative action to ensure that applicants are employed and employees are treated during employment, without regard to their race, color, religion, sex, age, national origin, or physical or mental disability.

Such action shall include but not be limited to the following: employment, upgrading, demotions, or transfers; recruitment or recruitment advertising; layoffs or terminations; rates of pay or other forms of compensation; and selection for training including apprenticeship. The Provider agrees to post in conspicuous places available to employees and applicants for employment notices setting forth the provisions of this nondiscrimination clause.

- b. The Provider shall, in all solicitations or advertising for employees placed by or on behalf of the Provider relating to this Agreement, state that all qualified applicants shall receive consideration for employment without regard to race, color, religious creed, sex, national origin, ancestry, age, physical or mental disability.
- c. The Provider shall send to each labor union or representative of the workers with which it has a collective bargaining agreement, or other agreement or understanding, whereby it is furnished with labor for the performance of this Agreement a notice to be provided by the contracting agency, advising the said labor union or workers' representative of the Provider's commitment under this section and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- d. The Provider shall inform the contracting Department's Equal Employment Opportunity Coordinator of any discrimination complaints brought to an external regulatory body (Maine Human Rights Commission, EEOC, Office of Civil Rights) against their agency by any individual as well as any lawsuit regarding alleged discriminatory practice.

- e. The Provider shall comply with all aspects of the Americans with Disabilities Act (ADA) in employment and in the provision of service to include accessibility and reasonable accommodations for employees and clients.
- f. Contractors and subcontractors with contracts in excess of \$50,000 shall also pursue in good faith affirmative action programs.
- g. The Provider shall cause the foregoing provisions to be inserted in any subcontract for any work covered by this Agreement so that such provisions shall be binding upon each subcontractor, provided that the foregoing provisions shall not apply to contracts or subcontracts for standard commercial supplies or raw materials.

11. EMPLOYMENT AND PERSONNEL. The Provider shall not engage any person in the employ of any State Department or Agency in a position that would constitute a violation of 5 M.R.S.A. § 18 or 17 M.R.S.A. § 3104. The Contractor shall not engage on a full-time, part-time or other basis during the period of this Agreement, any other personnel who are or have been at any time during the period of this Agreement in the employ of any State Department or Agency, except regularly retired employees, without the written consent of the State Purchases Review Committee. Further, the Provider shall not engage on this project on a full-time, part-time or other basis during the period of this Agreement any retired employee of the Department who has not been retired for at least one year, without the written consent of the State Purchases Review Committee. The Provider shall cause the foregoing provisions to be inserted in any subcontract for any work covered by this Agreement so that such provisions shall be binding upon each subcontractor, provided that the foregoing provisions shall not apply to contracts or subcontracts for standard commercial supplies or raw materials.

12. STATE EMPLOYEES NOT TO BENEFIT. No individual employed by the State at the time this Agreement is executed or any time thereafter shall be admitted to any share or part of this Agreement or to any benefit that might arise there from directly or indirectly that would constitute a violation of 5 M.R.S.A. § 18 or 17 M.R.S.A. § 3104. No other individual employed by the State at the time this Agreement is executed or any time thereafter shall be admitted to any share or part of this Agreement or to any benefit that might arise there from directly or indirectly due to his employment by or financial interest in the Provider or any affiliate of the Provider, without the written consent of the State Purchases Review Committee. The Provider shall cause the foregoing provisions to be inserted in any subcontract for any work covered by this Agreement so that such provisions shall be binding upon each subcontractor, provided that the foregoing provisions shall not apply to contracts or subcontracts for standard commercial supplies or raw materials.

14. ACCESS TO RECORDS. The Provider shall maintain all books, documents, payrolls, papers, accounting records and other evidence pertaining to this Agreement and make such materials available at its offices at all reasonable times during the period of this Agreement and for such subsequent period as specified under Maine Uniform Accounting and Auditing Practices for Community Agencies (MAAP) rules. The Provider shall allow inspection of pertinent documents by the Department or any authorized representative of the State of Maine or Federal Government, and shall furnish copies thereof, if requested.

FIRST AMENDMENT
TO
OPERATING SERVICES AGREEMENT
BETWEEN
CASELLA WASTE SYSTEMS, INC
AND
STATE OF MAINE, ACTING BY AND THROUGH ITS
EXECUTIVE DEPARTMENT, STATE PLANNING OFFICE

This is the First Amendment to the Operating Services Agreement ("Agreement") between Casella Waste Systems, Inc. ("Casella") and State of Maine, State Planning Office ("State"), which was entered into on February 5, 2004.

1. Section 4.2 (b) is amended to read:

Casella shall use its best and most diligent efforts to, at its own cost and expense, apply for, seek and maintain in full force and effect (i) the License Amendment, (ii) the Expansion Permit, and (iii) such other federal, state and local permits, licenses and authorizations as otherwise required in connection with Casella's obligations under this Agreement, including, without limitation, any required zoning, subdivision and site plan approval. Without limiting the generality of the foregoing, Casella shall prepare on or before the fifth anniversary of the Effective Date an application for the Expansion Permit and shall conduct geologic and engineering studies and bear the cost of any consulting services related to all such permit/license and approval efforts. Subject to the foregoing, Casella shall determine the timing of the submission and the content of any such applications to the appropriate regulatory entities. Casella currently contemplates and application for the Expansion Permit of ten million (10,000,000) cubic yards of additional capacity, but, following exhaustion of all appeals of any approval of the Expansion Permit authorizing a lesser disposal capacity, Casella hereby agrees to accept any such approval so issued in connection with any application for the Expansion Permit, provided that, taken together, the initial application so submitted by Casella for the Expansion Permit shall provide that the Existing Permit, the License Amendment and the Expansion Permit will collectively provide sufficient capacity to dispose of at least 500,000 tons of waste per year over twenty (20) years of operation. If issued, Casella shall not take any action or suffer any omission that causes, or provides a basis for the revocation, suspension or restriction of the Expansion Permit, or limit or restrict Casella's or the State's ability to operate the landfill.

2. Except as expressly provided in this First Amendment, the Agreement remains in full force and effect.

Dated: 7/28/06


CASELLA WASTE SYSTEMS, INC

By: 

Name: Brian Oliver

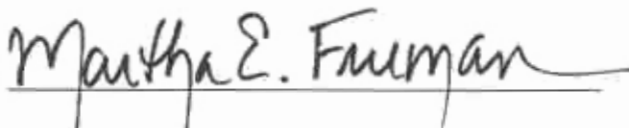
Its: Vice President, Casella Northeast Region

WITNESS:


(name)

Dated: July 24, 2006

STATE OF MAINE, Acting by and through
its Executive Department, State Planning Office

By: 

Name: Martha E. Freeman

Its: Director

WITNESS:


(name)

**SECOND AMENDMENT TO OPERATING
SERVICES AGREEMENT**

This Second Amendment to the Operating Services Agreement ("Amendment") is made as of this 2nd day of November, 2006, by and between CASELLA WASTE SYSTEMS, INC., a Delaware corporation with a place of business at 25 Greens Hill Lane, Rutland, Vermont 05702 ("Casella"), and the STATE OF MAINE, acting by and through its Executive Department, State Planning Office (the "State").

WITNESSETH:

WHEREAS, Casella and the State are parties to an Operating Services Agreement, dated as of February 5, 2004, as amended by the First Amendment to Operating Services Agreement, dated as of July 28, 2006 (the "Agreement"); and

WHEREAS, in connection with the contemplated change in the ownership of and the manner of operating the paper manufacturing facility and the biomass electric generating facility located in Old Town, Maine, FJ proposes to assign to, and Red Shield Environmental, LLC, a Delaware limited liability company ("Red Shield") proposes to assume, the FJ Commitments (as defined in the "Agreement"); and

WHEREAS, the parties wish to amend the Agreement;

NOW, THEREFORE, in consideration of the mutual promises and agreements hereinafter contained, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Casella and the State agree as follows:

1. The recitals and identification of the parties to this Amendment are incorporated by reference as though fully set forth herein. Capitalized terms not defined herein shall have the meaning given to them in the Agreement. Effective upon the consummation of the transactions described in the second recital above, all FJ Commitments, as defined in Section 23 of the Agreement, that refer to "FJ" or "Fort James" are hereby amended to refer to Red Shield.

2. Effective upon the consummation of the transactions described in the second recital above, Section 1 of the Agreement shall be amended as follows:

(a) The definition of "Biomass Ash" is hereby restated as follows: "Biomass Ash" shall mean the ash resulting from the operation of any Biomass Generating Facility installed and operated at the Old Town Facility to the extent the same is disposable at the Landfill under the Existing Permit and meets the definition of "special waste" as defined under Maine Environmental Law.

(b) The definition of "Old Town Mill" is hereby restated as follows: "Old Town Facility" shall mean the pulp and paper mill previously operated by FJ located in Old Town and Orono, Maine, including, without limitation, all industrial operations

conducted by any entity thereon, irrespective of the entity that owns or operates any industrial operation thereon, and all related facilities and improvements.

3. All references to "Old Town Mill" in the Agreement are hereby amended to refer to the "Old Town Facility."

4. All references to "Mill Waste" in the Agreement are hereby amended to refer to "Old Town Facility Waste."

5. Effective upon the consummation of the transactions described in the second recital above, Section 2.8(d) of the Agreement, and all cross-references thereto in the Agreement, are hereby deleted in their entirety.

6. In consideration for (i) Casella's willingness to enter into this Amendment and the Fuel Supply Agreement (the "FSA"), dated of near or even date herewith, between Casella and Red Shield, and (ii) Casella's agreement to cease accepting waste for disposal at the Pine Tree Landfill located in Hampden, Maine, on or prior to December 31, 2009, in accordance with the closure plan submitted to MDEP, and in recognition of Casella's loss of disposal capacity at the Pine Tree Landfill and its need to enter into long-term, binding commitments to accept construction and demolition waste ("C&D") and to develop and construct or expand, or otherwise gain access to one or more processing facilities within the State of Maine in order to assure its ability to produce or obtain C&D Fuel sufficient to fulfill its potential obligations hereunder and under the FSA, the State agrees that, anything to the contrary set forth in the Agreement notwithstanding, and in order to clarify the parties' understanding of the intent of the relevant provisions of the Agreement:

(a) Casella shall be entitled to source from within or outside the State of Maine sufficient quantity of C&D (as defined in the FSA) to produce, at one or more processing facilities located within the State of Maine, C&D Fuel (as defined in the FSA) to meet its delivery obligation under the FSA, and shall be entitled to dispose at the Landfill any and all residue produced in the processing of C&D, at one or more processing facilities located within the State of Maine. In accordance with Section 2.13 of the Agreement, Casella agrees to exercise commercially reasonable efforts to utilize C&D generated within the State of Maine in fulfilling its obligations under the FSA.

(b) Casella shall be entitled to dispose at the Landfill any C&D (up to 20,000 tons in any calendar year) that would have been processed, at a processing facility located within the State of Maine, in the ordinary course to produce C&D Fuel, as contemplated by Section 6(a) or Section 6(c) hereof, but for the fact that such processing facility was shut down for planned or unplanned maintenance or repair.

(c) In the event and to the extent that Red Shield fails to accept delivery of C&D Fuel that was processed at a processing facility located within the State of Maine at the maximum volumes contemplated by Section 2(b)(iii) of the FSA, or in the event that the FSA does not take effect, or the C&D Fuel Option (as defined in the FSA) is

terminated prior to thirty (30) years after the Biomass Commencement Date (as defined in the FSA), Casella shall be entitled to dispose at the Landfill any and all C&D processing residue should Casella elect to continue to produce, at one or more processing facilities located within the State of Maine, C&D Fuel to supply to alternate users.

(d) For purposes of clarification and the avoidance of doubt, no portion of any C&D sourced by Casella or any C&D residue created in the processing of C&D Fuel, in each case, as contemplated by this Section 6, shall be considered Excluded Waste, provided that such C&D and C&D residue does not contain Hazardous Waste.

This Section 6 shall be binding upon the parties irrespective of whether the transactions involving Red Shield contemplated by the second recital above are consummated.

7. Effective upon the consummation of the transactions described in the second recital above, Section 5.3 of the Agreement and all cross-references thereto in the Agreement are hereby deleted in their entirety.

8. Notwithstanding anything in the Agreement to contrary, Red Shield shall have the unrestricted right to mortgage and pledge its rights under the Agreement without Casella's consent, and encumber its rights under the Agreement with any type of security interest to secure debt, or other similar instrument creating a lien or other encumbrance on Red Shield's interest in the Agreement, regardless of the priority thereof (hereinafter, "Security Interest," and each lender with a Security Interest, a "Lender"), any assignment thereof and any modification or amendment of any of the terms thereof, including, without limitation, any extension, renewal or refinancing of any indebtedness secured thereby or an additional advance secured by any Security Interest or any additional Security Interest given to secure the same. A Lender, or its designee, or any purchaser in foreclosure proceedings (including, without limitation, an entity formed by a Lender) may become a legal owner of Red Shield's interest under the Agreement through such foreclosure proceedings or by assignment of Red Shield's interest under the Agreement in lieu of foreclosure. A Lender may enforce its rights under its Security Interest and acquire title to Red Shield's interest in the Agreement in any lawful way. The parties agree that nothing in the Agreement shall be deemed to impose any liability or obligation on (i) any mortgagee or secured party that may at any time hold a mortgage lien on or a security interest in the Agreement, or (ii) any party that becomes a mortgagee in possession, secured party in possession or receiver with respect to the Agreement. With respect to a party that is assigned the rights under the Agreement through a mortgage foreclosure, secured party sale or deed or bill of sale in lieu thereof, such party shall assume the obligations and liabilities under the Agreement first arising as of the date of such assignment.

9. In all other respects, the Agreement shall remain in full force and effect in accordance with its terms. The obligations of the State hereunder shall survive, and shall not be affected by, any termination of the FSA or closure of or cessation of operations at the Biomass Generating Facility.

IN WITNESS WHEREOF, the parties have caused this Amendment to be executed and delivered by their duly authorized representatives as of the day and year first above written.

[Signature]
Witness

CASELLA WASTE SYSTEMS, INC.
By: [Signature]
Name: Brian Alva
Title: Assistant Agent

[Signature]
Witness

STATE OF MAINE, acting by and through
Its Executive Department, State Planning
Office
By: [Signature]
Name: Martha Freeman
Title: Director

SEEN AND AGREED TO:

RED SHIELD ENVIRONMENTAL, LLC

By: [Signature]
Name: EDWARD PARLAWSKY
Title: CHAIRMAN

THIRD AMENDMENT TO OPERATING
SERVICES AGREEMENT

This Third Amendment to the Operating Services Agreement is made as of this 21st day of December, 2015, by and between Casella Waste Systems, Inc., a Delaware corporation with a place of business at 25 Greens Hill Lane, Rutland, Vermont 065702 ("Casella") and State of Maine, Department of Administrative and Financial Services, Bureau of General Services (the "State").

WITNESSETH:

WHEREAS, by Resolves 2003, ch. 93 (the "Resolve"), the State was authorized to acquire, own and cause to be operated an existing solid waste disposal facility in the City of Old Town now known as the Juniper Ridge Landfill (the "Landfill"), under such terms and conditions as are revenue-neutral and the State determines are advisable and in the public interest; and

WHEREAS, the State of Maine, acting by and through the Department of Administrative and Financial Services, Bureau of General Services, is the owner of the Landfill; and

WHEREAS, the State entered into an Operating Services Agreement (the "OSA") with Casella dated February 5, 2004, as amended by the First Amendment dated July 28, 2006 and the Second Amendment dated November 2, 2006, whereby the State granted to Casella the "...right, license and privilege to occupy, operate, maintain, repair, design, redesign, construct and utilize the Landfill..."; and

WHEREAS, the OSA provides that "the use of the Landfill shall be restricted to development and operation of a solid waste landfill, or other facilities providing for the disposal or recycling of solid waste or other management of solid waste or, with the prior written consent of the State...other uses that do not prohibit or impair the operation of a solid waste landfill..."; and

WHEREAS, the OSA provides that any capital improvements of any nature or type to or at the Landfill shall be and remain the property of the State upon termination of the OSA without any compensation to Casella; and

WHEREAS, under the OSA the State granted to Casella the right “to take and use any landfill gas generated at the Landfill, all in accordance with applicable laws and regulations”; and

WHEREAS, under the OSA the State granted to Casella the right to collect and retain all revenue, income and other financial benefits generated by, at, or related to the operation of the Landfill during the term of the OSA; and

WHEREAS, Casella now wishes to exercise its right under the OSA to take and use the landfill gas (“LFG”) generated at the Landfill and the parties wish to amend and clarify the OSA in order to enable Casella to do so as provided herein and in the other agreements and instruments referred to herein; and

WHEREAS, Casella, through its subsidiary, NEWSME Landfill Operations, LLC, has entered into the Landfill Gas Rights Agreement for the Juniper Ridge Landfill dated December 29, 2014, as amended by an amendment dated of near or even date herewith (the “LGRA”), with Juniper Ridge Energy, LLC, a Delaware limited liability company doing business at 46280 Dylan Drive, Suite 200, Novi, MI 48377 (“LES”) pursuant to which Casella purported to grant to LES, among other rights, “...the exclusive rights to all LFG collected by NEWSME from the Juniper Ridge Landfill, and any contiguous expansions, and all Environmental Attributes[,]” as the term is defined in the LGRA; and

WHEREAS, Casella has requested the State’s consent to the LES landfill gas to energy project being located at and operating at JRL pursuant to Sections 2.1.4 and 2.2(a) of the OSA; and

WHEREAS, the State is not a party to the LGRA; and

WHEREAS, the State recognizes that the use of recovered LFG is of environmental and economic benefit; and

WHEREAS, LFG will continue to be generated by the Landfill, and will need to be collected and managed, beyond the term of OSA; and

WHEREAS, pursuant to the OSA, Casella is responsible for all closure and post-closure aspects of the Landfill arising during the term of the OSA and for closing those portions of the Landfill that reach final grade; and

WHEREAS, pursuant to the OSA, Casella is responsible for the posting of closure and post-closure bonds; and

WHEREAS, Casella acknowledges that the interests and obligations of the State as owner and co-licensee of the Landfill need to be recognized and addressed with regard to any contract or other arrangement for the location and operation of a LFG utilization project ("LFGTE") at the Landfill pursuant to the LGRA; and

WHEREAS, Casella acknowledges that the interests and obligations of the State as owner and co-licensee of the Landfill need to be recognized and addressed with regard to any subordination or collateral access agreement that may be requested in connection with Casella's financing arrangements; and

WHEREAS, Casella may request that the State consent to certain collateral access rights and the subordination of any State interests in machinery or equipment employed by Casella in the operation of the Landfill and to certain collateral access rights and the subordination of any State interests in machinery or equipment employed by LES in the operation of the LFGTE at the Landfill; and

WHEREAS, the State and Casella desire to amend the OSA to address the rights and obligations of the parties with regard to the location and operation of a LFGTE at the Landfill; and

WHEREAS, the State and Casella desire to amend the OSA to address the rights and obligations of the parties with regard to certain collateral access rights and the subordination of any State interests in machinery or equipment employed by Casella in the operation of the Landfill.

NOW THEREFORE, in consideration of the premises and the mutual covenants and obligations set forth herein, the Parties agree as follows:

1. The State hereby consents to the LGRA, subject to the following terms and conditions, including certain amendments to the LGRA agreed to in writing by both Casella and LES and described below in Sections 1.1 – 1.10:

1.1. Section 1.23 of the LGRA shall be amended by deleting the last sentence and replacing it with the following: “The LFGTE Facility Site shall be at the site identified on Exhibit A attached hereto, or such other location at the Landfill mutually agreed to by NEWSME and LES and consented to in writing by the State, which consent shall not be unreasonably withheld, delayed or conditioned, subject in all cases to the receipt of all necessary permits, licenses and approvals, including but not limited to a minor revision of the JRL landfill license, an air license and site plan approval by the City of Old Town. No such change of location may occur without the agreement of NEWSME and LES and the written consent of the State.”

1.2. Section 1.25 of the LGRA shall be deleted and replaced with the following: “License shall mean that license to be issued by the State, which will provide for construction of the LFGTE Facility at the Landfill by LES, its contractors or agents and grants access over and across the Landfill for the operation, service and maintenance by LES of the LFGTE Facility for the Term of the OSA, or as may be otherwise agreed to in writing by NEWSME, LES and the State”.

1.3. Casella agrees to notify the State of any adverse regulatory action relating to LES’s compliance with applicable permits, rules and regulations, including but not limited to air emissions, noise levels related to or associated with the operation and maintenance of the LFGTE Facility and/or the OSA, all as more specifically addressed in Section 4.4 of the LGRA.

1.4. Section 7 of the LGRA shall be deleted and replaced with the following:

“(a) NEWSME acknowledges that LES may, at its sole option, secure financing for some or all of the machinery or equipment owned by LES and that LES requires to perform under this Agreement and hereby consents to any encumbrance or lien on such machinery or equipment that make up the LFGTE Facility listed on Exhibit B hereto (together with any replacements thereof or additions thereto) (the “LES Equipment”) and hereby consents to a collateral assignment by LES of the LES Equipment and its rights under this Agreement as required from time to time by any such financing.

“(b) LES acknowledges that NEWSME may, at its sole option, secure financing for some or all of the machinery or equipment owned by NEWSME at the Landfill, including the LFG Management System and the Cameron H2S System. LES hereby consents to any encumbrance or lien thereon and hereby consents to a collateral assignment by NEWSME of its assets and its rights under this Agreement as required from time to time by any such financing.”

1.5. Section 9.1 of the LGRA shall be amended to extend to the State (a) LES’s indemnity obligations for any and all suits, actions, liabilities, legal proceedings, claims, demands, losses, costs and expenses arising from LES’s negligence or willful misconduct in connection with LES’s performance under the LGRA; and (b) LES’s indemnity obligations arising from LES’s violation of any law, regulation, code, judgment, order, permit, license or governmental approval, including but not limited to a violation of the OSA and/or the permit regarding the ownership, operation and maintenance of the Landfill.

1.6. Section 9.2 of the LGRA shall be amended to extend to the State (a) Casella’s indemnity obligations for any and all suits, actions, liabilities, legal proceedings, claims, demands, losses, costs and expenses arising from Casella’s negligence or willful misconduct in connection with Casella’s performance under the LGRA; and (b) Casella’s indemnity obligations arising from Casella’s violation of any law, regulation, code, judgment, order, permit, license or governmental approval, including but not limited to a violation of the OSA and/or the permit regarding the ownership, operation and maintenance of the Landfill.

1.7. Section 11.1 of the LGRA shall be amended to require Casella and LES to name the State as an additional insured with respect to general liability and automobile coverages. In the event LES and Casella purchase additional insurance, the State shall be named as an additional insured.

1.8. Section 12 of the LGRA shall be amended by adding a new sentence at the end of subsection 12.2 to read: “Notwithstanding the foregoing or the provisions of Section 12.1, any capital improvements to or at the Landfill, including without limitation any capital improvements made by LES, shall be and remain the property of the State without any compensation to

Casella or LES. The parties agree and acknowledge that the LES Equipment does not constitute capital improvements.”

1.9. Section 14 of the LGRA shall be amended by deleting the last sentence of subsection 14.3 and replacing it with the following: “In the event of a default which results in termination by LES, LES may remove, without the consent of the State, the LES Equipment, but may not remove any capital improvements made by LES, which capital improvements shall be and remain the property of the State without any compensation to Casella or LES. \ Notwithstanding the foregoing, LES shall notify Casella and the State prior to the removal of the LES Equipment. Such removal shall be conducted in a manner reasonably acceptable to Casella and the State and undertaken in a manner that does not unreasonably interfere with the operation of the Landfill.”

1.10 Section 16 of the LGRA shall be amended by adding the words “(except in connection with a collateral assignment to third parties in connection with secured financing)” after the words “provided that” in the two instances where it occurs in the second sentence of Section 16.

1.11. Notwithstanding any provision to the contrary in the LGRA, concurrently with the execution of the Agreement and the effectiveness of the amendment to the LGRA contemplated hereby, the State will enter into a license agreement with LES (the “LES License”), upon terms acceptable to Casella and LES, to permit the construction of the LFGTE Facility at the Landfill by LES or its agents and to grant access over and across the Landfill for the operation, service and maintenance by LES of the LFGTE Facility for the Term of the OSA and thereafter for so long as Casella continues to provide closure and post-closure services at the Landfill. The LES License shall contain provisions reflecting the provisions of this Third Amendment relating to the LES Equipment, including without limitation those confirming that such LES Equipment does not constitute capital improvements for purposes of the OSA.

1.12. Casella shall promptly notify the State of any material operating or regulatory compliance deficiencies relating to the LFGTE Facility and applicable permits, rules and regulations, including but not limited to air emissions, noise levels related to or associated with the operation and maintenance of the LFGTE Facility and/or relating to the OSA, of which

Casella becomes aware, including those coming to Casella's attention pursuant to Section 4.4 of the LGRA. Casella agrees to promptly notify LES of the receipt by Casella of any notice of breach by Casella under the OSA given by the State, and to keep LES promptly informed of any further material actions or proceedings taken or initiated by the State in connection therewith.

2. The OSA is amended by amending Section 2.1.4 to read in its entirety as follows:

"During the Term of the OSA and coterminous with the fulfillment, termination or discharge of Casella's closure and post closure obligations and its rights and obligations under this Agreement with respect to the Landfill, the right to take and use any landfill gas at the Landfill, all in accordance with applicable laws and regulations."

3. The OSA is amended by adding a new subsection 2.1.5 to read as follows:

"2.1.5. The State grants to Casella the right of access over and across the Landfill, upon terms and conditions agreed to by the Parties in writing, to meet Casella's closure and post-closure obligations with respect to the Landfill. The term of the right of access granted in this subsection 2.1.5 shall be coterminous with the fulfillment, termination or discharge of Casella's closure and post-closure obligations and its rights and obligations under this Agreement with respect to the operation of the Landfill."

4. The OSA is amended by adding a new subsection 2.1.6 to read as follows:

"2.1.6. The State grants to Casella the right of access over and across the Landfill, upon terms and conditions agreed to by the Parties in writing, to operate, service and maintain the LFG Management System, as that term is defined in the LGRA. The State agrees and acknowledges that, notwithstanding any other provision to the contrary in this Agreement, the assets listed on Exhibit C hereto, whether or not included in the LFG Management System, together with any replacements thereof and any additions thereto, do not constitute fixed capital improvements, buildings, fixtures or other improvements for purposes of this Agreement. The term of the right of access granted in this subsection 2.1.6 shall be coterminous with the rights granted to Casella pursuant to Section 2.1.5 of this Agreement."

5. Section 10.1 of the OSA is amended by deleting from the last sentence thereof the word "exclusive" and replacing it with the word "non-exclusive".

6. The OSA is amended by adding a new sentence at the end of Section 13.5 to read as follows:

"Casella's responsibility for closure and post-closure of the Landfill, including without limitation the posting of closing and post-closing bonds, shall survive termination of the OSA."

7. The OSA is amended by adding a new subsection 15.1 (d)(vi) to read as follows:

"15.1 (d)(vi) if Casella seeks protection under any bankruptcy, receivership, trust deed, creditors arrangement, composition or comparable proceeding, or if any such proceeding is instituted against Casella and not dismissed within 60 days thereafter; or"

8. The OSA is amended by adding a new subsection 15.1(d) (vii) to read as follows:

"15.1 (d) (vii) if the State has received a written notice from Casella's senior lender that the obligations under Casella's senior secured credit facility (in excess of \$15 million) have been accelerated prior to its stated maturity and that such senior lender intends to assert its rights under a written collateral access agreement with the State and to foreclose upon or otherwise dispose of Casella's or its subsidiaries' assets that are located on the Landfill, and such notice is not withdrawn or rescinded within ninety (90) days; or"

9. The OSA is amended by adding a new subsection 15.1 (d) (viii) to read as follows:

"15.1 (d)(viii) if Casella defaults in its obligation in Section 7 hereof to be responsible for all costs and expenses related to Landfill regulatory compliance, including but not limited to Casella's obligation to provide financial assurance for conducting post-closure care and maintenance of the Landfill for at least 30 years after closure of the facility."

10. The OSA is amended by adding a new subsection 15.2 (e) to read as follows:

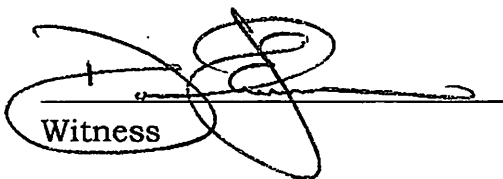
“15.2 (e) Upon request of the State at or following termination of this Agreement (other than upon expiration of the term of this Agreement or a termination arising from the breach hereof by the State), subject to the rights of Casella’s senior lenders, Casella shall assign to the State all its interests in the LGRA upon terms and conditions agreed to by the parties.”

11. The OSA is amended by adding the following text at the end of Section 24.1 thereof:

“The State agrees that, upon the request of Casella from time to time, the State will execute and deliver subordination and collateral access agreements in favor of Casella’s senior secured lenders, in form and substance reasonably acceptable to the State. The parties agree that a subordination and collateral access agreement substantially in the form attached hereto as Exhibit D is deemed reasonably acceptable to the State.”

12. Except as provided in this Third Amendment, the OSA shall remain in full force and effect in accordance with its terms.

IN WITNESS WHEREOF, the parties have caused this Third Amendment to Operating Services Agreement to be executed and delivered by their duly authorized representatives as of the day and year first above written.


Witness

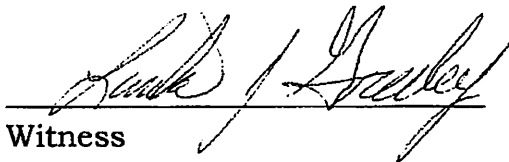
CASELLA WASTE SYSTEMS, INC.

By:

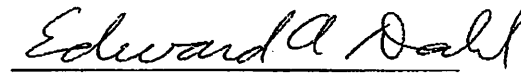

Name: Brian Oliver

Title: Vice President

STATE OF MAINE, Department of
Administrative and Financial Services,
Bureau of General Services


Witness

By:

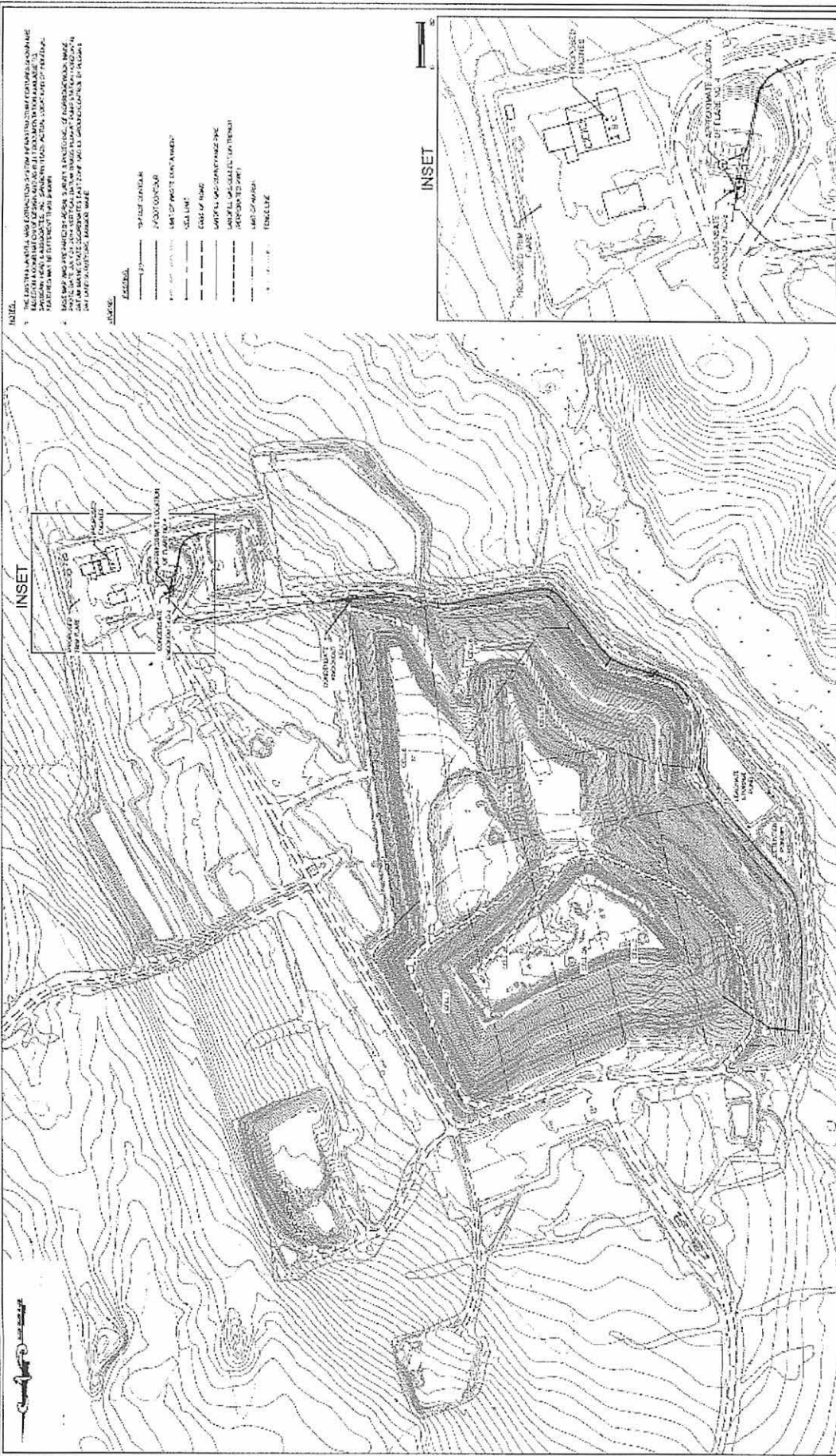


Name: Edward A. Dahl

Title: Director

EXHIBIT A

(See Attached)



NOTES:

1. THE EXISTING AND PROPOSED CONDUIT AND TRENCH LOCATIONS ARE BASED ON THE INFORMATION PROVIDED BY THE CLIENT AND ARE SUBJECT TO VERIFICATION BY THE ENGINEER. THE ENGINEER HAS CONDUCTED VISUAL INSPECTIONS OF THE EXISTING CONDUIT AND TRENCH LOCATIONS AND HAS FOUND THEM TO BE IN ACCORDANCE WITH THE INFORMATION PROVIDED BY THE CLIENT.
2. THE PROPOSED CONDUIT AND TRENCH LOCATIONS ARE BASED ON THE INFORMATION PROVIDED BY THE CLIENT AND ARE SUBJECT TO VERIFICATION BY THE ENGINEER. THE ENGINEER HAS CONDUCTED VISUAL INSPECTIONS OF THE EXISTING CONDUIT AND TRENCH LOCATIONS AND HAS FOUND THEM TO BE IN ACCORDANCE WITH THE INFORMATION PROVIDED BY THE CLIENT.

LEGEND:

- PROPOSED CONDUIT
- PROPOSED TRENCH
- LIMIT OF PROPOSED FACILITY
- SEAL LINES
- EXISTING CONDUIT
- PROPOSED CONDUIT
- PROPOSED TRENCH
- PROPOSED STRUCTURE
- PROPOSED ROAD
- PROPOSED DRIVE

INSET

SANBORN		HEAD	
DRAWING: R. CLAY, E. 1158987 DESIGNED BY: R. CLAY REVIEWED BY: D. TOUGONAWT PROJECT NO.: J. DORRIS DATE: JUNE 2018		PROJECT NUMBER: 3680 00 SHEET NUMBER: 1	
JUNIPER RIDGE ENERGY 8001 JUNIPER RIDGE		SITE PLAN	

EXHIBIT B

Initial LES Equipment

Processing equipment will include the following equipment (together with any replacements thereof and additions thereto):

- Gas Compression
- Gas Treatment components
- Engine-Generators and associated ancillary equipment
- Generation Switchgear
- Generation substation equipment
- Controls and Motor Control Centers associated with above equipment
- Plant office equipment, spare parts inventory

[NOTE: Equipment is on order; serial number, etc., not yet available]

EXHIBIT C**Casella/NEWSME Equipment
(non-Capital Improvements)**

Asset #	Description	Unit Number	Serial Number
11029	Pickup, 2000 Chevrolet	6252	2GCEK19V7Y1103176
11575	Ford Ranger Pickup, 2000	6355	1FTYR14U0XTB02797
16473	Trailer, 1987 Fruehauf	70831	1H2V04825HH060718
25713	Trailer 8X20 Hydraulicdeckover	71034	434DC25237C062321
2348	Bulldozer, Cat 91 D4H	9923	4664
6224	Auto, Chevy 97 Tahoe	1100	1GNEK13ROVJ378943
10161	Wheel Loader, Cat 966F li	9127	1SL02282
12908	Pickup, Chevrolet 1500 1997	6367	1GCEC14W9VZ152430
13029	Dump Truck 97 Intl Tri Axle	6369	1HTGLAET1VH481550
15969	Svc Truck, Ford 97 F450 4X2	6404	3FELF47F6VMA68019
21445	Plow Truck, 1987 Ford L8000	6517	QFDYK8OU7HVA67526
25566	Fuel Truck	9930	1FV6HFBB1SL653608
25569	Fuel Truck	9928	JW6HCFIB4JK000246
27648	Truck, 2008 Ford F350 Pickup	6719	1FTWF31548ED41761
28276	Truck, 2009 Toyota Tundra	6737	5TFBT541X9X015142
30320	Jd 400 Articulating Dump Truck	9855	DW400DT604831
30958	2008 Ford F250	6659	1FTSW215X8EC69134
32545	2007 International 4300	6807	1HTMMAAN67H422908
32789	2006 Toyota Corolla	1527	2TIBR32E36C692844
21444	H2S Analyzer		2249
22202	Gas Pod For Analyzer		
22203	Sander		4685
22846	Jerome H2S Analyzer Model631-X		2312
23130	Honda Pressure Washer On Trlr		4K1PT4C155K000439
24069	Isuzu Diesel Generator 120/240		
24985	Pressure Washer		
24986	Compressor		
24987	Welder-Power Mig 350Mp Package		V1061107395
24988	Welder 225A Dc Welder		LG078260

Asset #	Description	Unit Number	Serial Number
24989	Plasma Cutter		3821963
25142	Shop Tools		
25143	5Hp Light Duty Compressor		6004096
25144	2Hp 24Gal Compressor Irss3R2Gm		
25452	Chain Hoist-5 Ton Electric		
26331	Portable Litter Fence		
26686	Fisher Plow-Extreme V Plow		
30673	Hydraulic Jack		
30674	10' Swanson Sander		
34160	2007 Jd 850J Dozer	9901*	T0850JX128632
34827	Sulfa Treat System		
904764	Forklift-1998 Cat Gp25Lphp	9699	5AM92524
4442	Skid Steer, Bobcat 96 763	9025	512220170
6351	Articulated Truck, Dumptruck	9013	5TN00433
11003	All Terrain Vehicle, 95 Polaris	9212	2587809
12880	Wheel Loader, Cat 01 966G	9469	35W735
13821	Articulated Truck, Cat 95 D250	9013A	
14304	Grapple Bondine 3/2 Tines		
15449	Gas Blower		
16650	Welder On Service Truck #6404		
18069	D6R 1997 Caterpillar Dozer	9654	9PN00663
23680	Excavator, John Deere 270	9846	FF270CX702558
24008	Loader, John Deere 744	9854	DW744JX586551
24009	Crawler Dozer John Deere 850J	9837	T0850JX123883
24071	Trailer Mounted Dav System		
24670	Trimble Gcs900V10 Dual Ms980		T716/T605
24992	Emergency Response Trailer	71033	
25120	966 Bucket 5.25Cy	9469*	
25145	Confined Space Trailer	71035	4U01C10176A029589
27067	80' Portable Spray Unit Trlr		
27793	Jack		
27966	2000 Cat 826G Compactor	9926	7LN552
27987	Somatex Bridge Crane		
27988	Gps System Trimble Sn B900		
28385	Pro Heat Unit X3		
28480	Gideon Air Cleaner		
29668	2007 Fusion Machine		
30288	Bench Press		
30338	Radio Control System For Crane		

Asset #	Description	Unit Number	Serial Number
30367	Track Loader Cat 299C		JSP01105
30666	John Deere 850J Crawler Dozer	90131	1T0850JXJA0190710
30715	Plow/Forks For Track Loader		
30716	Gps System For Jd850	90131*	
30934	Winter Tracks For Skidsteer		
30935	Gps Upgrade	90131**	
31705	2001 Johnston J4000 Sp St Swee	90165	1J9VM4H351C172058
31706	Receiver Board Assembly	90131***	
32069	Skidsteer Attachments		
34942	Gps Receiver Antennas	90131*****	
35554	Sulfa Treat Can X4		
36875	Thiopaq		
36743	Gps Upgrade Trimble		
8335	20Yd, Ro Open Top		
19922	Router, Wan Interface Card		S32396059
22681	Kronos Time Clock		
30339	Tables/Chairs-Conference Room		
	Gem Landfill Gas Monitor		
	Scale System		
29835	Block Heater		

EXHIBIT D

EXECUTION VERSION

AGREEMENT

This AGREEMENT ("Agreement") is made and entered into as of this 20th day of August, 2015, by and among the State of Maine, acting by and through its Department of Administrative and Financial Services, Bureau of General Services ("Owner"), Casella Waste Systems, Inc., a Delaware corporation ("Operator"), and BANK OF AMERICA, N.A., as agent ("Agent") for the lenders (collectively, "Lenders") from time to time party to the Loan Agreement described below.

WHEREAS, the Owner and the Operator are party to an operating services agreement (the "Operating Services Agreement") providing for the operation by the Operator of a facility on the Owner's real property commonly known as the solid waste landfill located in Old Town, Maine ("Owner's Property"); and

WHEREAS, Owner is informed that Agent and Lenders have previously entered into a Loan and Security Agreement (the "Loan Agreement") and other loan documents with Operator, and certain of its affiliates, and to secure the obligations arising under such Loan Agreement, Operator has granted to Agent, for its own benefit and the ratable benefit of Lenders, a security interest in and lien upon certain personal property, including without limitation, those assets described on Schedule 1 attached hereto, and replacements thereof, that are owned by Operator and located or to be located in and upon said Premises (the property listed on Schedule 1, collectively, the "Collateral"). For the avoidance of doubt, in no event shall the term "Collateral" include any fixed capital improvements to the Owner's Property or any other buildings, fixtures or other improvements.

NOW, THEREFORE, in consideration of One Dollars (\$1.00) and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereby agree as follows:

1. **Acknowledgement.** Owner acknowledges that (a) the Operating Services Agreement is in full force and effect, and (b) to Owner's knowledge, without investigation or inquiry, Operator is not in default under the Operating Services Agreement.
2. **Subordination of Owner's Lien.** Owner agrees that until such time as the obligations of Operator to Agent and Lenders are indefeasibly paid in full and all commitments to lend thereunder have terminated, Owner subordinates any interest of Owner in the Collateral to the interests of the Agent and the Lenders, and agrees not to distraint or levy upon any Collateral or assert any lien, right of distraint or other claim against the Collateral for any reason.
3. **Notices.**
 - (a) Agent will use reasonable efforts to notify Owner in the event Operator is in monetary default under the Loan Agreement and when Operator has paid in full and all commitments to lend have been terminated provided, however, Agent shall have no liability to Owner for failing to so notify Owner.
 - (b) Owner will use reasonable efforts to provide Agent (at the same time Owner sends such a notice to Operator) with (i) written notice of the termination of the Operating

Services Agreement as a result of any default or failure to perform by Operator under the Operating Services Agreement (a "Termination Notice"), and (ii) any other notice given by the Owner to the Operator of a default or failure to perform a material obligation under the Operating Services Agreement; provided, however, Owner shall have no liability to Agent for failing to provide any such notice to Agent. Operator shall provide Agent with a copy of any Termination Notice or any other notice given by the Owner to the Operator of a default or failure to perform a material obligation under the Operating Services Agreement within two (2) business days of receipt.

(c) All notices required hereunder to be given shall be in writing, sent by certified mail, return receipt requested, or overnight delivery by a reputable overnight courier, to the respective parties at the addresses set forth below, or at such other addresses as the receiving party shall designate in writing:

Owner: State of Maine

Department Administrative & Financial Services
Bureau of General Services
77 State House Station
Augusta, ME 04333-0077
Attention: Director of Bureau of General Services

Operator: Casella Waste Systems, Inc.

25 Greens Hill Lane
Rutland, VT 05701
Attn: Office of General Counsel

Agent: Bank of America, N.A.
225 Franklin Street
MA1 225 02 05
Boston, MA 02110
Attention: Jolanta Bialek

4. Agreements.

(a) Agent may, after the occurrence of an event of default and acceleration of the obligations under the Loan Agreement, give notice (a "Disposition Period Notice") to the Owner and the Operator of the Agent's election to commence a Disposition Period. The "Disposition Period" shall commence on the earlier to occur of (i) the effective date of the termination of the Operating Services Agreement designated by the Owner in a Termination Notice that has been delivered by the Owner to Agent (or if later, 90 days after the date of notice given by the Owner to the Operator (a copy of which has been delivered to the Agent before the effective date of a termination under the Termination Notice) of a default or failure to perform a material obligation under the Operating Services Agreement which default or failure to perform has not been cured and has resulted in the termination specified in the Termination Notice), or (ii) the 90th day following receipt by Owner of a Disposition Period Notice (such time, a "Disposition Period

Commencement Date”) and shall end on the Disposition Period End Date. The “Disposition Period End Date” shall be the earlier of (i) 90 days following the Disposition Period Commencement Date and (ii) the date on which the Collateral has been removed from the Premises. Notwithstanding the foregoing, with respect to the Delayed Removal Collateral (defined below), the Disposition Period Commencement Date may be postponed for a period of up to 275 days in a written election of the Owner, if the Owner in its reasonable discretion determines that it is necessary to maintain such Delayed Removal Collateral for an additional period of time to ensure that there is no interruption in the operation and maintenance of the landfill operated at the Owner’s Property. The “Delayed Removal Collateral” means the Collateral identified on Schedule 2.

(b) During any Disposition Period, upon at least 48 hours notice, Agent and its representatives may enter into and be present upon the Premises and inspect, repossess, and/or remove the Collateral, and Agent may conduct private sales of the Collateral at the Premises. If Agent conducts a private sale of the Collateral at the Premises, Agent shall notify Owner prior to such sale. Such sale shall be conducted in a manner reasonably acceptable to Owner and undertaken in a manner that does not unreasonably interfere with the operation of the landfill. The Agent will provide information reasonably requested by the Owner regarding the disposition of the Collateral during the Disposition Period.

(c) Agent shall promptly repair, at Agent’s expense, or, at Owner’s request, immediately reimburse Owner for any physical damage to the Premises caused by the conduct of such private sale and any removal of Collateral by or through Agent (ordinary wear and tear excluded). Subject to the foregoing, neither Agent nor any Lender shall be liable for any diminution in value of the Premises caused by the absence of Collateral removed, and neither Agent nor any Lender shall have any duty or obligation to remove or dispose of any Collateral or any other property left on the Premises by Operator.

(d) After the Owner’s receipt of a Disposition Period Notice, Owner may enter into and be present upon the Premises and inspect (or cause to be inspected) the Collateral.

(e) After the Owner’s receipt of a Disposition Period Notice and until the Disposition Period End Date, if the Operating Services Agreement has been terminated, or if the Owner has given Casella a notice of Casella’s default or failure to perform under the Operating Services Agreement, and such default or failure to perform has not been cured, Owner may use and/or operate (or cause to be used or operated) any Collateral on the Premises as Owner deems necessary in its reasonable discretion, subject to the rights of the Agent under Section 4(b) hereof during a Disposition Period.

(f) No action by Agent or any Lender pursuant to this Agreement shall be deemed to be an assumption by Agent or such Lender of any obligation under the Operating Agreement and/or an assignment of the Operating Agreement to Agent or Lender.

5. Miscellaneous.

Section headings are for convenience of reference only and in no way shall be used to construe or modify the provisions set forth in this Agreement. Operator hereby agrees that Owner shall

have no duty or obligation to inquire into the accuracy or validity of any default by Operator with respect to the security agreements, and Operator hereby agrees that nothing contained in this Agreement nor Owner's acts or failures to act in connection herewith shall be deemed a default by Owner under the Operating Services Agreement, and Operator hereby waives all claims of whatever nature or kind Operator may have against Owner in connection with this Agreement and/or Owner's acts or failures to act in connection with herewith. This Agreement shall be governed by and construed in accordance with the laws of the State of Maine. It is specifically understood and agreed that this Agreement shall not be binding in any manner upon any present or future mortgagee of the aforesaid real estate. This Agreement may be executed in any number of several counterparts and shall inure to the benefit of Agent and its successors and assigns provided Owner receives written notice of such transfer and/or assignment and shall be binding upon Owner and its successors and assigns (including any transferees of the Premises). Owner agrees and consents to the filing of this document for recording in the land records of the county in which the Premises is located provided Owner incurs no additional cost in connection therewith.

[Signatures Appear on Following Page]

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

Owner: State of Maine, Dept of Administrative and Financial Services
By: R. W. Rosen
Name: Richard W. Rosen
Title: Commissioner

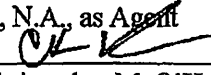
Agent: Bank of America, N.A., as Agent
By: _____
Name: _____
Title: _____

Operator: _____
By: _____
Name: _____
Title: _____

[Corporate Seal]

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

Owner: _____
By: _____
Name: _____
Title: _____

Agent: Bank of America, N.A., as Agent
By:  _____
Name: Christopher M. O'Halloran
Title: Senior Vice President

Operator: _____
By: _____
Name: _____
Title: _____

[Corporate Seal]

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

Owner: _____
By: _____
Name: _____
Title: _____

Agent: Bank of America, N.A., as Agent
By: _____
Name: _____
Title: _____

Operator: _____
By: *[Signature]*
Name: JOHN W. CASELLA
Title: Chairman & CEO

[Corporate Seal]

SCHEDULE 1

Asset #	Description	Unit Number	Serial Number
11029	Pickup, 2000 Chevrolet	6252	2GCEK19V7Y1103176
11575	Ford Ranger Pickup, 2000	6355	1FTYR14U0XTB02797
16473	Trailer, 1987 Fruehauf	70831	1H2V04825HH060718
25713	Trailer 8x20 HydraulicDeckover	71034	434DC25237C062321
2348	Bulldozer, Cat 91 D4H	9923	4664
6224	Auto, Chevy 97 Tahoe	1100	1GNEK13ROVJ378943
10161	Wheel Loader, Cat 966F II	9127	1SL02282
12908	PICKUP, CHEVROLET 1500 1997	6367	1GCEC14W9VZ152430
13029	DUMP TRUCK 97 INTL TRI AXLE	6369	1HTGLAET1VH481550
15969	Svc Truck, Ford 97 F450 4x2	6404	3FELF47F6VMA68019
21445	Plow Truck, 1987 Ford L8000	6517	QFDYK8OU7HVA67526
25566	Fuel Truck	9930	1FV6HFBB1SL653608
25569	Fuel Truck	9928	JW6HCFIB4JK000246
27648	Truck, 2008 Ford F350 Pickup	6719	1FTWF31548ED41761
28276	Truck, 2009 Toyota Tundra	6737	5TFBT541X9X015142
30320	JD 400 Articulating Dump Truck	9855	DW400DT604831
30958	2008 Ford F250	6659	1FTSW215X8EC69134
32545	2007 International 4300	6807	1HTMMAAN67H422908
32789	2006 Toyota Corolla	1527	2TIBR32E36C692844
21444	H2S Analyzer		2249
22202	Gas Pod for Analyzer		

22203	Sander		4685
22846	Jerome H2S Analyzer Model631-X		2312
23130	Honda Pressure Washer on trlr		4K1PT4C155K000439
24069	Isuzu Diesel Generator 120/240		
24985	Pressure Washer		
24986	Compressor		
24987	Welder-Power MIG 350MP package		V1061107395
24988	Welder 225A DC Welder		LG078260
24989	Plasma Cutter		3821963
25142	Shop Tools		
25143	5HP Light Duty Compressor		6004096
25144	2HP 24Gal Compressor IRSS3R2GM		
25452	Chain Hoist-5 ton Electric		
26331	Portable Litter Fence		
26686	Fisher plow-Extreme V plow		
30673	Hydraulic Jack		
30674	10' Swanson Sander		
34160	2007 JD 850J Dozer	9901*	T0850JX128632
34827	Sulfa Treat System		
904764	Forklift-1998 Cat GP25LPHP	9699	5AM92524
4442	Skid Steer, Bobcat 96 763	9025	512220170
6351	Articulated Truck, Dump Truck	9013	5TN00433
11003	All Terrain Vehicle, 95 Polaris	9212	2587809

12880	Wheel Loader, Cat 01 966G	9469	35W735
13821	Articulated Truck, CAT 95 D250	9013A	
14304	Grapple Bondine 3/2 Tines		
15449	Gas Blower		
16650	Welder on Service Truck #6404		
18069	D6R 1997 Caterpillar Dozer	9654	9PN00663
23680	Excavator, John Deere 270	9846	FF270CX702558
24008	Loader, John Deere 744	9854	DW744JX586551
24009	Crawler Dozer John Deere 850J	9837	T0850JX123883
24071	Trailer Mounted DAV System		
24670	Trimble GCS900v10 Dual MS980		T716/T605
24992	Emergency Response Trailer	71033	
25120	966 Bucket 5.25CY	9469*	
25145	Confined Space Trailer	71035	4U01C10176A029589
27067	80' Portable Spray Unit Trlr		
27793	Jack		
27966	2000 Cat 826G Compactor	9926	7LN552
27987	Somatex Bridge Crane		
27988	GPS System Trimble SN B900		
28385	Pro Heat Unit x3		
28480	Gideon Air Cleaner		
29668	2007 Fusion Machine		
30288	Bench Press		

30338	Radio Control System for Crane		
30367	Track Loader Cat 299c		JSP01105
30666	John Deere 850J Crawler Dozer	90131	1T0850JXJA0190710
30715	Plow/Forks for Track Loader		
30716	GPS System for JD850	90131*	
30934	Winter Tracks for Skidsteer		
30935	GPS Upgrade	90131**	
31705	2001 Johnston J4000 SP ST Swee	90165	1J9VM4H351C172058
31706	Receiver Board Assembly	90131***	
32069	Skidsteer Attachments		
34942	GPS Receiver Antennas	90131*****	
35554	Sulfa Treat Can x4		
36875	Thiopaq		
36743	GPS Upgrade Trimble		
8335	20YD, RO OPEN TOP		
19922	Router, WAN Interface card		S32396059
22681	Kronos Time Clock		
30339	Tables/Chairs-Conference Room		
	GEM Landfill Gas Monitor		
	Scale System		
29835	Block Heater		

SCHEDULE 2

34827 Sulfa Treat System
15449 Gas Blower
35554 Sulfa Treat Can x4

APPENDIX D

**JUNIPER RIDGE LANDFILL 2007 PRELIMINARY INFORMATION REPORT
DETERMINATION OF ENVIRONMENTAL FEASIBILITY**

APPENDIX A-2

**MEDEP APRIL 13, 2007 LETTER "DETERMINATION OF
ENVIRONMENTAL FEASIBILITY"
PROPOSED EXPANSION**



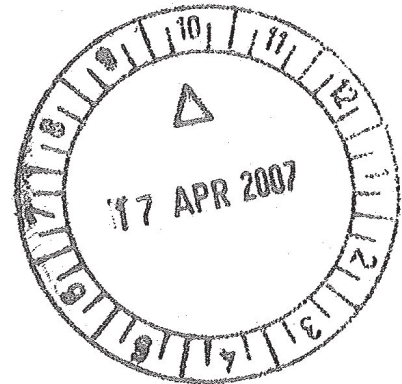
STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCI
GOVERNOR

DAVID P. LITTELL
COMMISSIONER

April 13, 2007

George MacDonald, Manager
Waste Management & Recycling Program
State of Maine Executive Department
State Planning Office
38 State House Station
Augusta, Maine 04333-0038



Martin L. Drew, Divisional Landfill Manager
Juniper Ridge Landfill
2828 Bennoch Road
Alton, Maine 04468

Re: Staff Response to Preliminary Information Report for Expansion of Juniper Ridge Landfill; DEP # S-020700-WQ-X-N

Dear George and Marty:

The Department has completed its review of the Preliminary Information Report ("PIR"), dated November, 2006, for a proposed expansion of the Juniper Ridge Landfill, owned by the State of Maine and operated by NEWSME, LLC.

The purpose of the PIR is to demonstrate that the proposed landfill will meet the prohibitive siting criteria in Chapter 401.1.C(2) of the Solid Waste Management Regulations, and to preliminarily identify any of the restrictive siting criteria in Chapter 401.1.C(3) to which a variance may be needed.

The majority of the information required to be included in the PIR concerns basic geologic/hydrogeologic information about a proposed landfill site, thus most of the discussion at the preliminary information meeting held on February 21, 2007 at JRL was led by Dick Behr, the staff geologist for the project. Included with this letter is a memorandum prepared by Dick, dated April 3, 2007, which summarizes his review of the PIR. The memorandum also accurately summarizes Dick's comments during the February 21st meeting; staff expect that the comments and recommendations will be incorporated into the preparation of the expansion application.

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826
RAY BLDG., HOSPITAL ST.

BANGOR
106 HOGAN ROAD
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

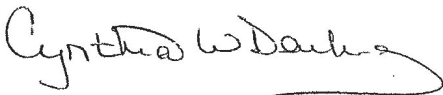
PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769-2094
(207) 764-0477 FAX: (207) 760-3143

Mr. George MacDonald - MESPO - Recycling and Waste Management
Mr. Marty Drew - NEWSME, LLC
RE: PIR for expansion of JRL
April 13, 2007

Also included with this letter are two other documents: one is a copy of my notes from the February 21st meeting, and the other is a summary of the various steps required by statute and/or regulation that apply to applications to expand a landfill.

In conclusion, based on the Department's review of the limited information contained in the PIR, staff have determined that the proposed landfill expansion appears to be environmentally feasible. We concur that none of the siting criteria of Chapter 401.1.C(2) prohibit the proposed landfill. This opinion does not constitute the Department's approval of the landfill or the site. This opinion is the Department's concurrence with the applicant that the site warrants further investigation to determine its suitability and further define the facility design, and that the Department expects to see an application prepared and filed in accordance with all applicable statutory and regulatory requirements.

Sincerely,



Cynthia W. Darling
Division of Solid Waste Management
Bureau of Remediation and Waste Management
Eastern Maine Regional Office

Encl.

pc: Steve Patch
Dick Behr
Amanda Wade

XCD62308

APPENDIX E

**JUNIPER RIDGE LANDFILL 2012 PUBLIC BENEFIT DETERMINATION
PARTIAL APPROVAL**

Copy - Secret Moka
Engineers

RECEIVED FEB 03 2012



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

IN THE MATTER OF

STATE OF MAINE, ACTING THROUGH THE	)	PUBLIC BENEFIT
STATE PLANNING OFFICE	)	DETERMINATION
OLD TOWN, PENOBSCOT COUNTY, MAINE)	
JUNIPER RIDGE LANDFILL EXPANSION)	
#S-020700-W5-AU-N	)	PARTIAL APPROVAL
(APPROVAL WITH CONDITIONS))	

Pursuant to the provisions of the *Maine Hazardous Waste, Septage and Solid Waste Management Act*, 38 M.R.S.A. §§1301 to 1319-Y; and the *Solid Waste Management Rules: General Provisions*, 06-096 CMR 400 (last amended July 20, 2010) and *Landfill Siting, Design and Operation*, 06-096 CMR 401 (last amended July 20, 2010), the Commissioner of the Department of Environmental Protection ("Department") has considered the application of THE STATE OF MAINE, ACTING THROUGH THE STATE PLANNING OFFICE ("SPO") with its supportive data, staff review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. APPLICATION SUMMARY

- A. Application: The applicant has applied for a determination of public benefit for the proposed Juniper Ridge Landfill Expansion ("the expansion"), located in Old Town, Maine. The expansion is proposed to accept the same waste types as are currently disposed in the Juniper Ridge Landfill: special wastes, construction and demolition debris ("CDD"), miscellaneous non-special wastes, and municipal solid waste ("MSW") bypass from Maine's 4 MSW incinerators. The expansion is proposed to provide 21.9 million cubic yards of additional capacity at the facility. SPO states that the expansion will provide capacity for approximately 20 years based on disposal needs projected in the latest *State of Maine Waste Management and Recycling Plan* dated January 2009 ("State Plan") and the *Solid Waste Generation and Disposal Capacity Report for Calendar Year 2009*, dated January 2011 ("Capacity Report"), both prepared by SPO. To allow for the Department's periodic review of an affirmative determination of public benefit, the applicant divided the proposed expansion into 3 phases.
- B. History: On October 21, 2003, the Department issued conditional approval for the transfer of licenses for the West Old Town Landfill, developed and operated by Georgia-Pacific Corporation, to the SPO (Department licenses #S-020700-

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STATE PLANNING OFFICE)	DETERMINATION
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#S-020700-W5-AU-N)	PARTIAL APPROVAL
(APPROVAL WITH CONDITIONS))	

WR-M-T and #L-019015-TH-C-T); the transfer became effective when the sale of the landfill to SPO occurred on February 5, 2004. On February 5, 2004, SPO also finalized an Operating Services Agreement (“OSA”) with Casella Waste Systems, Inc. (“Casella”), for the operation of the WOTL. On April 9, 2004, the Department approved the amendment application (Department license #S-020700-WD-N-A) for a vertical increase in the final elevation of the landfill and the disposal of additional waste streams (“the amendment license”). The West Old Town Landfill is now known as the Juniper Ridge Landfill. Solid waste is currently disposed in cells 6 and 7 of the landfill; cells 8 through 11 will be constructed and operated in the future.

On November 19, 2009, SPO filed an application for a determination of public benefit for the same capacity requested in this application. On January 5, 2010, the Department issued a draft denial of that application. On January 13, 2010, the applicant withdrew the application prior to finalization of the denial decision.

2. APPLICABLE LAW

The applicable law for a determination of substantial public benefit is 38 M.R.S.A. §1310-AA, which establishes the process and standards to be used in determining whether proposed new solid waste disposal capacity provides a substantial public benefit. In the first regular session of the 124th Legislature, 38 M.R.S.A. §1310-AA was amended to extend applicability to new state-owned facilities or expansions to existing state-owned facilities.

38 M.R.S.A. §1310-AA(3) reads as follows:

Standards for determination. The commissioner shall find that the proposed facility under subsection 1 or the acceptance of waste that is not generated within the State under subsection 1-A provides a substantial public benefit if the applicant demonstrates to the commissioner that the proposed facility or the acceptance of waste that is not generated within the State:

- A. Meets immediate, short-term or long-term capacity needs of the State;

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#S-020700-W5-AU-N)	PARTIAL APPROVAL
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- B. Except for expansion of a commercial solid waste disposal facility that accepts only special waste for landfilling, is consistent with the state waste management and recycling plan;
- C. Is not inconsistent with local, regional or state waste collection, storage, transportation, processing or disposal; and
- D. For a determination of public benefit under subsection 1-A only, facilitates the operation of a solid waste disposal facility and the operation of that solid waste disposal facility would be precluded or significantly impaired if the waste is not accepted.

The law further provides that “[i]n making the determination of whether the facility under subsection 1 or the acceptance of waste that is not generated within the State under subsection 1-A provides a substantial public benefit, the commissioner shall consider the state plan, written information submitted in support of the application and any other written information the commissioner considers relevant.”¹

3. PUBLIC PARTICIPATION

As provided in 38 M.R.S.A. § 1310-AA, the Department accepted written public comments on the application for at least 20 days following receipt of the complete application on September 15, 2011. The Department received numerous comments on the application, both orally and in writing. Those that commented in opposition to the application primarily focused on the following issues: the need for an “audit” of solid wastes handled by Casella at its Maine facilities, the source and types of wastes disposed at Juniper Ridge Landfill, the acceptance of excess residuals from the processing of CDD known as “fines”, the lack of a statutory or regulatory definition of “immediate”, “short-term” or “long-term” capacity, and the effect legislative decisions on several solid waste legislative documents (“LDs”) held over from the last legislative session may have on the State’s solid waste disposal capacity needs and operation of the Juniper Ridge Landfill. Those that commented in support of the application primarily focused on the following issues: the need businesses and municipalities in Maine have for predictable and reliable long-term landfill capacity for their solid wastes that cannot be handled other than in landfills, the commentors' knowledge of the operation of Juniper Ridge Landfill, and the business expertise and reputation of Casella. Also, some comments were neither for nor against the project; these commentors' provided questions about the project and

¹ 38 M.R.S.A. §1310-AA(2)

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recommendations for changes to the existing operation or licenses for Juniper Ridge Landfill.

The Commissioner concluded that a public informational meeting would be held on the application, and notice of the meeting was provided to interested parties. On October 24, 2011, in accordance with the above statute, the Department held a public informational meeting on the application in the vicinity of the proposed project. The meeting was recorded, and an audio tape of the meeting is also part of the project record.

Comments received that pertained to the determination of public benefit criteria provided in Finding of Fact #2, above, are addressed throughout this determination.

4. DESCRIPTION OF SPO/CASELLA RELATIONSHIP

As described in Finding of Fact #1.B., above, the SPO is the owner of the Juniper Ridge Landfill and the proposed expansion, and is the applicant for this application. Casella is the long-term operator of the landfill. Actual operations are by NEWSME Landfill Operations LLC (“NEWSME”), a company in which a Casella subsidiary holds the sole membership interest. The terms and conditions of NEWSME Operations’ operation of the landfill are established by the OSA between SPO and Casella, dated February 5, 2004, and amended on July 24, 2006 and November 2, 2006.

While SPO retains ownership of the landfill, in accordance with the Resolve 2003, Chapter 93 and the OSA, Casella/NEWSME Operations is required to pay all costs associated with the development, operation, closure and post-closure care of the landfill and the proposed expansion. In addition, Casella/NEWSME Operations is required by the OSA to establish and maintain financial assurance for the landfill and the expansion sufficient to meet the closure and post-closure care provisions of the applicable solid waste management regulations, assume liability for the landfill and the proposed expansion under both the current (including past actions by Georgia-Pacific Corporation) and future conditions, and assure that adequate disposal capacity is provided for the wastes currently disposed in the landfill for at least a 20 year period.

Condition #6 of the license transferring the landfill licenses (Department license #S-020700-WR-M-T, dated October 21, 2003) from Georgia-Pacific Corporation to SPO requires that if Casella or a subsidiary of Casella is replaced as the operator, prior to

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finalization of a new OSA, SPO must submit to the Department for its review and approval information on the financial capacity of the new operator, information on the financial assurance to be provided by the new operator consistent with 38 M.R.S.A. §400.11 or successor regulations in effect at that time, and information on the technical ability of the new operator.

Casella has prepared an application to expand the Juniper Ridge Landfill in accordance with the terms of the OSA signed by SPO and Casella; the OSA requires that the expansion application be ready for submission by February 5, 2009, but leaves the decision as to when to submit the application to Casella. With the amendment of 38 M.R.S.A. §1310-AA to include expansions to existing state-owned facilities as being subject to the public benefit determination requirements, the Commissioner must determine that the proposed expansion of the Juniper Ridge Landfill will provide a public benefit before the expansion application can be submitted.

The Commissioner finds that the OSA is a contract between the State of Maine, acting by and through SPO, and Casella; the Department is not a party to the contract. Findings of fact and conclusions of law made by the Commissioner on this application are based on the standards and criteria set forth in the applicable law; see Finding of Fact #2, above. The Commissioner further finds that the Department is not bound by the capacity commitments in the OSA; instead, the Department has reviewed the capacity needs in the immediate, short and long term periods. The Commissioner also finds that reference to the applicant in this determination refers to both SPO and Casella/NEWSME Operations (or a successor operator).

5. CAPACITY NEEDS

To determine whether the proposed expansion provides a substantial public benefit, the Commissioner must determine, first, whether the applicant has demonstrated that the proposed increase in landfill capacity meets the immediate, short-term or long-term capacity needs of the State.

- A. The Application: The applicant asserts that the proposed expansion is necessary to meet the long-term capacity needs of the State of Maine. The proposed expansion would provide approximately 21.9 million cubic yards of capacity, with an estimated 20 years of site life. The applicant proposes to develop the

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capacity in 3 phases: Phase I would have approximately 5.45 million cubic yards of capacity and a life of approximately 5 to 7 years; Phase II would have approximately 9.35 million cubic yards of capacity and a life of approximately 8 to 11 years; and Phase III would have approximately 7.08 million cubic yards of capacity and a life of approximately 7 to 9 years. The applicant proposes division of the expansion into phases in expectation that the Department will condition approval of the public benefit determination to require periodic checks on the use of landfill capacity before submittal of applications to develop additional capacity in the landfill expansion area.

The waste acceptance rates for the proposed expansion rely on the latest Capacity Report. The Capacity Report calculated available disposal capacity based on projected growth rates of zero, 1% and 2.8%, and compared the available capacity to that calculated at the 4% growth rate used in the latest State Plan. The applicant concluded available capacity at Juniper Ridge Landfill would be depleted in 2017 at a 2.8% growth rate, and in 2018 at a zero growth rate. For the calculations included in the application, a zero growth rate was used for 2010 and 2011, and a 2.8% annual growth rate was used for the subsequent years. Both the Capacity Report and the State Plan recognize the relationship between the economy and waste generation in Maine

The applicant asserts that, either as a direct customer or indirectly as the disposal facility for incineration residues, wastes from municipalities in every county in Maine are disposed at Juniper Ridge Landfill, with approximately 49% of the points of origin for the wastes currently disposed at Juniper Ridge Landfill located within 25 miles of the landfill.

The applicant estimates that the Crossroads Landfill in Norridgewock (owned by Waste Management Disposal Services of Maine), the only remaining commercial landfill in Maine, had approximately 12 to 14 years of remaining licensed capacity at the end of 2009, based on 2009 fill rates. The licensing of new commercial solid waste disposal facilities is prohibited by 38 M.R.S.A. §1310-X. The active municipal and quasi-municipal landfills in Maine each serve a limited regional need.

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The Capacity Report estimate of existing permitted disposal capacity in Juniper Ridge Landfill, Crossroads Landfill and publicly owned landfills (other than the less than 6 acre CDD landfills) in Maine was approximately 17,568,810 cubic yards as of the end of 2009. The Capacity Report projects that an estimated 24.4 million cubic yards of landfill capacity will be required over the next 20 years, based on a predicted growth rate of 2.8%.

The application and the Capacity Report both emphasize the uncertainty of future waste generation rates. Overall, Maine waste generation rates have declined; however, the larger Maine MSW incinerators import MSW to meet their power contracts as Maine-generated MSW rates fall, so the incinerator residues requiring disposal have not appreciably declined. But, if Maine's economy improves, waste generation is expected to increase. The applicant also notes that many unexpected events could cause an increase in wastes requiring disposal, such as: wastes generated during a major storm event, wastes generated during cleanup of a major spill, or closure of a Maine incinerator.

- B. Department Review: The Department thoroughly analyzed the information available in the various reports and other submittals provided to both the Department and SPO on an ongoing basis to determine the quantities of the various categories of wastes generated in Maine that are proposed to be disposed in the Juniper Ridge Landfill Expansion. This information included the volumes of wastes generated in Maine, the capacity of existing disposal facilities in Maine, reports on solid waste uncertainties and possible plans for the future in the Maine waste markets, the status of disposal facilities in New Hampshire and New Brunswick, and available information on future applications.

Basis for Review of Capacity Needs

In accordance with 38 M.R.S.A. §1310-AA, the Department considered the State Plan during its review of this application. In addition to the State Plan, the Department also reviewed the information provided in the most recent biennial Capacity Report (for calendar year 2009) prepared by SPO in accordance with 38 M.R.S.A. §2124-A.

STATE OF MAINE, ACTING THROUGH THE	8	PUBLIC BENEFIT
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The Department also considered data submitted to SPO and the Department in annual and monthly reports regarding solid waste generated in Maine and disposed in Maine's landfills.

As noted by commentors, neither statute nor regulation expressly define immediate, short-term or long-term capacity. 38 M.R.S.A. §2124-A requires that SPO submit a report to the Legislature, the Governor and the Department "setting forth information on statewide generation of solid waste, statewide recycling rates and available disposal capacity for solid waste. The report due on January 1, 2009 was required to analyze the solid waste disposal needs of the State for the next 3, 5 and 10 years. Based upon these time frames, a reading of the overall statutory scheme as a whole, and legislative intent, the Department has interpreted the solid waste laws to define immediate as 3 years, short-term as 5 years and long-term as 10 years for the purposes of evaluation of public benefit determination applications. The Department has historically used these time frames in its evaluation of all public benefit determination applications submitted to the Department, and has continued that practice with this application. However, to clarify the evaluation process, the Department considers, in general terms, the time involved from issuance of a positive determination of public benefit until the capacity considered in the public benefit determination application is available for disposal.

As described in Finding of Fact #4, above, findings of fact and conclusions of law made by the Commissioner on this application are based on the standards and criteria set forth in the applicable law. While the Department is cognizant of the terms of the OSA between SPO and Casella, the Department is not bound by the contractual agreements between SPO and Casella; in fact, the OSA references in various locations that neither party can guarantee the Department's approval of the applications required to be prepared by Casella and submitted for SPO.

Relevant Waste Streams

The wastes proposed to be disposed in the proposed expansion are special wastes, CDD, residues from the processing of CDD (the fines component of which is used as alternative daily cover), miscellaneous non-special wastes and MSW bypass. The Department's review examined data from both 2009 and 2010. According to

STATE OF MAINE, ACTING THROUGH THE	9	PUBLIC BENEFIT
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the 2009 annual report, 528,622 tons of waste were disposed in the Juniper Ridge Landfill in 2009. According to the 2010 annual report, 708,198 tons of waste were disposed in the Juniper Ridge Landfill in 2010. (Department review of the monthly waste summary reports submitted by the applicants shows a total of 542,364 tons of waste disposed in 2009, and 712,125 tons of waste disposed in 2010. ²A table created from the Department's *Juniper Ridge Landfill Waste Volume Summary*", updated monthly, is provided as Attachment A of this determination.)

Overview of Current Licensed Capacity

According to the 2010 annual report, the remaining capacity of the Juniper Ridge Landfill as of December 31, 2010 is approximately 6,565,719 cubic yards. The 2010 annual report notes that this capacity is based upon the volume estimated for the landfill in the amendment application as being 10.28 million cubic yards. This volume is based on the landfill design approved in the amendment license, which included a mechanically-stabilized earthen ("MSE") berm along the western and southwestern sides of the landfill, and an enlarged earthen berm along the northern and eastern sides of the landfill. Casella has not constructed the MSE berm or the enlarged berms. In the public benefit application, the applicant notes that the proposed expansion will overlay the northern and eastern waste sideslopes of the currently licensed footprint. The need for the berms will be re-evaluated after this licensing decision. The construction of the berms is estimated to provide capacity for approximately 1 year.

The commercial Pine Tree Landfill in Hampden, owned by Casella, reached then licensed capacity and ceased accepting waste on December 31, 2009. The remaining commercial landfill in Maine licensed to accept many of the same waste types as Juniper Ridge Landfill is Waste Management Disposal Services of Maine's ("WMDSM") Crossroads Landfill in Norridgewock. As of December 2010, the remaining capacity for waste disposal at Crossroads Landfill was estimated by WMDSM to be approximately 3,907,064 cubic yards. In 2009, Crossroads accepted 265,047 tons of waste for disposal; of this, 79,778 tons of

² The difference between the monthly waste summary reports totals and the annual reports totals reflects that the monthly waste summary reports include everything that crosses the scales at the landfill, including construction materials that will not be disposed, whereas the annual reports totals include only the wastes disposed in the landfill.

STATE OF MAINE, ACTING THROUGH THE	10	PUBLIC BENEFIT
STATE PLANNING OFFICE)	DETERMINATION
OLD TOWN, PENOBSCOT COUNTY, MAINE)	
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(APPROVAL WITH CONDITIONS))	

waste were used as alternative daily cover. In 2010, Crossroads accepted 258,375 tons of waste for disposal; of this, 75,397 tons of waste were used as alternative daily cover.

There are 7 active municipally-owned landfills for the disposal of MSW. The Capacity Report states that these facilities have an estimated combined capacity of 4.9 million cubic yards (3.26 million tons). These landfills serve their immediate area. The Capacity Report notes that, while reaching capacity will be a significant concern to the region served by a landfill in this group, it will not result in a statewide capacity concern. Expansions approved at two landfills in northern Maine that serve about 50 communities will provide capacity for decades.

There are 2 publicly owned landfills for the disposal of residues from the processing/incineration of MSW. The Capacity Report states that these facilities have an estimated combined capacity of 6.2 million cubic yards (4.5 million tons). These landfills are expected to serve the ecomaine and the MMWAC incinerators for more than 20 years.

There are approximately 14 municipally-owned less than 6 acre non-secure landfills licensed for the disposal of wood waste and CDD. The Capacity Report assigns an estimated overall capacity for these facilities of 10 to 12 years. According to the annual reports filed by the facilities, a total of approximately 12,278 tons of waste was disposed in this group of landfills in 2009, and approximately 7,538 tons was disposed in 2010. The Marion Township CDD landfill in Washington County reached capacity in 2011, and the Marion Users Group is now transporting its CDD to Canada for disposal. The Marion Users Group had planned to license a new landfill, but concluded contracting with the Canadian landfill was a less expensive alternative.

The State also has licensed landfill capacity at the as yet undeveloped Carpenter Ridge Landfill located at T2 R8 (Department license # S-021372-WD-A-N, dated June 24, 1996); however, this capacity would require legislative authorization to be developed. This State-owned site has approximately 2 million cubic yards of licensed capacity for special wastes and other wastes. In 2011, the State also acquired the Dolby III Landfill facility in East Millinocket. The Dolby III landfill

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has only approximately 300,000 cubic yards of licensed capacity remaining, and the license transfer approved the disposal of only wastes generated at the Great Northern Paper Co., LLC (former Katahdin Paper) mills in Millinocket and East Millinocket. At this time *de minimus* quantities of waste from the East Millinocket mill are periodically disposed at Dolby III.

CDD Generated in Maine

According to the 2009 and 2010 annual reports filed with the Department and SPO, Maine municipalities and businesses reported generating approximately 397,636 tons of wood waste and CDD in 2009, and 490,274 tons of wood waste and CDD in 2010. Based on information from the annual reports filed with SPO and the Department, and the Department's general knowledge of waste generation in Maine, Attachment B was prepared to show how the wood waste and CDD was handled by recycling, processing or disposal.

As shown in Attachment B, the most significant change in CDD generation results from a significant increase in the amount of oversized bulky waste ("OBW") and fines, primarily from KTI in Lewiston, disposed at Juniper Ridge Landfill. KTI is a Casella subsidiary. The majority of the CDD accepted at KTI is imported from other states. 38 M.R.S.A. §1310-N(11) provides that, in part, waste generated within the State "includes residue and bypass generated by incineration, processing and recycling facilities within the State or waste, whether generated within the State or outside the State, if it is used for daily cover, frost protection or stability or is generated within 30 miles of the solid waste disposal facility." 38 M.R.S.A. §1303-C(1-C) defines bypass as "...any solid waste that is destined for disposal, processing or beneficial use at a solid waste facility but that cannot be disposed of, processed or beneficially used at the facility because of the facility's malfunction, insufficient capacity, inability to process or burn, downtime or any other comparable reason." OBW consists of large items that may be difficult to process, such as mattresses, furniture, appliances, and certain other components of demolition debris. The Department comments that KTI's inability to process certain components of the CDD delivered to the site has contributed to the large amounts of OBW delivered to Juniper Ridge Landfill. KTI received Department approval for major modifications to its facility on July 18, 2011. Construction and implementation of the infrastructure improvements to

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the facility have been substantially completed, and KTI expects to generate less OBW due to its ability to process and recycle more material from the CDD. The Department comments that OBW deliveries to Juniper Ridge Landfill in November and December 2011 were less than half the amount delivered in any month since May 2011.

The Department also compared the amount of fines used as alternative daily cover at Juniper Ridge Landfill to the amount of wastes used as alternative daily cover at the Crossroads Landfill in Norridgewock, and concluded that the two landfills used a similar amount of daily cover. The Department also comments that Juniper Ridge Landfill has consistently been found to be operating in conformance with the criteria in 06-096 CMR 401.4.C(8)(a); this subsection limits the depth of fines used as alternative daily cover to 9 inches. Juniper Ridge Landfill routinely covers highly putrescible wastes such as front-end process residues ("FEPR") and MSW bypass from the incinerators, and some sludges, immediately after deposit in the landfill to control the odor from these wastes. However, when comparisons were made considering only the amount of putrescible wastes accepted, the Department concluded Juniper Ridge Landfill used less alternative daily cover per ton of putrescible waste.

The applicant asserts that it predicted that additional residues from the processing of CDD would be disposed at Juniper Ridge Landfill after CDD processing capability was expanded. The Department comments that the increase from construction and operation of a CDD processing facility owned by Casella in Westbrook is no longer expected; the major modifications to KTI in Lewiston were licensed and completed rather than the development of new capacity at the Westbrook facility.

The Department further comments that implementation of changes to 38 M.R.S.A. §1310-N(5-A) which require, in part, the "maximum extent practicable" standard be met is ongoing. Regulations for implementing the statute were adopted on July 20, 2010. Facilities have filed their interim reports, and the first

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demonstration of compliance with the statute is required with the annual reports to be filed by February 28, 2012. The maximum extent practicable standard reads as follows:

”(2) “A solid waste processing facility that generates residue requiring disposal shall recycle or process into fuel for combustion all waste accepted at the facility to the maximum extent practicable, but in no case at a rate less than 50%. For purposes of this subsection, ‘recycle’ includes, but is not limited to, reuse of waste as shaping, grading or alternative daily cover materials at landfills; aggregate material in construction; and boiler fuel substitutes.”³

Special Wastes Generated in Maine

A review of the Department’s records indicates the disposal of approximately 480,541 tons in 2009 and 435,099 tons in 2010 of special waste (including FEPR) generated in Maine at commercial, municipally-owned, and state-owned landfills. Based on information from the annual reports filed with SPO and the Department, and the Department’s general knowledge of waste generation in Maine, Attachment C was prepared to show how the special waste was disposed. Attachment C shows a significant decrease in the amount of special wastes disposed in these landfills.

Municipal transfer stations do not typically handle special wastes. Of Maine’s 4 incinerators, only Maine Energy is licensed to accept special waste; it accepts only a negligible amount. While the Department is unaware of any Maine business generating large amounts of special waste that ships it out of state, Maine businesses are not required to directly report to SPO or the Department the amount of special waste generated.

The Department also licenses the beneficial use of special wastes (including agronomic utilization). A review of Department records indicates an estimated 324,065 tons in 2009 and 242,092 tons in 2010 of special wastes generated in Maine were beneficially used. This represents a significant decrease from the 1,385,552 tons estimated to have been beneficially used in 2008; however, the Department still does not expect Maine municipalities and businesses that

³ 38 M.R.S.A. §1310-N(5-A)

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currently beneficially use their special wastes to dispose of them in landfills in the future.

A review of the Department's records indicates approximately 463,612 cubic yards in 2009 and 639,719 cubic yards in 2010 of solid waste was disposed in the large, generator-owned landfills. These are landfills that are limited by 38 M.R.S.A. §1303-C(6)(E) to the disposal of not more than 15% solid waste accepted on an annual basis from sources other than the single entity that owns the landfill. The 15% from sources other than the generator must be accepted on a nonprofit basis. The generator-owned landfills serving the pulp and paper mills active in 2011 are expected to remain active through the short term, and either have licensed capacity for their wastes or have plans for new long-term capacity that do not include use of the Crossroads or Juniper Ridge landfills for their long-term capacity needs.

MSW Generated in Maine

The last significant category of solid waste currently being disposed in Maine is MSW (including MSW bypass from incinerators). A review of the Department's records indicates the disposal of approximately 661,638 tons in 2009 and 660,392 tons in 2010 of MSW generated in Maine. Based on information from the annual reports filed with SPO and the Department, and the Department's general knowledge of waste generation in Maine, Attachment D was prepared to show how the MSW was handled. Attachment D shows a decrease in the amount of MSW generated, although the percentages of MSW handled through the different options didn't change much except for a steady increase in the amount of MSW exported for disposal in other states and Canada.

The waste stream proposed by the applicant to be disposed in the expansion does not include MSW except for small amounts of MSW bypass from Maine's 4 incinerators and FEPR, which is reported as special waste, above. MSW bypass accounted for 4% in 2009 and 5.6% in 2010 of Juniper Ridge Landfill's waste streams. Conditions on the landfill's licenses limit the amount of MSW bypass Juniper Ridge Landfill may accept.

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No changes to Maine Energy, owned by Casella and located in downtown Biddeford, resulted from the most recent series of discussions about options for operational changes or relocation of the Maine Energy incinerator. The Department comments that the condition on the amendment license for Juniper Ridge Landfill that limits the total amount of MSW that can be handled at both Maine Energy and Juniper Ridge Landfill to 310,000 tons per year, in combination with Maine Energy's standard practice of zeroing its tipping floor on a weekly basis, appears to have resulted in more MSW bypass coming to Juniper Ridge Landfill than would be the case without the limit. The Department recommends that the Juniper Ridge Landfill Expansion license limit only the amount of MSW bypass from Maine Energy that can be accepted at Juniper Ridge Landfill. 38 M.R.S.A. §1303-C(1-C) defines bypass as "...any solid waste that is destined for disposal, processing or beneficial use at a solid waste facility but that cannot be disposed of, processed or beneficially used at the facility because of the facility's malfunction, insufficient capacity, inability to process or burn, downtime or any other comparable reason." The Department comments that the contracts Maine Energy has with its customers also define bypass in similar terms, and that Maine Energy ensures that any MSW bypass transported to Juniper Ridge Landfill was generated in Maine.

Another significant unknown is future disposal of MSW currently disposed at the PERC incinerator in Orrington. As noted during review of the 2009 public benefit application, the current contracts with PERC for disposal of its residuals and bypass expire in 2018, concurrent with the end of the projected "life" of the PERC facility. The large group of Maine municipalities included in the Municipal Review Committee ("MRC") have been gradually buying into PERC for many years; the MRC municipalities currently own approximately 25% of PERC. The MRC has formed a group to plan for MSW disposal beyond 2018; reportedly, the group will be considering total ownership of PERC as well as other disposal options.

Miscellaneous Non-Special Wastes from Maine Routinely Disposed at Juniper Ridge Landfill

The last broad category of waste proposed to be disposed by the applicant, miscellaneous non-special waste, constituted less than 0.1% in 2009 and 0.4% in

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2010 of Juniper Ridge Landfill's waste streams. Typical wastes included in this category include spoiled food waste from Maine industrial processing plants and businesses, carpet fiber and padding waste from Formed Fiber Technologies in Auburn, tire chips, and vegetable starch.

Historic Use of the Juniper Ridge Landfill

The Department reviewed specifically how the existing licensed Juniper Ridge Landfill capacity has been utilized since the State of Maine purchased the landfill. Using information provided by the applicant in its annual reports and in this public benefit determination application, a summary of the types and amounts of wastes disposed in the Juniper Ridge Landfill throughout its operation was prepared. This information is provided in Attachment E of this determination.

Evaluation of the data in Attachment E reveals that the amount of waste disposed in the Juniper Ridge Landfill exceeded the 540,000 tons per year estimate included in the 2003 amendment application in 2008, 2010 and 2011. The significant increases since the end of 2007 were in ash, FEPR, OBW, fines and MSW bypass. The incinerator residue and bypass increases were associated with the cessation of disposal of putrescible waste at Pine Tree Landfill, and the closure of Pine Tree Landfill. Some increase in MSW bypass in 2010 and 2011 is also attributable to the Department's encouragement of the use of MSW bypass in the soft layer of new base cells (14,911 tons were used for this purpose in 2010, and 5,301 were used in 2011). The Department routinely tracks the quantities of OBW and fines from KTI, and MSW bypass delivered to Juniper Ridge Landfill; see Attachment F for a tabulation of this information. As noted above, the Department recommends that the Maine Energy and Juniper Ridge landfill licenses be de-linked in the 9.35 million cubic yard expansion license to limit only the amount of MSW bypass that can be accepted in expansion. The Department suggests this would minimize the frequent deliveries of MSW bypass from Maine Energy (37,561 total tons in 2010, and 22,305 total tons in 2011).

The most significant increases in waste acceptance were seen with OBW and fines from the processing of CDD. OBW increased from 3.5% of the total waste acceptance in 2008 to 9.7% in 2009, 13.6% in 2010, and approximately 18.6% in 2011. Fines increased from 7.3% of the total waste acceptance in 2008 to 8.8% in

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2009, 12.3% in 2010, and 17.7% in 2011. The Department concurs with the applicant that the increases are, at least in part, caused by the closure of Pine Tree Landfill and the subsequent increase in out-of-state CDD delivered to the KTI processing facility instead. As noted above, the Department's analysis indicated the fines delivered to Juniper Ridge Landfill are legitimately being used as alternative daily cover. However, the Department recommends limiting the amount of OBW delivered to Juniper Ridge Landfill by CDD processors that report in their annual reports generating substantive amounts of OBW to that amount that has been determined by the Department to have been generated as a result of recycling CDD "to the maximum extent practicable".

Disposal Capacity Unknowns

As described more fully throughout this determination, over the next few months there are several policy and legislative decisions that may significantly impact the ways solid waste is handled in Maine, and thus the need for disposal capacity for solid waste generated in Maine. It is not possible at this time to quantify these impacts and thus assess how they will affect solid waste capacity and capacity needs. The Department expects, however, they will impact solid waste capacity needs to some extent. The application also recognizes the potential impact of the listed issues. The outstanding solid waste management issues the Department refers to includes, but is not limited to:

- * potential decreases in CDD processing residues requiring disposal as a result of full implementation of 38 M.R.S.A. §1310-N(5-A);
- * observed changes in solid waste needing disposal;
- * the potential sale of Juniper Ridge Landfill, as noted in the Capacity Report;
- * potential development of disposal capacity at other landfills;
- * extension of waste fees to residues from the processing of CDD; and
- * potential statutory changes to the definition of "waste generated within the State"; and
- * operation of PERC past 2018.

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Maine Generated Waste Expected to be Disposed in Maine Landfills

The applicant notes that the projected annual fill rates provided in the 2003 amendment application did not include the closure of Pine Tree Landfill in Hampden at the end of 2009. However, as has been stated before, the closure of Pine Tree Landfill did not occur “early”; rather, Pine Tree Landfill reached its then licensed capacity. Apparently, the applicant assumed approval of increased capacity at Pine Tree Landfill for which Casella did not submit an application until August 2005. Casella subsequently withdrew its application for a revised public benefit determination associated with the increased capacity amendment application, and entered into the Schedule of Compliance that detailed the phased closure of Pine Tree Landfill. Closure of the landfill was completed in 2010.

Throughout Maine, disposal numbers have continued to be lower, as noted by MRC/PERC communities having trouble meeting their guaranteed annual tonnage of MSW delivered to the PERC incinerator. Both PERC and Maine Energy have imported additional MSW in recent years in order to meet their power contract obligations. The State Plan projected a 2007 annual fill rate at the Crossroads Landfill of 336,854 tons; in its July 2009 capacity update, WMDSM reported an average annual fill rate of 300,000 tons per year. Crossroads reported disposing of 265,047 tons of waste in 2009 and 258,375 tons in 2010. The State Plan estimated the remaining capacity life at Crossroads Landfill at the end of 2007 to be 3,900,000 cubic yards or 10 to 12 years; in its 2010 annual report, WMDSM reported having 4,202,973 cubic yards of remaining capacity (still approximately 12 years or more).

The estimates of capacity needed in the State Plan were calculated using a 4% annual increase, to reflect increases in economic activity and population. In the Capacity Report and the public benefit determination application, the applicant scaled the annual increase back to reflect the now expected lack of growth in economic activity and population for several years.

Finally, the Department notes that, as seen in Appendices A through E, there is considerable volatility in the solid waste arena. Overall, Maine’s waste generation rate has decreased, and thus the existing disposal capacity needs have

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decreased. However, if the economy improves in the near term, the Department agrees with the applicant that waste generation is likely to increase. The Department also concurs that the landfill design and licensing process can be lengthy. It will take considerable time, from the date of this determination, before the first cell of the expansion is constructed and operational. The Department has taken this fact into account in its analysis of capacity needs. The public benefit determination application proposes the division of the expansion into 3 phases. Phase I is estimated to provide 5 to 7 years of capacity for approximately 4,687,000 tons of waste. Phase II is estimated to provide 8 to 11 years of capacity for approximately 8,041,000 tons of waste. Phase III is estimated to provide 7 to 9 years of capacity for approximately 6,089,000 tons of waste.

C. Commissioner Findings:

Based on the foregoing figures and analysis, the Commissioner finds that, in the absence of additional capacity at Juniper Ridge Landfill, there is sufficient disposal capacity currently available for the amounts of CDD, special wastes and other wastes known to be generated in Maine and expected to be disposed in Maine landfills both in the immediate (3 years) and short-term (5 years) periods. The Commissioner further finds there likely exists sufficient disposal capacity currently available for the amounts of CDD, special waste and other wastes known to be generated in Maine and expected to be disposed in Maine landfills in the long term (10 years) period, provided the existing solid waste disposal options remain available and waste generation rates remain depressed.

The Commissioner finds that the timing of an application to expand Juniper Ridge Landfill appears to be at least partly based upon the terms of the OSA. The Commissioner further finds that the provision in the 2nd amendment to the OSA that encourages Casella to import CDD to be processed into CDD fuel for biomass boilers is outdated given current circumstances. The applicant acknowledges that Casella has difficulty meeting the quality standards for CDD fuel. Further, the Commissioner finds that the biomass plant referenced in the OSA no longer burns CDD fuel. As also noted in Finding of Fact #6.C, below, the Department is not bound by the language in the OSA. In any event, the Commissioner recommends SPO and Casella amend the OSA to address the significant quantity of CDD imported into Maine under the terms of the OSA.

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Based on the large, and to date annually increasing, volume of OBW disposed in Juniper Ridge Landfill, the Commissioner finds that it appears much of the CDD imported into Maine contains insufficient wood to justify efforts to process it into CDD fuel. Although 38 M.R.S.A. §1310-N(11) defines residues and bypass generated by incineration, processing and recycling facilities in Maine as Maine waste, some of the CDD delivered to KTI has little or no processing value, and therefore is ultimately disposed in a landfill, usually Juniper Ridge Landfill.

The Commissioner finds that it is necessary and appropriate to establish a limit on the tonnage of OBW disposed in the expansion. If, and when, a license is issued for the construction and operation of an expansion, the Department will establish such a limit. The limit will be based upon the results of annual demonstrations required pursuant to 06-096 CMR 409.2.C, that waste processing facilities that generate residue requiring disposal will “recycle or process into fuel for combustion all waste accepted at the facility to the maximum extent practicable, but in no case at a rate less than 50%”, submitted by CDD processing facilities that send OBW to Juniper Ridge Landfill for disposal. Annually, the Department will reevaluate and may modify this limit.

In addition, the Commissioner finds that periodic independent third party audits of CDD processing operations that transport more than 10,000 tons of OBW to Juniper Ridge Landfill on an annual basis are necessary, in order to verify the results of the demonstrations required under the provisions of 06-096 CMR 409.2.C, are necessary in view of the significant volumes of OBW disposed in the state-owned Juniper Ridge Landfill in the past. The purpose of the audits will be to ensure that, by maximizing processing and recycling at CDD processing facilities, disposal of waste at Juniper Ridge Landfill is minimized, in conformance with the intent of 38 M.R.S.A. § 1310-N (5-A). The Commissioner therefore requires that periodic third party audits be conducted, focused on the nature and volume of processing residues being sent to Juniper Ridge Landfill for disposal. The first such audit(s) will occur prior to the disposal of OBW from processing facilities anticipated to transport more than 10,000 tons of OBW to the 9.35 million cubic yard expansion annually. Third party audits will be conducted by a qualified consultant selected by the Department in consultation with the affected processing facilities and Casella. Casella will reimburse the Department

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for the cost of the audits. Audits will be conducted at 2 year intervals, unless or until the Department approves their discontinuation.

The Commissioner further finds that the 310,000 ton annual limit placed on MSW handled at both Maine Energy and Juniper Ridge Landfill⁴ results in more MSW bypass being disposed at Juniper Ridge Landfill than would a limit specific to Juniper Ridge Landfill. The 310,000 ton annual limit was negotiated with the Municipal Review Committee and Casella in 2002 to ensure that Maine Energy (a Casella-owned company) and Casella-owned or operated disposal facilities, did not garner an unfair advantage in the MSW market. It was carried into the amendment license in 2004. The Commissioner therefore, rather than continue the 310,000 ton annual limit, places a 25,000 ton annual limit on the amount of MSW bypass that the 9.35 million cubic yard expansion may accept for disposal during routine operations. If the 9.35 million cubic yard expansion is licensed, the license should include provisions for exceptions to this limit in emergencies or prolonged outages at Maine Energy.

The Commissioner finds it is reasonable to determine that the full 21.9 million cubic yards of disposal capacity sought by the applicant is not needed to meet the State's immediate, short-term or long-term capacity needs. The Commissioner finds that available data shows a current decrease in the amount of Maine waste needing disposal, and that whether the amount of waste needing disposal will decrease, level off or increase in the future is uncertain at this time. However, the Commissioner finds that it is reasonable and prudent to plan for an increase in capacity needs based upon an expected eventual improvement in the economy. Accordingly, to ensure the availability of adequate long-term capacity given current outstanding issues related to Maine's solid waste management system, and the difficulty in guaranteeing the time period from submission of an application for a new or expanded landfill through final appeals and construction, the Commissioner finds that the 9.35 million cubic yards of capacity estimated for Phase II of the expansion proposal would adequately ensure that Maine could meet its long-term disposal capacity needs. 38 M.R.S.A. §1310-AA requires that an applicant receive a positive determination of public benefit prior to submission of an application under 38 M.R.S.A. §1310-N for new or expanded disposal capacity. The Commissioner therefore determines a substantial public benefit

⁴ see the amendment license- DEP #S-020700-WD-N-A. dated April 9, 2004

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only for the 9.35 million cubic yards of capacity estimated for Phase II of the proposed landfill expansion. It is anticipated that the proposed landfill expansion footprint will be modified to reflect this partial approval.

6. CONSISTENCY WITH STATE WASTE MANAGEMENT PLAN

As part of the substantial public benefit review, 38 M.R.S.A. § 1310-AA(3) requires that the Commissioner determine whether the proposal for increased landfill capacity at the Juniper Ridge Landfill is consistent with the state plan.

A. The Application: The state plan, prepared by SPO in accordance with 38 M.R.S.A. § 2122, is based on the priorities and recycling goals established in 38 M.R.S.A. §§ 2101-2132, including the solid waste management waste hierarchy. In decreasing order of preference, the hierarchy for management of solid waste is reduction, reuse, recycling, composting, incineration and landfilling. The State Plan notes that landfilling is at the bottom of the waste management hierarchy.

The applicant notes the proposed expansion is consistent with the State Plan in that the proposed expansion is contemplated and incorporated into the plan as a central component in meeting the State's solid waste disposal capacity needs over the next 20 years. The applicant references 38 M.R.S.A. §2123-A(4) as its basis for use of 20 years as the long-term window for future disposal capacity.

In support of its application, the applicant describes how Casella is actively involved in source reduction, reuse, composting, toxics reduction, and recycling programs throughout the State and at Juniper Ridge Landfill, and concludes that these efforts reduce the risks related to waste handling and disposal at Juniper Ridge Landfill to the maximum practical extent. The initiatives detailed include: Zero Sort® (single stream) Recycling operations that are located at 4 Casella facilities in Maine, and in collection vehicles operated in 3 municipalities; standard recycling collection operations that serve many municipalities and many businesses in Maine; CDD and woodwaste processing operations in Maine; composting or beneficial reuse of large volumes of Maine's organic waste through Casella's New England Organics facilities; and 7 universal and electronic waste consolidation facilities in Maine. The applicant states that, in 2010, Casella facilities and programs recycled, beneficially used, or composted a total of 250,

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227 tons of waste materials in Maine. The applicant also describes SPO's considerable efforts to promote recycling consistent with the State Plan.

The applicant asserts that the wastes currently disposed in Juniper Ridge Landfill and proposed for disposal in the expansion are primarily materials that cannot be reduced or recycled for one or more of the following reasons: the nature of the wastes precludes it; they are already residuals from recycling or source reduction activities; or the State or municipalities lack the recycling resources to handle the materials in an economic fashion.

The applicant notes that the State Plan identifies the management and disposal of CDD as an area of continuing difficulty in Maine, and states that Juniper Ridge Landfill received 145,488 tons of unprocessed CDD generated in Maine in 2010; 62% of this CDD is reported as being generated within 50 miles of the landfill. Landfill capacity for the waste is needed because it is not accepted at MSW incinerators, and cannot be recycled or reused without investment in equipment, labor, and sufficient land area for collection and processing of the CDD. The applicant also asserts that the 3 Casella CDD processing facilities in Maine all achieve no less than a 50% recycling rate, in compliance with 38 M.R.S.A. §1310-N(5-A). In 2010, the facilities produced approximately 106,000 tons of biomass fuels, recovered metal, aggregate, and alternative daily cover (used at Juniper Ridge Landfill) from the approximately 200,000 tons of woodwaste and CDD delivered to them. The applicant also notes that regulatory changes promulgated in 2006 to the CDD fuel quality standards resulted in an increase in the CDD residue generated by screening to obtain CDD wood fuel that met the standards; at KTI, only between 5 and 20% of the CDD processed can be converted to fuel grade wood chips.

- B. Department Review: The Department comments that using the State Plan's recognition that an expansion of the Juniper Ridge Landfill is contemplated as justification for a positive determination of public benefit is inconsistent with the state's actual capacity needs, as explained in Finding of Fact #5, and is inconsistent with the waste management hierarchy. The Department also comments that the OSA sets an upper limit for tipping fees that can be assessed on wastes disposed at Juniper Ridge Landfill, to "act as a check on pricing for the

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disposal of similar materials at other solid waste facilities”⁵. The tipping fees, however, are lower than those charged by the remaining commercial landfill in Maine, and may contribute to increases in the disposal of some waste streams, such as CDD and wastewater treatment plant sludges, because the cost of disposal can be less than the cost of handling the wastes for processing, composting or agronomic utilization.

The Department comments that the applicant has demonstrated that both Casella and SPO play critical roles in source reduction, reuse, composting, toxics reduction, and recycling programs throughout the State, and that many of the waste streams disposed at Juniper Ridge Landfill cannot be handled other than by land disposal. However, as discussed more fully in Finding of Fact #5, above, the Department comments that inspections of the KTI facility indicate much of the incoming CDD has arrived pre-sorted with the wood and easily recyclable components removed. This has reduced the volume of materials recoverable for recycling or reuse at KTI, and has resulted in substantial amounts of fines and OBW being sent to Juniper Ridge Landfill⁶. Although the fines are used as alternative daily cover in compliance with the applicable standards, the Department recommends that the amount of OBW disposed at Juniper Ridge Landfill as processing residue be limited.

- C. Commissioner Findings: The Commissioner finds that it is inadequate to rely on the circular reasoning that the State Plan, developed by SPO, relies on the development of expansion of the Juniper Ridge Landfill, owned by SPO, to provide disposal capacity for the next 20 years, which is a requirement of the OSA between SPO and Casella. Further, the Commissioner finds that both SPO and Casella understand that the Department is not bound by the language in the OSA, among other reasons, because the OSA specifically includes the following language: "The parties, however, recognize that the MDEP is an independent permitting authority before which the State must appear as any other person. Therefore, the parties acknowledge that any commitment of the State to cooperate with and seek a governmental approval is not a guaranty of issuance of such approval or the terms of such approval."⁷

⁵ State Plan, page 42

⁶ see Attachments B, E and F of this license

⁷ OSA, section 4.1

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The Commissioner further finds that the 20 year period referenced in 38 M.R.S.A. §2123-A(4), when taken in the context of the entire statute, is appropriately viewed as a general long-term planning horizon, rather than a directive that at all times landfill capacity be licensed and available for a 20 year future period.

The Commissioner also finds that the rate of CDD generated in Maine requiring disposal has in significant part increased because CDD that was imported for disposal at Pine Tree Landfill is now classified as waste generated in Maine under 38 M.R.S.A. § 1310-N (11) because it is handled at a Maine processing facility. The full implementation of 38 M.R.S.A. § 1310-N(5-A) and the limit on OBW included in this determination are expected to decrease the amount of processing facility residues handled at the Juniper Ridge Landfill. The Commissioner finds that while landfilling may be an unavoidable management option for some CDD, it should be employed only when all other options are unavailable and there is a demonstrated need for use of that landfill capacity.

The Commissioner further finds that, consistent with the goals of the State Plan and the statutory solid waste management hierarchy, the applicant should aggressively pursue in the course of its operation of the existing Juniper Ridge Landfill and the proposed expansion approaches that decrease the volumes of waste requiring disposal, and that the applicant does not adequately demonstrate that the proposed expansion advances the State's waste reduction, reuse and recycling goals.

Finally, the Commissioner finds that the applicant has not demonstrated that the proposal for the full 21.9 million cubic yards of increased landfill capacity at the Juniper Ridge Landfill, to be developed in 3 phases, is consistent with the state waste management and recycling plan. The Commissioner further finds, as explained more fully in Finding of Fact #5, above, that a number of outstanding questions, issues and potential changes in the way solid waste is handled in Maine, as well as recent decreases in solid waste generation, have altered the basis for certain assumptions made in the State Plan, and cause it to be imprudent for the Commissioner to approve at this time, the entire amount of disposal capacity requested. Instead, the Commissioner finds that the approximately 9.35

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million cubic yards (8,041,000 tons) of disposal capacity planned by the applicant for the expansion will meet the intent of 38 M.R.S.A. §1310-AA(3).

7. CONSISTENCY WITH LOCAL, REGIONAL OR STATE WASTE MANAGEMENT

The third public benefit criterion is consistency with local, regional or state waste collection, storage, transportation, processing or disposal.

A. The Application: The applicant asserts that the proposed landfill expansion will provide needed landfill capacity for generators of solid waste, especially those in the area local to Juniper Ridge Landfill. The applicant notes that Juniper Ridge Landfill provides disposal capacity for, in addition to its regular contractual customers, unanticipated delivery of contaminated soils from Department-supervised remediations and cleanups, and debris generated during natural disasters such as hurricanes, floods or winter storms. In addition, the applicant asserts that the capacity proposed for the Juniper Ridge Landfill Expansion may be needed if the current waste flows to one or more of the Maine incinerators changes; in response to statutory or regulatory changes; if changes in operation at one or more of the existing generator-owned or municipally-owned landfills decrease the amount or types of wastes accepted; or in response to changes in technology.

B. Department Review: The Department concurs that all of the residues from the 2 largest incinerators in Maine are disposed in Juniper Ridge Landfill; that no other options are currently available for FEPR or MSW incinerator ash; and that the amount of residues from PERC and Maine Energy requiring disposal are unlikely to decrease until after 2018 because the facilities must acquire sufficient MSW to meet their power contracts; if Maine municipalities and businesses provide less waste than expected, the incinerators will seek out-of-state MSW to make up the difference. 38 M.R.S.A. §1310-N(11) defines residues from the incinerators as waste generated within the State.

The Department also concurs that Juniper Ridge Landfill currently provides needed capacity for CDD generated in the vicinity of the landfill, and that the proposed expansion would continue to meet area capacity needs. The Department is not aware of any new CDD landfills planned for the Old Town/greater Bangor

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area and expect a couple less than 6 acre landfills in the vicinity to close within the next 5 to 10 years. However, the Department comments that the quantity of CDD delivered to Juniper Ridge Landfill from a 50 mile radius is a small part of the total CDD disposed at Juniper Ridge Landfill. If the amount of OBW from CDD processors is limited, as recommended in Findings of Fact #5 and #6, above, the capacity that could be provided by Phase II of the expansion, if approved and constructed, may be reasonably expected to meet local needs for the long-term.

The Department comments that no future large remediation projects have been identified; however, it is prudent to ensure the availability of sufficient landfill capacity for unexpected remediation or spill cleanups. When natural disasters occur, the Department typically implements procedures which allow short-term handling of debris in the local areas affected. Therefore, although it is unlikely the expansion would handle volumes of debris large enough to significantly affect landfill capacity, unexpected capacity needs from these types of activities could be accommodated within the 9.35 million cubic yards of capacity proposed for Phase II.

- C. Commissioner Findings: As noted in Findings of Fact #5 and #6, above, the Commissioner finds that the additional 21.9 million cubic yards of landfill capacity that full expansion of the Juniper Ridge Landfill would provide is not needed to meet the State's needs in the immediate or short term, and a 9.35 million cubic yard expansion will be adequate to meet long-term disposal capacity needs. This determination is unchanged when reviewing local or regional waste management needs; no significant changes in the way current users of the Juniper Ridge Landfill access the facility is expected in the near future.

The Commissioner finds that a determination that the capacity provided by the estimated 9.35 million cubic yards of capacity in Phase II of the proposed expansion at the Juniper Ridge Landfill will not result in a gap in local, regional or state waste landfilling needs. The applicant has not demonstrated that the entire amount of proposed increased capacity from the landfill expansion is needed to provide special waste, CDD or other waste disposal needs in the local or regional area that Juniper Ridge and other facilities could not provide. Therefore, the Commissioner finds that the landfill capacity over and above the 9.35 million cubic yards proposed for Phase II is currently not needed, and

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approval of Phases I and III at this time would be inconsistent with local, regional or state waste collection, storage, transportation, processing or disposal as the additional capacity might undercut local, regional and state initiatives to encourage waste reduction, reuse and recycling.

BASED on the above Finding of Facts, the Commissioner makes the following CONCLUSIONS:

1. The proposed expansion of the Juniper Ridge Landfill in Old Town, Maine, will provide a substantial public benefit, provided the expansion is limited to the 9.35 million cubic yards associated with the Phase II area as described in the public benefit application, provided an annual limit on OBW disposal in the 9.35 million cubic yard expansion is established by the process described in Finding of Fact #5.C, and provided no more than 25,000 tons of MSW bypass from Maine Energy is delivered to the 9.35 million cubic yard expansion in any calendar year, unless authorized by specific conditions in a Department license for the 9.35 million cubic yard expansion.
2. The entire 21.9 million cubic yards of capacity proposed for expansion of the Juniper Ridge Landfill is not needed to meet the immediate or short-term solid waste disposal capacity needs of the State.
3. The 9.35 million cubic yards of capacity proposed for the Phase II area of the expansion of the Juniper Ridge Landfill is adequate to ensure the long-term disposal capacity needs of the State can be met.
4. The proposal for expansion of the Juniper Ridge Landfill is consistent with the State Plan, provided only the application for the capacity proposed for Phase II is submitted.
5. The estimated 9.35 million cubic yards of landfill capacity in Phase II only of the proposed Juniper Ridge Landfill expansion is consistent with local, regional or state waste storage, transportation, processing or disposal.

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6. The Commissioner recommends SPO and Casella amend the OSA to address the significant quantity of CDD imported into Maine under the terms of the OSA, and the associated large volumes of processing residues delivered to the Juniper Ridge Landfill.

THEREFORE, the Commissioner APPROVES only the 9.35 million cubic yards of capacity estimated for the Phase II area as described in the noted application of the STATE OF MAINE, ACTING THROUGH THE STATE PLANNING OFFICE, SUBJECT TO THE ATTACHED CONDITIONS and all applicable standards and regulations:

1. The Standard Conditions of Approval, a copy attached as Appendix A.
2. The invalidity or unenforceability of any provision, or part thereof, of this determination shall not affect the remainder of the provision or any other provisions. This determination shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.
3. The applicant shall, if, and when, a license is issued for the construction and operation of the 9.35 million cubic yard expansion, comply with the limit, and any subsequent modifications to the limit, established by the Department in the license on the tonnage of OBW that may be disposed in the 9.35 million cubic yard expansion.
4. Periodic independent third party audits of CDD processing operations that are anticipated to transport more than 10,000 tons of OBW to the 9.35 million cubic yard expansion for disposal on an annual basis shall be conducted to verify the results of the demonstrations required under the provisions of 06-096 CMR 409.2.C, focused on the nature and volume of processing residues being sent to Juniper Ridge Landfill for disposal. Third party audits will be conducted by a qualified consultant selected by the Department in consultation with the affected CDD processing facilities and Casella. Casella shall reimburse the Department for the cost of the audits. The first such audit(s) shall occur prior to the disposal of OBW from these processing facilities in the 9.35 million cubic yard expansion. Audits will be conducted at 2 year intervals, unless or until the Department approves their discontinuation.

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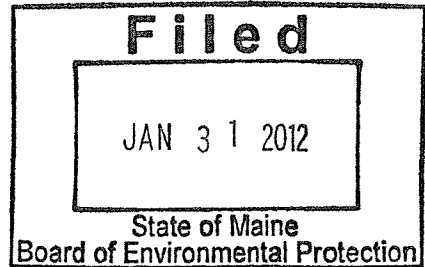
5. No more than 25,000 tons of MSW bypass from Maine Energy shall be delivered to the 9.35 million cubic yard expansion in any calendar year, unless otherwise authorized by specific conditions in a Department license for the 9.35 million cubic yards expansion.

DONE AND DATED AT AUGUSTA, MAINE, THIS 31ST DAY

OF January, 2012.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Patricia W. Aho
 Patricia W. Aho, Commissioner



PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

Date of initial receipt of application: September 15, 2011
 Date of application acceptance: September 23, 2011

Date filed with Board of Environmental Protection:

XCD73907/cwd

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ATTACHMENT A

TOTAL WASTE RECEIVED AT JUNIPER RIDGE LANDFILL
 BY MONTH

YEAR	TOTAL WASTE RECEIVED (in tons) ⁸												ANNUAL TOTALS
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
2004				5,254	6,103	7,089	6,544	6,219	5,904	4,274	2,978	4,125	48,490
2005	4,504	7,589	10,257	15,555	22,365	26,081	17,775	25,789	24,060	28,189	28,219	34,985	245,368
2006	40,608	34,028	36,450	38,314	54,025	55,240	42,951	48,127	40,543	43,248	48,689	43,583	525,806
2007	35,804	26,081	32,769	29,772	35,780	43,334	40,869	41,092	39,801	57,791	47,379	37,171	472,643
2008	54,440	38,585	45,800	54,878	53,125	52,647	55,798	61,836	66,515	53,072	42,479	50,182	629,357
2009	41,602	34,955	44,419	43,780	45,909	44,833	41,275	43,424	40,001	58,271	53,242	50,653	542,364
2010	56,032	48,521	52,186	58,100	58,399	62,962	62,241	63,564	60,840	65,730	64,213	59,337	712,125
2011	47,688	43,708	56,031	54,945	57,209	64,365	59,235	69,824	63,068	68,383	62,862	59,136	706,452

⁸ compiled by the Department from monthly reports submitted by the applicant

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ATTACHMENT B
WOOD WASTE AND CONSTRUCTION & DEMOLITION DEBRIS (CDD⁹) GENERATED IN MAINE

	2008		2009		2010	
	% of total	% of total	tons	% of total	tons	
disposed in Maine landfills		92.6	368,388	95.2	466,826	
Juniper Ridge(in Old Town)	31.7	39.2	155,747 ¹⁰	49.5	242,866 ¹¹	
Crossroads (in Norridgewock)	24.2	17.1	68,075	14.2	69,737	
Pine Tree (in Hampden)	2.6	7.1	28,264	-	(closed)	
CDD fines used as alternative daily cover (ADC)	15.0	11.8	46,744	17.8	87,449	
munic/quasi-municipal landfills	13.9	17.1	67,992	13.1	64,273	
generator-owned landfills		0.4	1,566	0.5	2,501	
fuel chips / energy (in ME, NH or Canada)	6.2	6.5	25,690	3.6	17,484	
used as erosion control mix (in ME, NH & MA)	1.0			-		
exported to NH or Canada	1.1	0.1	198	1.0	5,000	
stockpiled	4.0	-	5	-		
otherwise recycled, reused or beneficially used (in ME, NH or Canada)	0.3	0.4	1,510	-	-	
otherwise disposed		0.5	1,850	0.2	964	
total wood waste and CDD generated			397,641		490,274	

⁹ CDD includes oversized bulky waste (OBW) from incinerators and processing facilities

¹⁰ includes 50,581 tons of OBW from KTI

¹¹ includes 95,157 tons of OBW from KTI

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ATTACHMENT C
DISPOSAL LOCATIONS FOR SPECIAL WASTES GENERATED IN MAINE

DISPOSAL FACILITY	2008		2009		2010	
	% of total	tons	% of total	tons	% of total	tons
:						
Juniper Ridge Landfill, Old Town	63.4		66.0	316,952	79.4	344,377
Crossroads Landfill, Norridgewock	16.9		2.3	11,123	3.8	16,572
ecomaine Landfill, Scarborough	7.7		10.3	49,714	10.8	47,066
Pine Tree Landfill, Hampden	6.2		16.2	77,829	-	(closed)
City of Lewiston Landfill	3.1		3.6	17,246	4.1	18,023
City of Rockland Quarry	2.3		0.2	1,139	0.2	866
Tri-Community Landfill, Fort Fairfield	0.2		0.6	3,116	0.7	3125
City of Presque Isle Landfill	0.1		0.5	2,400	0.6	2614
Hatch Hill Landfill, City of Augusta	<0.1		<0.1	176	0.1	625
City of Bath Landfill	<0.1		0.1	406	0.1	487
Town of Hartland Landfill	0.1		0.1	440	0.1	445
TOTAL DISPOSED		593,966		480,541		435,099

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ATTACHMENT D
 MUNICIPAL SOLID WASTE (MSW) GENERATED IN MAINE¹²

DISPOSAL TYPE	2008 – % of total	2009		2010	
		% of total	tons	% of total	tons
Incinerated: Maine Energy, PERC, ecomaine & MMWAC	74.3	74.2	491,000	71.1	469,707
Municipal/Quasi-Municipal Landfills	12.5	10.9	71,894	10.6	69,713
Crossroads Landfill in Norridgewock	10.3	9.9	65,529	10.7	70,500
Exported to NH or NB	1.9	3.8	24,857	6.1	40,606
Generator-Owned Landfills	0.8	0.6	4,202	0.5	2,956
Incinerator Bypass to Juniper Ridge Landfill	0.2	0.6	4,156	1.0	6,910
total amount of MSW generated (in tons)	692,508		661,638		660,392

¹² FEPR amounts are reported in the special waste table

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ATTACHMENT E
AMOUNT OF WASTE DISPOSED IN JUNIPER RIDGE LANDFILL,
AFTER PURCHASE BY STATE OF MAINE

WASTE STREAM	2003 amendment application (estimate)		2003 (Oct-Dec) (actual)	2004 (actual)	2005 (actual)		2006 (actual)		2007 (actual)		2008 (actual)		2009 (actual)		2010 (actual)		2011 (from monthly reports)		
	(tons)	% of total	(tons)	(tons)	(tons)	% of total	(tons)	% of total	(tons)	% of total	(tons)	% of total	(tons)	% of total	(tons)	% of total	(tons)	% of total	
ash related waste	70,000	13.0	5,744	20,880	58,269	23.1	86,474	16.4	91,999	19.5	159,159	25.8	131,132	24.8	131,187	18.5			
FEPR	120,000	22.2	0	393	45,644	18.1	105,139	20.0	74,763	15.8	117,118	19.0	84,727	16.0	125,250	17.7			
OBW	20,000	3.7	0	0	12,271	4.9	29,225	5.6	9,649	2.0	21,405	3.5	51,438	9.7	96,520	13.6			
CDD	190,000	35.2	0	493	76,088	30.2	163,581	31.1	143,453	30.4	125,790	20.4	104,309	19.7	145,488	20.5			
CDD fines/fines for cover			0	0	7,931	3.1	42,320	8.0	41,109	8.7	45,148	7.3	46,744	8.8	87,449	12.3			
Misc. special waste ¹³	50,000	9.3	0	569	252	0.1	38,419	7.3	46,379	9.8	73,704	11.9	7,595	1.4	19,029	2.7			
Misc. non-special solid wastes			30	0	48	--	11,649	2.2	8,398	1.8	5,822	0.9	2,051	0.4	1,106	0.2			
Wood/bark/knots,			5,842	4,884	7,504	3.0	2,013	0.4	145	--	127	--	605	0.1	858	0.1			
Lime/slaker grit					6,936	2.7	5,784	1.1	4,402	0.9	3,130	0.5	6,205	1.2	3,229	0.5			
Treatment plant sludges	50,000	9.3	35,290	26,686	35,336	14.0	29,999	5.7	44,683	9.5	44,953	7.3	70,265	13.3	58,558	8.3			
MSW bypass	40,000	7.4	0	0	2,035	0.8	11,155	2.1	7,620	1.6	21,426	3.5	23,551	4.5	39,524	5.6			
TOTAL WASTE (tons)	540,000	100.1	46,906¹⁴	53,905¹⁵	252,314	100	525,758	99.9	472,600	100	617,782	100.1	528,622	99.9	708,198	100	706,452		
change from 2003 amendment application							47% of estimate		97% of estimate		88% of estimate		114% of estimate		98% of estimate		131% of estimate		131% of estimate

¹³ Miscellaneous special wastes includes oil spill debris, sandblast grit, non-friable asbestos, leather scraps, grit screenings, etc.

¹⁴ Sludge mixing program began

¹⁵ Sludge mixing program ongoing; limited waste acceptance

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ATTACHMENT F (page 1 of 2)
OBW and FINES from KTI, and MERC & PERC BYPASS DISPOSED at
JUNIPER RIDGE LANDFILL (in tons)

	OBW - KTI	FINES - KTI	MSW BYPASS - MERC		MSW BYPASS - PERC	RDF - MERC
2008						
Jan.	1,618	4,483	0		0	0
Feb.	1,389	3,868	0		0	0
Mar.	1,696	4,301	0		0	0
April	1,703	3,502	1,897		0	0
May	1,855	2,717	5,466		0	0
June	1,541	4,281	1,673		0	0
July	2,025	861	1,352		0	0
Aug.	1,829	2,369	2,635		0	0
Sept.	1,956	3,184	3,008		0	0
Oct.	1,874	4,733	2,113		0	0
Nov.	1,758	3,183	170		0	0
Dec.	1,379	2,910	3,111		0	0
TOTAL	20,623	40,392	21,425		0	0
2009						
Jan.	1,590	3,259	0		0	0
Feb.	742	2,447	0		0	0
Mar.	1,445	3,209	0		0	0
April	1,441	1,535	1,889		0	0
May	1,838	0	5,817		10	1,064
June	1,960	6,134	2,978		341	245
July	3,050	4,608	2,767		472	0
Aug.	1,889	477	3,149		0	246
Sept.	1,753	1,627	1,606		0	219
Oct.	8,919	5,393	1,034		325	135
Nov.	14,514	2,330	653		0	83
Dec.	11,440	3,639	517		0	0
TOTAL	50,581	38,952	20,410		1148	1,192

STATE OF MAINE, ACTING THROUGH THE 37 PUBLIC BENEFIT
STATE PLANNING OFFICE) DETERMINATION
OLD TOWN, PENOBSCOT COUNTY, MAINE)
JUNIPER RIDGE LANDFILL EXPANSION)
#S-020700-W5-AU-N) PARTIAL APPROVAL
(APPROVAL WITH CONDITIONS))

ATTACHMENT F (page 2 of 2)
OBW and FINES from KTI, and MERC & PERC BYPASS DISPOSED at
JUNIPER RIDGE LANDFILL (in tons)

	OBW - KTI	FINES - KTI	MSW BYPASS - MERC		MSW BYPASS - PERC	RDF - MERC
2010				(soft layer)		
Jan.	12,143	3,000	1,146		637	0
Feb.	7,601	3,117	1,592		1,347	351
Mar.	4,959	5,389	2,038		0	679
April	7,591	5,805	4,101		0	0
May	8,554	5,328	5,355		0	0
June	8,797	10,845	1,769		0	0
July	6,042	6,438	2,655		0	0
Aug.	8,561	6,417	2,784		0	0
Sept.	7,999	9,458	1,210	2,124	0	0
Oct.	7,978	17,022	0	5,035	0	0
Nov.	8,252	12,833	0	4,777	0	0
Dec.	6,680	10,735	0	2,975	0	0
TOTAL	95,157	96,387	22,650	14,911	1,984	1,030
2011						
Jan.	6,989	9,155	0	824	0	0
Feb.	5,581	8,364	0	589	0	0
Mar.	8,559	10,945	376	0	0	0
April	8,138	9,718	1,306	0	0	0
May	8,157	7,968	4,929	0	0	0
June	9,355	9,104	2,445	0	0	0
July	8,787	9,636	2,528	0	0	0
Aug.	12,645	11,882	2,372	0	0	0
Sept.	10,284	12,541	2,199	0	0	0
Oct.	10,623	13,849	849	649	0	0
Nov.	4,398	9,583	0	1,785	0	0
Dec.	4,228	12,260	0	1,454	0	0
TOTAL	97,744	125,005	17,004	5,301	0	0

Appendix A

STANDARD CONDITIONS TO ALL SOLID WASTE FACILITY LICENSES

STRICT CONFORMANCE WITH THE STANDARD AND SPECIAL CONDITIONS OF THIS APPROVAL IS NECESSARY FOR THE PROJECT TO MEET THE STATUTORY CRITERIA FOR APPROVAL. VIOLATIONS OF THE CONDITIONS UNDER WHICH A LICENSE IS ISSUED SHALL CONSTITUTE A VIOLATION OF THAT LICENSE AGAINST WHICH ENFORCEMENT ACTION MAY BE TAKEN, INCLUDING REVOCATION.

1. Approval of Variations from Plans. The granting of this approval is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted and affirmed by the licensee. Any consequential variation from these plans, proposals, and supporting documents is subject to review and approval prior to implementation.
2. Compliance with All Applicable Laws. The licensee shall secure and comply with all applicable federal, state, and local licenses, permits, authorizations, conditions, agreements, and orders prior to or during construction and operation, as appropriate.
3. Compliance with All Terms and Conditions of Approval. The licensee shall submit all reports and information requested by the Department demonstrating that the licensee has complied or will comply with all terms and conditions of this approval. All preconstruction terms and conditions must be met before construction begins.
4. Transfer of License. The licensee may not transfer the solid waste facility license or any portion thereof without approval of the Department.
5. Initiation of Construction or Development Within Two Years. If the construction or operation of the solid waste facility is not begun within two years of issuance or within 2 years after any administrative and judicial appeals have been resolved, the license lapses and the licensee must reapply to the Department for a new license unless otherwise approved by the Department.
6. Approval Included in Contract Bids. A copy of the approval must be included in or attached to all contract bid specifications for the solid waste facility.
7. Approval Shown to Contractors. Contractors must be shown the license by the licensee before commencing work on the solid waste facility.
8. Background of key individuals. A licensee may not knowingly hire as an officer, director or key solid waste facility employee, or knowingly acquire an equity interest or debt interest in, any person convicted of a felony or found to have violated a State or federal environmental law or rule without first obtaining the approval of the Department.
9. Fees. The licensee must comply with annual license and annual reporting fee requirements of the Department's rules.
10. Recycling and Source Reduction Determination for Solid Waste Disposal Facilities. This condition does not apply to the expansion of a commercial solid waste disposal facility that accepts only special waste for landfilling.

The solid waste disposal facility shall only accept solid waste that is subject to recycling and source reduction programs, voluntary or otherwise, at least as effective as those imposed by 38 MRSA Chapter 13.

11. Deed Requirements for Solid Waste Disposal Facilities. Whenever any lot of land on which an active, inactive, or closed solid waste disposal facility is located is being transferred by deed, the following must be expressly stated in the deed:

- A. The type of facility located on the lot and the dates of its establishment and closure.
- B. A description of the location and the composition, extent, and depth of the waste deposited.
- C. The disposal location coordinates of asbestos wastes must be identified.



DEP INFORMATION SHEET

Appealing a Commissioner's Licensing Decision

Dated: January 2004

Contact: (207) 287-2811

SUMMARY

One of two methods is available to an aggrieved person for appealing a licensing decision made by the Department of Environmental Protection's ("DEP") Commissioner -- in an administrative process before the Board of Environmental Protection ("Board") or a judicial process before Maine's Superior Court. This FACT SHEET, in conjunction with consulting statutory and regulatory provisions referred to herein, will assist aggrieved persons with understanding their rights and obligations in filing an administrative or judicial appeals. A failure to file an appeal within the identified time periods will result in the Commissioner's decision becoming final.

I. ADMINISTRATIVE APPEALS TO THE BOARD

LEGAL REFERENCES

DEP's *General Laws*, 38 M.R.S.A. § 341-D(4), and its *Rules Concerning the Processing of Applications and Other Administrative Matters* (Chapter 2), 06-096 CMR 2.24.

HOW LONG YOU HAVE TO SUBMIT AN APPEAL TO THE BOARD

The Board must receive a written notice of appeal within 30 calendar days of the date on which the Commissioner's decision was filed with the Board.

HOW TO SUBMIT AN APPEAL TO THE BOARD

Signed original appeal documents must be sent to: Chair, Board of Environmental Protection, c/o Department of Environmental Protection, 17 State House Station, Augusta, ME 04333-0017; faxes and photocopies are not acceptable. The person appealing a licensing decision must also send the DEP's Commissioner and the applicant a copy of the documents. All the information listed in the next section must be submitted at the time the appeal is filed. Only the extraordinary circumstances described at the end of that section will justify evidence not in the DEP's record at the time of decision being added to the record for consideration by the Board as part of an appeal.

WHAT YOUR APPEAL PAPERWORK MUST CONTAIN

An appeal must contain the following information:

1. *The findings, conclusions or conditions objected to or believed to be in error.* Specific references and facts regarding the appellant's issues with the decision must be provided in the notice of appeal.
2. *The basis of the objections or challenge.* If possible, specific regulations, statutes or other facts should be referenced. This may include citing omissions of relevant requirements, and errors believed to have been made in interpretations, conclusions, and relevant requirements.
3. *The remedy sought.* This can range from reversal of the Commissioner's decision on the license or permit to changes in specific permit conditions.
4. *All the matters to be contested.* As part of the appeal, the Board will limit its consideration to those arguments specifically raised in the written notice of appeal.

5. *All the matters to be contested.* The Board will limit its consideration to those arguments specifically raised in the written notice of appeal.
6. *Request for hearing.* The Board will hear presentations on appeals at its regularly scheduled meetings, unless a public hearing is requested and granted. A request for public hearing on an appeal must be filed as part of the notice of appeal.
7. *New or additional evidence to be offered.* The Board may allow new or additional evidence as part of an appeal only when the person seeking to add information to the record can show due diligence in bringing the evidence to the DEP's attention at the earliest possible time in the licensing process or show that the evidence itself is newly discovered and could not have been presented earlier in the process. Specific requirements for additional evidence are found in Chapter 2, Section 24(B)(5).

OTHER CONSIDERATIONS IN APPEALING A DECISION TO THE BOARD

1. *Be familiar with all relevant material in the DEP record.* A license file is public information made easily accessible by DEP. Upon request, the DEP will make the material available during normal working hours, provide space to review the file, and provide opportunity for photocopying materials. There is a charge for copies or copying services.
2. *Be familiar with the regulations and laws under which the application was processed, and the procedural rules governing your appeal.* DEP staff will provide this information on request and answer questions regarding applicable requirements.
3. *The filing of an appeal does not operate as a stay to any decision.* An applicant proceeding with a project pending the outcome of an appeal runs the risk of the decision being reversed or modified as a result of the appeal.

WHAT TO EXPECT ONCE YOU FILE A TIMELY APPEAL WITH THE BOARD

The Board will formally acknowledge initiation of the appeals procedure, including the name of the DEP project manager assigned to the specific appeal, within 15 days of receiving a timely filing. The notice of appeal, all materials accepted by the Board Chair as additional evidence, and any materials submitted in response to the appeal will be sent to Board members along with a briefing and recommendation from DEP staff. Parties filing appeals and interested persons are notified in advance of the final date set for Board consideration of an appeal or request for public hearing. With or without holding a public hearing, the Board may affirm, amend, or reverse a Commissioner decision. The Board will notify parties to an appeal and interested persons of its decision.

II. APPEALS TO MAINE SUPERIOR COURT

Maine law allows aggrieved persons to appeal final Commissioner licensing decisions to Maine's Superior Court, see 38 M.R.S.A. § 346(1); 06-096 CMR 2.26; 5 M.R.S.A. § 11001; & MRCivP 80C. Parties to the licensing decision must file a petition for review within 30 days after receipt of notice of the Commissioner's written decision. A petition for review by any other person aggrieved must be filed within 40-days from the date the written decision is rendered. The laws cited in this paragraph and other legal procedures govern the contents and processing of a Superior Court appeal.

ADDITIONAL INFORMATION

If you have questions or need additional information on the appeal process, contact the DEP's Director of Procedures and Enforcement at (207) 287-2811.

Note: The DEP provides this INFORMATION SHEET for general guidance only; it is not intended for use as a legal reference. Maine law governs an appellant's rights.

APPENDIX F

JUNIPER RIDGE LANDFILL SOLID WASTE LICENSE S-020700-WD-BI-N



BOARD ORDER

IN THE MATTER OF

STATE OF MAINE, ACTING THROUGH)	SOLID WASTE LICENSE,
THE BUREAU OF GENERAL SERVICES)	NATURAL RESOURCES
OLD TOWN, PENOBSCOT COUNTY, ME)	PROTECTION ACT, AND
JUNIPER RIDGE LANDFILL EXPANSION)	WATER QUALITY CERTIFICATION
#S-020700-WD-BI-N and #L-19015-TG-D-N)	
(APPROVAL WITH CONDITIONS))	NEW LICENSE

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THE BUREAU OF GENERAL SERVICES)	NATURAL RESOURCES
OLD TOWN, PENOBSCOT COUNTY, ME)	PROTECTION ACT, AND
JUNIPER RIDGE LANDFILL EXPANSION)	WATER QUALITY CERTIFICATION
#S-020700-WD-BI-N and #L-19015-TG-D-N)	
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Reference to “Finding [#]” refers to the specified section in the Findings of Fact narrative portion of the license. Conclusions and Conditions are listed separately at the end of the license.

STATE OF MAINE, ACTING THROUGH	3	SOLID WASTE LICENSE,
THE BUREAU OF GENERAL SERVICES	)	NATURAL RESOURCES
OLD TOWN, PENOBSCOT COUNTY, ME	)	PROTECTION ACT, AND
JUNIPER RIDGE LANDFILL EXPANSION	)	WATER QUALITY CERTIFICATION
#S-020700-WD-BI-N and #L-19015-TG-D-N)	
(APPROVAL WITH CONDITIONS)	)	NEW LICENSE

Pursuant to the provisions of the *Maine Hazardous Waste, Septage and Solid Waste Management Act*, 38 Maine Revised Statutes (M.R.S.) §§ 1301 to 1319-Y; *Solid Waste Management Hierarchy*, 38 M.R.S. §2101; the *Rule Concerning the Processing of Applications and Other Administrative Matters*, 06-096 Code of Maine Rules (C.M.R.) ch. 2 (last amended October 19, 2015); the *Solid Waste Management Rules: General Provisions*, 06-096 C.M.R. ch. 400 (last amended April 6, 2015), *Landfill Siting, Design and Operation*, 06-096 C.M.R. ch. 401 (last amended April 12, 2015), and *Water Quality Monitoring, Leachate Monitoring, and Waste Characterization*, 06-096 C.M.R. ch. 405 (last amended April 12, 2015) (collectively, the Rules); the *Natural Resources Protection Act* (NRPA), 38 M.R.S. §§ 480-A to 480-JJ; Section 401 of the *Federal Water Pollution Control Act*, 33 U.S.C. § 1341; *Wetlands and Waterbodies Protection*, 06-096 C.M.R. ch. 310 (last amended January 26, 2009); and *Assessing and Mitigating Impacts to Existing Scenic and Aesthetic Uses*, 06-096 C.M.R. ch. 315 (effective June 29, 2003), the Board of Environmental Protection (Board) has considered the application of the State of Maine acting through the Bureau of General Services, with all supportive data, agency review comments, and other related materials on file, and FINDS THE FOLLOWING FACTS:

APPLICATION OVERVIEW AND PROCEDURAL HISTORY

1. APPLICATION SUMMARY

A. Application

The State of Maine, acting through the Bureau of General Services (BGS), has applied for Maine Hazardous Waste, Septage and Solid Waste Management Act, Natural Resources Protection Act, and Water Quality Certification approval to construct a 9.35 million cubic yard expansion of the existing Juniper Ridge Landfill (JRL), located in Old Town, Maine. The northern edge of the property parcel borders, and a portion of the access road is located in, Alton, Maine. The solid waste application under the Maine Hazardous Waste, Septage, and Solid Waste Management Act and the land application under NRPA were processed as a consolidated licensing proceeding and are both addressed in this license.

BGS, as the owner of JRL, and NEWSME Landfill Operations, LLC (NEWSME), as the operator of JRL, prepared the application for the proposed expansion.

The NRPA application was originally identified as license #L-24251-TG-C-N, which was incorrect. It is now correctly identified as license #L-19015-TG-D-N.

B. History

The following history is a summary and does not include all licensing actions:

STATE OF MAINE, ACTING THROUGH	4	SOLID WASTE LICENSE,
THE BUREAU OF GENERAL SERVICES	)	NATURAL RESOURCES
OLD TOWN, PENOBSCOT COUNTY, ME	)	PROTECTION ACT, AND
JUNIPER RIDGE LANDFILL EXPANSION	)	WATER QUALITY CERTIFICATION
#S-020700-WD-BI-N and #L-19015-TG-D-N)	
(APPROVAL WITH CONDITIONS)	)	NEW LICENSE

- (1) On July 28, 1993, James River Paper Company, Inc. was issued a license to construct and operate a 68-acre secure landfill, known as the West Old Town Landfill, to dispose of the James River Paper Company's pulp and papermaking residuals (license #S-020700-7A-A-N). The project impacted 1.31 acres of freshwater wetland. The compensation package included preservation of 27.92 acres of land adjacent to the facility and the restoration and enhancement of 1.76 acres of wetland within the preserved parcel.
- (2) On August 24, 1995, the Department approved, with conditions, a modification to the compensation package (licenses #L-19015-31-A-M and #S-20700-DW-B-M).
- (3) On October 21, 2003, the Department issued conditional approval for the transfer of licenses for the West Old Town Landfill, from the Fort James Operating Company, to the State of Maine, State Planning Office (SPO) (licenses #S-020700-WR-M-T and #L-019015-TH-C-T); the transfer became effective when the sale of the landfill to the State of Maine, acting by and through SPO, occurred on February 5, 2004.
- (4) On February 5, 2004, the State of Maine, acting by and through the SPO, and Casella Waste Systems, Inc. (Casella) entered into an Operating Services Agreement (OSA) for the operation of the West Old Town Landfill.
- (5) On April 9, 2004, the Department approved an amendment application (license #S-020700-WD-N-A) for a vertical increase in the final elevation of the landfill and the disposal of additional waste streams.
- (6) In 2006, the West Old Town Landfill became known as the Juniper Ridge Landfill.
- (7) On January 31, 2012, the Department issued to the State of Maine, acting through the SPO, a Public Benefit Determination (license #S-020700-W5-AU-N) partial approval, with conditions, for additional landfill capacity of 9.35 million cubic yards, decreased from the original 21.9 million cubic yard capacity proposed.
- (8) Pursuant to PL 2011, ch. 655, § GG-69, on July 1, 2012, the BGS, within the Department of Administrative and Financial Services (DAFS), became the state agency acting as the owner and licensee of JRL. The Department

STATE OF MAINE, ACTING THROUGH	5	SOLID WASTE LICENSE,
THE BUREAU OF GENERAL SERVICES	)	NATURAL RESOURCES
OLD TOWN, PENOBSCOT COUNTY, ME	)	PROTECTION ACT, AND
JUNIPER RIDGE LANDFILL EXPANSION	)	WATER QUALITY CERTIFICATION
#S-020700-WD-BI-N and #L-19015-TG-D-N)	
(APPROVAL WITH CONDITIONS)	)	NEW LICENSE

of Economic and Community Development is the manager of JRL. NEWSME, a wholly-owned indirect subsidiary of Casella, operates the landfill for the State of Maine, acting through the Bureau of General Services.

- (9) To date, approximately 62.6 acres of the facility’s 68-acre existing licensed footprint have been developed, including Cells 1, 2, 3A, 3B, 4, 5, 6, 7, 8, and 9 (current active cell).

C. Terms and Acronyms

The following terms and acronyms can be found in this license and are listed in Table 1 for ease of reference:

Table 1: License Terms and Acronyms

applicant	Refers to both BGS and NEWSME (or a successor operator)
Board	Maine Board of Environmental Protection
BGS	Bureau of General Services
BMP	Best Management Practices
Casella	Casella Waste Systems, Inc.
CDD	Construction and Demolition Debris
C.M.R.	Code of Maine Rules
dBA	Decibels adjusted for frequency extremes
Department	Maine Department of Environmental Protection
EMP	Environmental Monitoring Plan
FEMA	Federal Emergency Management Agency
FEPR	Front End Process Residue
GCL	Geosynthetic Clay Liner
H ₂ S	Hydrogen Sulfide
HDPE	High-Density Polyethylene
JRL	The Juniper Ridge Landfill
LFG	Landfill Gas
MDOT	Maine Department of Transportation
M.R.S.	Maine Revised Statutes
MSW	Municipal Solid Waste
MSW Bypass	Any MSW that is destined for disposal or processing at a solid waste incinerator, but that cannot be disposed of or processed at that incinerator because of the incinerator’s malfunction, insufficient capacity, inability to process or burn, down-time, or any other comparable reason as approved by the Department
NEWSME	NEWSME Landfill Operations, LLC
NRPA	Natural Resource Protection Act

STATE OF MAINE, ACTING THROUGH	6	SOLID WASTE LICENSE,
THE BUREAU OF GENERAL SERVICES	)	NATURAL RESOURCES
OLD TOWN, PENOBSCOT COUNTY, ME	)	PROTECTION ACT, AND
JUNIPER RIDGE LANDFILL EXPANSION	)	WATER QUALITY CERTIFICATION
#S-020700-WD-BI-N and #L-19015-TG-D-N)	
(APPROVAL WITH CONDITIONS)	)	NEW LICENSE

OBW	Oversized Bulky Waste
OSA	Operating Service Agreement
ppb	Parts per Billion
PBD	Public Benefit Determination License
PIR	Preliminary Information Report
Rules	The Department's Solid Waste Management Rules, including 06-096 C.M.R. chs. 400, 401, and 405
SME	Sevee & Maher Engineers, Inc.
Soft Layer	A protective layer of waste above the liner and leachate collection systems
State Plan	Maine Materials Management Plan: 2014 State Waste Management and Recycling Plan Update & 2012 Waste Generation and Disposal Capacity Report, January 2014, prepared by the Maine Department of Environmental Protection
SVP	Significant Vernal Pool

D. Summary of Proposal

The application is for the construction and operation of a 9.35 million cubic yard expansion at JRL. The existing solid waste footprint is proposed to be expanded by 54 acres, to be developed in phases. An additional 20 acres is planned for ancillary infrastructure including roads, piping, sedimentation ponds, scales, and buildings. The proposed expansion would extend the life of the landfill by approximately 10 to 12 years.

The proposed expansion design consists of various engineered systems for the construction and operation of the landfill. Landfill gas generated on-site will be combusted in the facility's flare. The leachate from the expansion will be treated off-site, as is the current practice.

The requested wastes to be placed in the proposed expansion are similar to the accepted wastes currently allowed in the existing landfill. The accepted wastes will include only non-hazardous waste generated within the State and will not include MSW, except for MSW bypass as described in Finding 37 of this license.

The application for the proposed expansion includes the direct alteration of 2.04 acres of freshwater wetlands. A compensation plan was proposed for wetland impacts. Additionally, a Permit-by-Rule Notification Form (PBR#60159) was submitted for clearance for an electrical line and perimeter fence through the critical terrestrial habitat of a significant vernal pool (SVP) pursuant to *Permit By Rule Standards*, 06-096 C.M.R. ch. 305, § 19 (last amended June 8, 2012). The Department accepted the PBR on July 29, 2015.

STATE OF MAINE, ACTING THROUGH	7	SOLID WASTE LICENSE,
THE BUREAU OF GENERAL SERVICES	)	NATURAL RESOURCES
OLD TOWN, PENOBSCOT COUNTY, ME	)	PROTECTION ACT, AND
JUNIPER RIDGE LANDFILL EXPANSION	)	WATER QUALITY CERTIFICATION
#S-020700-WD-BI-N and #L-19015-TG-D-N)	
(APPROVAL WITH CONDITIONS)	)	NEW LICENSE

The solid waste and NRPA applications were accepted as complete for processing on August 7, 2015 and July 31, 2015, respectively. The Department commented on various aspects of the application and received responses. These include the following: November 12, 2015 Department review letter on select portions of the application; January 22, 2016 Department review transmittal letter with two technical memoranda; March 4, 2016 BGS and NEWSME response to comments; April 4, 2016 Department follow-up comment transmittal letter with two technical memoranda; May 13, 2016 BGS and NEWSME follow-up responses; and July 1, 2016 Department letter with two memoranda.

E. Ownership and Operation of the Juniper Ridge Landfill

The State of Maine, acting through BGS, owns JRL. Casella is the operator of the landfill through NEWSME, a Casella subsidiary. The terms and conditions of NEWSME’s operation of the landfill are established by the OSA between the State of Maine and Casella dated February 5, 2004, and amended on July 24, 2006 and November 2, 2006.

In accordance with the OSA, Casella is required to pay all costs associated with the development, operation, closure and post-closure care of the landfill and the proposed expansion. In addition, Casella is required by the OSA to establish and maintain financial assurances for the landfill and the expansion sufficient to meet the closure and post-closure care provisions of the applicable Rules, assume liability for the landfill and the proposed expansion under both the current and future conditions, and assure that adequate disposal capacity is provided for the wastes currently disposed in the landfill for at least a 20-year period. Resolve 2003, Chapter 93 requires contract terms and conditions to be “revenue-neutral to the State and as the office [former Executive Department, State Planning Office] determines are advisable and in the public interest.”

NEWSME has prepared an application to expand JRL in accordance with the terms of the OSA. The OSA is a contract between the State of Maine, acting through BGS, and Casella. The Board and Department are not parties to the OSA. Section 4.1 of the OSA includes language that specifies that the State shall work with Casella in maintaining in the State’s name the existing permit, amendments, and all permits, licenses, statutory amendments and legislation, approvals and authorizations reasonably requested by Casella and agreed to by the State for the operation of the landfill in accordance with the terms of the OSA, including without limitation the expansion permit.

STATE OF MAINE, ACTING THROUGH	8	SOLID WASTE LICENSE,
THE BUREAU OF GENERAL SERVICES	)	NATURAL RESOURCES
OLD TOWN, PENOBSCOT COUNTY, ME	)	PROTECTION ACT, AND
JUNIPER RIDGE LANDFILL EXPANSION	)	WATER QUALITY CERTIFICATION
#S-020700-WD-BI-N and #L-19015-TG-D-N)	
(APPROVAL WITH CONDITIONS)	)	NEW LICENSE

Reference to the “applicant” in this license determination refers to both BGS, as the owner of JRL, and NEWSME, as the current operator, acting as an agent on behalf of BGS in accordance with the terms in the OSA.

2. PUBLIC PARTICIPATION

A. Pre-Application Requirements

(1) Preliminary Information Report

A Preliminary Information Report (PIR) is required by 06-096 C.M.R. ch. 401, § 1(E). The PIR, prepared by SME, was submitted to the Department on November 22, 2006 for a larger 106-acre expansion with 22 million cubic yards of capacity. The proposed 54-acre expansion is to be located within the boundary of the area described in the original submittal. A follow-up meeting was held on February 21, 2007 among representatives of the SPO (since abolished), the Department, NEWSME, SME, and Pierce Atwood, LLP to discuss the PIR.

(2) Determination of Environmental Feasibility

The Department issued a letter addressing the PIR on April 13, 2007 stating that the proposed expansion appeared to be environmentally feasible and that the siting criteria of 06-096 C.M.R. ch. 401, § 1(C)(2) did not prohibit the proposed expansion.

(3) Pre-Application Meetings

The Department’s rule at 06-096 C.M.R. ch. 2, § 10 includes requirements for pre-application and pre-submission meetings. The applicant held four pre-application meetings in 2014 with the Department and interested persons, including the City of Old Town, the Landfill Advisory Committee, the Penobscot Nation, and the general public. The Town of Alton did not attend the pre-application meetings. The meetings took place September 9, October 16, November 20, and December 18. Additional meetings also occurred among the applicant, the Department, and the U.S. Army Corps of Engineers on October 29, 2014 and April 27, 2015. A representative of the U.S. Fish and Wildlife Service attended the October 29, 2014 meeting.

STATE OF MAINE, ACTING THROUGH	9	SOLID WASTE LICENSE,
THE BUREAU OF GENERAL SERVICES)	NATURAL RESOURCES
OLD TOWN, PENOBSCOT COUNTY, ME)	PROTECTION ACT, AND
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B. Public Informational Meeting

A public informational meeting was held on June 3, 2015 in the City of Old Town as required by 06-096 C.M.R. ch. 2, § 13. The applicant mailed notice of the public informational meeting to the abutters, the Old Town and Alton municipal offices, the Landfill Advisory Committee and the Penobscot Nation. The notice was published in the Bangor Daily News on May 22, 2015.

C. Notice of Intent to File

A Notice of Intent to File an application was published in the Bangor Daily News and Penobscot Times on July 9, 2015, in addition to being mailed to the abutters, the Old Town and Alton municipal offices, the Landfill Advisory Committee and the Penobscot Nation. The notice and mailing of the notice to the Landfill Advisory Committee fulfilled the public and local participation requirement of 38 M.R.S. § 1310-S(1), the citizen's advisory committee notification requirement of 38 M.R.S. § 1310-N(12), and the public notice requirements of 06-096 C.M.R. ch. 2, § 14.

D. Public Hearing Requests and Board Jurisdiction

The Department received 27 timely requests in August 2015 for a public hearing. On September 17, 2015 the Board, on the recommendation from the Department, voted to assume licensing jurisdiction over the application and convene a public hearing.

E. Public Hearing Process

(1) Intervenors

a. Petitions to Intervene

Intervenor status was requested by several entities. State law at 38 M.R.S. § 1310-S(3) provides municipal intervenor status, if requested, for the municipality in which the facility would be located. The City of Old Town requested intervenor status on June 4, 2015. The Town of Alton notified the Department on July 30, 2015 that it would not be requesting intervenor status. The Board received intervenor status requests from two abutting property owners, Jesse Pekkala and SSR, LLC, who have intervenor status under 38 M.R.S. § 1310-S(3-A). Petitions for intervenor status

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were received from three interested persons: Edward Spencer, Dana Snowman, and Antonio Blasi.

b. Board Action on Petitions to Intervene by Interested Persons

The Board’s First Procedural Order, issued on January 21, 2016, granted intervenor status to Mr. Spencer and Mr. Snowman. Mr. Blasi was denied intervenor status due to the finding that his petition did not demonstrate that he may be substantially and directly affected by the proceeding.

c. Withdrawal from Participation

On May 10, 2016, Mr. Pekkala withdrew as an intervenor.

d. Intervenor Designations

The following entities participated as intervenors in the licensing process:

- i. City of Old Town, as a municipal intervenor;
- ii. Edward Spencer, as an interested person petitioner;
- iii. Dana Snowman, as an interested person petitioner; and
- iv. SSR, LLC, as an abutter.

(2) Procedural Orders

Prior to the public hearing, the Board issued six Procedural Orders:

- a. The First Procedural Order, issued on January 21, 2016, addressed the designation of intervenors as described in Finding 2(E)(1) of this license.
- b. The Second Procedural Order, issued February 25, 2016, documented the pre-hearing conference held on February 10, 2016. The pre-hearing conference included a review of the procedural rules in preparation for, and during, the hearing; the roles and responsibilities of the applicant, intervenors, and Department staff; and the relevant licensing criteria. The Second Procedural Order

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established the deadline for the intervenors to submit a list of issues they expected to address at the hearing through testimony, along with a list of expert witnesses.

- c. The Third Procedural Order, issued May 27, 2016, documented the pre-hearing conference held on May 18, 2016. The pre-hearing conference included a review of the list of issues submitted by the intervenors, agreement on issues not contested by the intervenors, and discussion of the Board’s site visit and schedule of pre-hearing testimony submissions. The Third Procedural Order established submission deadlines for the applicant’s and intervenors’ lists of witnesses, pre-filed direct testimony and exhibits, and pre-filed rebuttal testimony, as well as setting the dates for the public hearing.
- d. The Fourth Procedural Order, issued July 7, 2016, addressed the requirements for submission of pre-filed testimony and scheduling decisions made in consultation with the parties following the June 23, 2016 Board meeting.
- e. The Fifth Procedural Order, issued August 25, 2016, addressed the rulings of the Presiding Officer on the motions to strike pre-filed direct testimony.
- f. The Sixth Procedural Order, issued September 28, 2016, documented the pre-hearing conference held on September 14, 2016. The pre-hearing conference included a review of procedures and a draft schedule for the public hearing.

(3) Site Visit

A site visit to JRL occurred on June 23, 2016 for the purpose of allowing Board members to view the physical features of the site and the nature of the surrounding areas. The applicant and intervenors were also present during the tour. Department staff conducted the tour and responded to Board members’ questions.

(4) Public Hearing

The Board held a public hearing on the proposed expansion application on October 18 and 19, 2016 in Bangor, Maine pursuant to the Maine Administrative Procedure Act, 5, §§ 9051-9064; 38 M.R.S. §§ 341-D(2)

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and 1310-S(2); and the *Rules Governing the Conduct of Licensing Hearings*, 06-096 C.M.R. ch. 3 (last amended February 16, 2015). At the hearing, the witnesses for the parties summarized their pre-filed direct and rebuttal testimony, and were subject to cross-examination by the other parties and questioning by Board members and staff.

The Board held an evening session on October 18 to receive testimony from members of the general public, and 33 persons testified at that session. Prior to the close of the evidentiary record, the Board received 31 written comments from the general public. The testimony and written comments by the general public included opposition to, and support for, the proposed expansion.

Following the filing of post-hearing briefs by the parties on November 23, 2016, the Board held a deliberative session on December 15, 2016 to review the evidentiary record with Department staff.

Issues addressed in pre-filed testimony, hearing testimony, and post-hearing briefs included, but were not limited to: the solid waste management hierarchy regarding CDD and OBW, site geology, design and operation of the proposed expansion, the facility’s odor complaint procedure, stormwater management and extreme weather events, ground and surface water monitoring, leachate treatment and disposal, NRPA alternative analysis, impacts to Atlantic salmon, fees and payments to the City of Old Town for the use of CDD fines and soft layer waste, traffic on Bennoch Road, third party administration of the Declaration of Covenants and Restrictions, and hydrogen sulfide action levels and notification procedures.

Issues raised in testimony by the general public in opposition to the project included: impacts on the Penobscot River and natural resources, impacts on public health, leachate treatment, prohibiting additional waste disposal at the site, out-of-state waste coming into the State for disposal at a State landfill, and the solid waste hierarchy.

Issues raised in testimony by the general public in support of the project included: the facility as a well-designed, operated, and maintained landfill; the importance of the landfill to businesses and the community; and the need for a landfill option for material that cannot be reduced, reused, or recycled utilizing current technology and practices.

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The hearing transcript and hearing documents are included in the record on file. Additional discussion of testimony and comments are addressed in the findings of fact of this license, as appropriate.

F. Draft License Comment Period

A draft license was made available for comment on April 14, 2017 through notification to the applicant, intervenors, and interested persons. The draft license was posted on the Department’s website and the 15 working day comment period closed on May 8, 2017. A total of 48 commenters submitted written comments on the draft license. All of the comments were reviewed and given consideration in relation to the relevant review criteria of State laws and rules.

Comments were received from the applicant, intervenor Edward Spencer, intervenor Dana Snowman, intervenor City of Old Town, and the public (including three industry entities) and included, but were not limited to, the following:

(1) Applicant

Comments on the draft Board Order included:

- a. Insertion of NEWSME in the header as an additional licensee;
- b. Removal of sand dune references;
- c. Changes to the test pad requirements; and
- d. Comment to allow MSW if needed for the soft layer.

(2) Intervenor Edward Spencer

Comments on the draft Board Order included:

- a. Hierarchy findings and the definition of waste generated within the state;
- b. Usage of vague language;
- c. Regulated and regulator control;

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- d. Non action on the PBD recommendation to review CDD imported and processing residue disposed;
- e. OBW information;
- f. A need for a more thorough evaluation of other viable site locations;
- g. Impact on the Penobscot Nation;
- h. Technical issues (underdrains and pumping with possible effect on wetlands, site selection process with respect to wetlands and surface water used, odor);
- i. Leachate disposal;
- j. Financial ability and criminal or civil record;
- k. The endangered species evaluation; and
- l. MSW bypass issues.

(3) Intervenor Dana Snowman

Comments on the draft Board Order included opposition to the acceptance of out-of-state waste.

(4) Intervenor City of Old Town

No additional comments on the Board Order were stated.

(5) Industry Entities

Comments on the draft Board Order included:

- a. MSW bypass language;
- b. Utilizing enforceable provisions to preclude MSW for disposal if it can be processed at another facility;
- c. Removal of the clause allowing bypass of waste delivered under interruptible contracts with the PERC incinerator;

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- d. Additions of definitions and limits on the PERC incinerator’s FEPR that may be disposed of at JRL;
- e. Recalculation of the OBW limits to use an average tons/year over 5 years and to apply the Consumer Price Index (CPI) for 3 years; and
- f. Clarification that if the required third party OBD audit is not completed in a timely manner through no fault of the processing facility, the OBW may be disposed of at the expansion.

(6) Public

Comments on the draft Board Order included:

- a. Harm to the environment (air, land, and waters);
- b. Environmental justice;
- c. Meeting hierarchy requirements;
- d. Not taking proactive action to meet the State’s waste management goals, priorities, and policies; and
- e. State designations of in-state waste and out-of-state waste.

Based on comments received, revisions were made to the draft license that address the relevant review criteria and issues raised within the purview of the Board’s authority. The revisions include, but are not limited to, general clarification language, revisions to the liner system barrier soil test pad language, added information in Finding 38 on the association between wetlands and the proposed underdrains, additional clarification of the allowance of only MSW bypass in the proposed expansion, removal of the provision governing waste delivered under an interruptible contract, revisions to the bypass notification requirement, and the addition of a provision concerning the receipt if the third party OBW audit is not completed in a timely manner.

All comments received are part of the record and were made available to the Board and posted on the Department’s website.

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3. PROJECT DESCRIPTION AND SITE DESIGN

The 9.35 million cubic yard proposed expansion of the existing Juniper Ridge Landfill will be located within the 780-acre parcel in Old Town. The northern edge of the property parcel is on the Alton/Old Town border and a portion of the access road is located in Alton. Six cells, Cells 11 through 16, are proposed to be constructed in a phased manner. The construction is projected to begin in 2018 with Cell 11 and then is proposed to continue with a new cell constructed approximately every 2 years. In total, the proposed expansion footprint will be approximately 54 acres, plus an additional 20 acres of ancillary infrastructure, with the same peak elevation as the existing landfill, approximately 390 feet above mean sea level. The side slopes are designed at 3H:1V (horizontal to vertical), with the south side of the expansion to abut the northern side of the existing landfill.

The proposed expansion design includes an underdrain system and augmented secondary liner system over portions of the proposed expansion footprint, a secondary liner system, a leak detection system, a primary liner system, leachate collection and off-site treatment for liquid in contact with waste, landfill gas collection and control infrastructure, stormwater management, and a water quality monitoring network. Similar types of non-hazardous waste generated within the State, as currently placed in existing landfill cells, are proposed for the expansion, including CDD, FEPR, MSW incinerator ash, wood biomass ash, sludges, contaminated soil, OBW, MSW bypass, and other approved special wastes.

The proposed expansion will have direct impacts on 2.04 acres of freshwater wetlands. As stated in Finding 1(D) of this license, the applicant previously obtained a permit-by-rule for clearing of 0.1 acres of the critical terrestrial habitat associated with a significant vernal pool for construction of the fence and electrical line. The applicant also identified additional vernal pools subject to regulation by the U.S. Army Corps of Engineers. The applicant submitted a compensation plan consisting of a designated on-site preservation area of 266 total acres for impacts to both the wetlands regulated by the State and those regulated by the U.S. Army Corps of Engineers.

GENERAL SOLID WASTE PROVISIONS

4. HOST COMMUNITY AGREEMENTS AND MUNICIPAL INTERVENOR GRANTS

A. Host Community Agreement

State law at 38 M.R.S. § 2170-A requires that host community agreements be in place with all applicable communities prior to issuing a license to a solid waste disposal facility owned or operated by the State. Copies of the two host

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community agreements with the City of Old Town and the Town of Alton were submitted with the application. The Host Community Compensation and Facility Oversight Agreement, dated December 8, 2005, was signed by the State of Maine, the City of Old Town and Casella Waste Systems, Inc. The Community Benefits Agreement, dated October 6, 2005, was signed by the State of Maine, the Town of Alton, and NEWSME Landfill Operations, LLC.

B. Municipal Intervenor Grants

The Department’s rule at 06-096 C.M.R. ch. 400, § 7(B) establishes procedures for the use of funds by a municipality that has requested intervenor status, pursuant to 38 M.R.S. § 1310-S(4), for an expanded solid waste disposal facility proposed to be located in that municipality. A municipal intervenor may request financial assistance to pay for direct expenses associated with its substantive participation in the application review process.

The City of Old Town requested, and was automatically granted, intervenor status on June 4, 2015. The City of Old Town meets the eligibility requirements to receive financial grants to support participation in the licensing process. The Town of Alton notified the Department on July 30, 2015 that it would not be requesting intervenor status.

5. TITLE, RIGHT OR INTEREST

The applicant must demonstrate sufficient title, right, or interest in all of the property which is proposed for development or use pursuant to 06-096 C.M.R. ch. 400, § 4(A). The applicant has provided evidence of the State’s title to the property pursuant to the Rules by submitting a copy of its warranty deed to the 780-acre parcel of land on which the proposed expansion will be located. The deed for the parcel is recorded in Book 9188, page 152 at the Penobscot County Registry of Deeds. A deeded right-of-way to the parcel from Route 16 is also recorded in the Registry. The Board therefore finds that the applicant has demonstrated sufficient title, right, or interest in the property proposed for the expansion.

6. FINANCIAL ABILITY AND FINANCIAL ASSURANCE

State law at 38 M.R.S. § 1310-N(2-F)(A) (siting standards) requires that the applicant have the financial ability to develop the project in a manner consistent with state environmental standards and the provisions of the statute. State law at 38 M.R.S. § 1310-Y requires the applicant to provide assurance of its financial ability to satisfy the estimated costs for corrective action and assurance of financial capacity to satisfy the estimated costs of closure and post closure care; however, 38 M.R.S. § 1310-Y applies to

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privately owned solid waste facilities. The Department’s rules at 06-096 C.M.R. ch. 400, § 4(B)(1) and § 11 require financial ability and financial assurance for the design, construction, operation, maintenance, closure and post-closure care of a proposed solid waste facility; however, as a State-owned facility the proposed expansion is not subject to the requirements of § 11 to provide financial assurance sufficient to ensure that funds are available to pay for the anticipated costs of compliance with all facility closure, post-closure maintenance, post-closure monitoring requirements, and corrective action.

Although not all of the financial requirements of the State laws and Rules apply to the State owned JRL, Casella maintains financial assurance as required by the OSA and as described below.

A. Financial Ability: Design, Construct, Operate, Maintain, Close, and Post-Closure Care

Permitting, design, construction, operation, and closure of JRL are funded by Casella, as set forth in the OSA with the State of Maine. Ongoing activities at JRL are funded by revenues generated from the operation of the landfill (i.e., tipping fees). The applicant provided a letter dated May 21, 2015 from the Bank of America, N.A. showing that Casella maintains a secured credit facility administered by that bank. The applicant represented that this letter demonstrates the ability of NEWSME and its ultimate parent company, Casella, to fund the expansion of JRL from working capital, if necessary.

Table 2 includes the opinion of expansion costs submitted by the applicant (Volume I of the application, Table 3-1, page 3-2). The application included an estimated cost of construction for the first cell of the expansion, Cell 11, of \$6,240,000.

Table 2: Opinion of Expansion Costs

Activity	Estimated Cost (\$)
Design and Permitting	\$4,800,000
Construction	\$19,800,000
Operations	\$7,000,000
Closure	\$12,400,000
Post-Closure Care	\$8,700,000
Notes:	
1. Design costs include MEDEP permit fees in 2015.	
2. Construction costs are in 2015 dollars.	
3. Operations costs represent estimated yearly costs.	
4. Closure costs for the entire project in 2015 dollars at a per acre closure cost at \$226,000 per acre.	

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5. Post-closure care includes costs to maintain and monitor the facility for the 30-year post-closure period in 2015 dollars based on a per-acre cost of \$160,400 per acre.

The Board finds that financial ability is maintained by NEWSME as the current operator of JRL to design, operate, maintain, close, and accomplish post-closure care in a manner consistent with applicable State law and Rule requirements.

B. Financial Assurance

The applicant maintains a surety bond as financial assurance for final closure costs and post-closure care costs for the entire developed site for a 30-year period. Financial assurance is required by the OSA, Sections 13.7 and 21. A surety bond will be utilized as financial assurance for the proposed expansion, as well. The closure and post-closure care costs are updated yearly with updates of costs by an independent third party and the documentation of any changes made to the funding agreement submitted in the facility’s Annual Report. The most recent updated surety bond documentation was submitted to the Department in an August 9, 2016 letter with attachments.

The Board finds that sufficient financial assurance is maintained by NEWSME as the current operator of JRL for closure and post-closure care, provided NEWSME submits the appropriate financial assurance package updates to the Department on an annual basis.

7. TECHNICAL ABILITY

The applicant must have the technical ability to develop the project in a manner consistent with State environmental standards in accordance with the 38 M.R.S. § 1310-N (2-F)(A) siting standards and must submit evidence that affirmatively demonstrates the technical ability to design, construct, operate, maintain, close, and accomplish post-closure care, as well as meeting civil or criminal record standards as stated in 06-096 C.M.R. ch. 400, § 4(C)(1).

A. Technical Experience

NEWSME has managed JRL since April 2004 and employs qualified management and staff at the facility, along with utilizing qualified consultants for design, construction, and operations. The application included position descriptions and responsibilities, along with resumes, of key personnel. NEWSME’s parent company, Casella is also available to provide extensive

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expertise in solid waste, recycling, and resource management. The specific consultants retained for the proposed expansion application include: SME of Cumberland, Maine as the primary consultant with expertise in geology, hydrogeology, and landfill design; Sanborn, Head & Associates, Inc. of Concord, New Hampshire for landfill gas design; Gorrill Palmer of Gray, Maine for traffic assessment; SMRT, Inc. of Portland, Maine for visual assessment; Epsilon Associates, Inc. of Maynard, Massachusetts for noise assessment; and Stantec Consulting Services, Inc. (Stantec) of Topsham, Maine for wetland and other natural resources assessments.

The Board finds that the combination of BGS staff, NEWSME operations and management personnel, and the consultants retained by the applicant have the technical ability to develop the proposed expansion in a manner consistent with the applicable State law and Rule requirements.

B. Civil or Criminal Record

Finding 23 of this license contains the information on civil and criminal disclosure.

8. PROVISIONS FOR TRAFFIC MOVEMENT

The applicant must make adequate provisions for safe and uncongested traffic movement of all types into, out of, and within the proposed solid waste facility as set forth in the 38 M.R.S. § 1310-N(2-F)(B) siting standards and in 06-096 C.M.R. ch. 400, § 4(D)(1).

The primary waste haul route to JRL utilizes the Interstate system, I-95, to the Route 16 Bennoch Road interchange (exit 199), then Route 16 West for 0.1 miles to JRL’s site access road. This haul route is to remain unchanged. New internal roads required for the proposed expansion have been designed for continuous traffic flow to minimize danger to pedestrians or other vehicles. The site access and internal site roads are maintained by NEWSME, including winter plowing and summer dust control.

The applicant submitted a traffic assessment prepared by Gorrill Palmer, dated June 2015, to determine if traffic increase due to the expansion will be adequately accommodated. Based on 2014 weight scale records and turning movement volumes collected on September 30, 2014, it was determined that the 2014 peak design hour trip generation was 28 during the morning and 25 during the afternoon. The proposed expansion is expected to increase accepted waste tonnages to 700,000 tons annually from about 629,000 tons received in 2014, resulting in an estimated 31 and 28 truck round trips during the peak morning and afternoon hours, respectively. For the proposed expansion, the total daily vehicle trips generation is expected to be 203 (one way traffic, therefore,

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approximately 101 total vehicles per day), of which 20 would be non-trucks and 183 would be various trucks with gross vehicle weights from 70,000 to 100,000 pounds. Gorrill Palmer noted that a disposal volume of approximately 700,000 tons was accepted in both 2010 and 2011.

For the proposed expansion, the primary 30-foot wide paved access road to the landfill will remain at its current location. Prior to a federal law change in 2011 which increased the allowable gross vehicle weight on I-95 from 80,000 to 100,000 pounds, vehicles over 80,000 pounds were required to use the state and local roadways. The weight limit change has reduced the traffic on local roadways by allowing trucks to utilize I-95. The applicant will encourage trucks to utilize the I-95 haul route when trucking waste to the proposed expansion.

In addition to addressing the existing and future traffic volumes and haul routes, the traffic assessment also looked at the future capacity of the facility, the Maine Department of Transportation (MDOT) accident inventory, sight distances, and internal access roads. The assessment concluded that the existing street system will continue to accommodate the vehicles associated with operation of the expansion.

During the course of the application review, traffic issues were raised by the City of Old Town regarding JRL related truck traffic on Bennoch Road (State Route 16). To address road conditions, BGS contacted MDOT concerning the possibility of improvements to the northern part of Bennoch Road. Preservation paving and highway rehabilitation work were added to MDOT's 2018 work plan. To encourage truck usage on I-95 rather than Bennoch Road, the facility has installed two signs that read "Trucks Please Use I-95". One sign is located just beyond the scale house, seen by drivers leaving the scales, and the other is located across from the landfill entrance, seen by drivers as they leave the facility. In addition, MDOT agreed to install two additional signs. At the hearing, the City of Old Town stated that their concerns regarding expansion truck traffic impacts have been addressed.

The Board finds that the applicant has demonstrated that the roads and intersections in the vicinity of JRL have the ability to safely and appropriately handle all of the traffic attributable to the proposed expansion into, out of, and within the facility pursuant to the applicable State law and Rule requirements. The Board further finds that the applicant will continue its policy of encouraging trucks to utilize I-95.

9. FITTING THE SOLID WASTE FACILITY HARMONIOUSLY INTO THE NATURAL ENVIRONMENT

In accordance with the 38 M.R.S. § 1310-N(2-F)(C) siting standards, the applicant must make adequate provisions for fitting the proposed solid waste facility harmoniously into

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the existing natural environment. Pursuant to the requirements in 06-096 C.M.R. ch. 400, § 4(E)(1), JRL must have buffer strips of sufficient size and quality to adequately protect aquatic and wildlife habitat and the natural environment; and may not unreasonably adversely affect protected natural resources and rare, threatened and endangered plant and animal species. The buffer must be a minimum of 100 feet between the facility site and the listed locations and habitats, unless otherwise approved or required.

The applicant retained Stantec to identify and inventory the presence of wetlands; potential significant wildlife habitats, unusual natural areas; vernal pools; and rare, threatened, and endangered species on the proposed project site. A review of records and contact with the following agencies occurred: the Maine Department of Inland Fisheries and Wildlife, the Department of Agriculture, Conservation, and Forestry, the Department, and U.S. Fish and Wildlife Service. Field studies were performed to assess the potential presence of State or federally listed rare, threatened, and endangered species, along with the delineation of wetlands and waterbodies.

Stantec did not directly observe State or federally listed rare, threatened and endangered plant or wildlife species on site during the field work which took place in 2008-2009 and 2014-2015. However, two areas were identified at the facility for further review: the forested area on site which is located in the range of the northern long-eared bat and the northeast portion of the facility which is located in the National Oceanic Atmospheric Association's mapped critical habitat for Atlantic salmon.

The northern long-eared bat (*Myotis septentrionalis*) was listed as threatened effective May 4, 2015 with a 4d ruling by the U.S. Fish and Wildlife Service under the Endangered Species Act. Stantec conducted an acoustic bat survey during the nights of June 10 and 11, 2015 utilizing the current U.S. Fish and Wildlife Service guidelines and did not detect the presence of the northern long-eared bat.

Atlantic salmon are protected under the final 2009 ruling issued by the National Marine Fisheries Service and U.S. Fish and Wildlife Service under the Endangered Species Act. The expansion is proposed to be located approximately 800 feet from an unnamed intermittent brook, 950 feet from an unnamed tributary to Pushaw Stream and 2,350 feet from Judkins Brook. All of these streams are located in the watershed of the Penobscot River which contains Atlantic salmon. Isolated freshwater wetlands occur within the 780 acre facility parcel, including approximately two acres directly impacted by the proposed expansion; however, no delineated or mapped streams were identified within the proposed development area of the site. The Department of Marine Resources (DMR) stated that the proposed project should not cause any significant adverse impact to Atlantic salmon or other marine resources. The Maine Department of Inland Fisheries and Wildlife (MDIFW) stated that fisheries staff does not anticipate any adverse impacts on fisheries resources associated with this landfill expansion.

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At the hearing, intervenor Edward Spencer’s expert witness, Dr. Stephen Coghlan, questioned the applicant’s conclusions regarding no expected impacts to Atlantic salmon. He testified on the life history and habitat requirements of Atlantic salmon and its sensitivity to various toxins, and argued that leachate generated by the project as well as impacts to the freshwater wetlands on-site have the potential to negatively impact its viability. He also argued that potential impacts to Atlantic sturgeon (federally-listed as threatened) and shortnose sturgeon (federally-listed as endangered) which are found in the lower Penobscot River Watershed should be considered. Dr. Coghlan testified that continued deforestation, urbanization and wetland alteration in the Penobscot River watershed have a detrimental impact on the habitat and viability of these endangered species as a result of increased runoff of nutrients and toxic chemicals. Dr. Coghlan also stated that in the event of a catastrophic breach of the liner system or a large storm event, leachate and/or stormwater runoff may contaminate adjacent waterways and ultimately the Penobscot River. Dr. Coghlan pointed out that in light of the success of the Penobscot River Restoration Trust’s work on the Penobscot River that other important anadromous fish species have seen population increases recently and that the proposed expansion may put those species at risk again.

In response, Bryan Emerson, the applicant’s wetland’s expert, stated in his rebuttal testimony that the proposed expansion does not directly impact any river, stream or brook. The largest wetland being impacted in the middle of the proposed expansion is “an isolated forested wetland with no surface hydrological connection to a stream or floodplain wetlands, and the wetlands being impacted on the edge of the expansion are not floodplain wetlands. Therefore, no direct impacts to Atlantic salmon or their habitat are likely to occur.” He further testified that Judkins Brook, which is within federally mapped Critical Habitat for Atlantic salmon, is located in a different watershed than the landfill expansion. With respect to Dr. Coghlan’s concerns regarding potential impacts to Atlantic sturgeon and shortnose sturgeon in the Penobscot River, Mr. Emerson testified that Judkins Brook is located approximately 6.5 river miles upstream from the Stillwater River, and Pushaw Steam, more than 8.4 river miles. The Stillwater River then flows approximately 6 to 8 river miles before it reaches the mainstream of the Penobscot River, making it “highly unlikely” that there would be any adverse impacts to Atlantic sturgeon or shortnose sturgeon as a result of the JRL expansion.

Based on Stantec’s evaluation results; the design of the landfill; the distance from the solid waste boundary to the intermittent and perennial streams; the fact that these streams do not contain habitat for Atlantic Salmon, Atlantic sturgeon, or shortnose sturgeon; and that the leachate is collected and treated at an off-site facility that has a waste discharge license from the Department, the Board finds the project will not have an unreasonable impact to Atlantic salmon, Atlantic sturgeon, or shortnose sturgeon.

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The expansion will impact approximately 2.04 acres of primarily forested freshwater wetlands through direct filling and 0.1 acres of the critical terrestrial habitat of one significant vernal pool regulated under the Natural Resources Protection Act. The impacts to the significant vernal pool were authorized in a permit-by-rule that was accepted by the Department on July 29, 2015. Finding 38 of this license addresses impacts to freshwater wetlands and compliance with the Natural Resources Protection Act and associated rules.

In addition to the NRPA regulated wetlands, the applicant identified 14 vernal pools within and adjacent to the expansion area, 12 of which are regulated by the U.S. Army Corps of Engineers. Stantec prepared a Wetlands Compensation Plan to meet both NRPA and Corps requirements.

The MDIFW reviewed the proposed project and stated that, with the exception of one Significant Vernal Pool, there are no other essential or significant wildlife habitats at the project site.

The Board finds that the applicant has demonstrated that the facility will have sufficient buffers to adequately protect aquatic life and wildlife habitat and the natural environment; and that there will be no unreasonable adverse effects to protected natural resources and rare, threatened and endangered plant and animal species pursuant to 38 M.R.S. § 1310-N(2-F)(C) and 06-096 C.M.R. ch. 400, § 4(E)(1).

10. NO UNREASONABLE ADVERSE EFFECT ON EXISTING USES AND SCENIC CHARACTER

The solid waste facility may not unreasonably adversely affect exiting uses and scenic character as set forth in the 38 M.R.S. § 1310-N(2-F)(C) siting standards and in 06-096 C.M.R. ch. 400, § 4(F)(1), including consideration of bird hazard to aircraft, historical sites, established public viewing areas, excessive noise at the property boundary or at any protected location, or existing uses of neighboring property.

A. Bird Hazard to Aircraft

The proposed expansion is located over 13,000 feet from Dewitt Field Old Town Municipal Airport, the closest airfield. The Rules require a description of all airport runways within 10,000 feet of the facility.

Based on the distance to the airport, the Board finds that the expansion is not expected to present a bird hazard to aircraft.

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B. Historical Site Preservation

In a letter dated January 15, 2015, from the Deputy State Historic Preservation Officer of the Maine Historic Preservation Commission, it was concluded that there would be no historic properties affected by the proposed expansion.

The Board finds that the proposed expansion will not unreasonably adversely affect historic properties.

C. Visual Assessment

A visual assessment dated July 2015 was prepared for the applicant by SMRT Inc. to evaluate whether the proposed expansion will unreasonably interfere with views from established public viewing areas. Public viewing area is defined in 06-096 C.M.R. ch. 400, § 1(LI) as “an area designated for the public to view scenic areas, historical sites, unusual natural features or public monuments. These areas include but are not limited to scenic highways; public easements; scenic turnouts; public monuments; and national, state or municipal parks.” The Rules require descriptions of protected locations and established public viewing areas within 2,000 feet of the proposed expansion.

The visual assessment included defining the existing site characteristics around the facility, quantification of the site viewshed, identification of public viewing areas, development of maps for line of site and viewsheds, and preparation of final landfill topography illustrations. Computer-generated modeling, weather balloons at strategic locations and elevations, field visits, and photography were used. To determine public viewing areas within 2,000 feet of the proposed expansion, stakeholders contacted by correspondence included Maine Bureau of Parks and Lands, MDOT, City of Old Town, the towns of Alton, Glenburn, Greenbush, Hudson, and Milford, and the Penobscot Nation. No public viewing areas were identified within 2,000 feet of the proposed expansion, but the study area was expanded to a 6-mile distance based on a question raised in a pre-submittal meeting regarding possible views from the western shore of Pushaw Lake and vicinity. The stakeholder process identified the following potential scenic resources within 6 miles of the proposed expansion: Pushaw Lake, Pushaw Stream, Penobscot River, Stillwater River, Hirundo Wildlife Refuge, Sunkhaze Meadows National Wildlife Refuge, Mud Pond (also known as Perch Pond) and the Perch Pond Recreational Trail, the Costigan Historical Cemetery, and the Penobscot River corridor at the public boat launch. Views were also considered from the following roadways: Route 16, I-95 Southbound, and Route 43.

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The assessment performed using U.S. Forest Service standards and guidelines in 06-096 C.M.R. ch. 315 concluded that Pushaw Lake and the Penobscot and Stillwater Rivers had no significant scenic features reported or identified within the study area. The scenic resources within the study area were determined not to have views to the landfill or are considered background by the U.S. Forest Service as being 4 miles to the horizon. The area roadways were not defined as public viewing areas, scenic resources, or scenic byways. The views from Route 16 were considered intermittent, the distant view from I-95 includes broken line of sight by roadside vegetation, and Route 43 has a screening of plantings.

Views of the landfill will change during construction and operation. The operating landfill will generally be seen as grayish in color with equipment in sight. Prior to final closure, the landfill is proposed to be covered by a temporary black geomembrane, and at closure it will be fully planted with a vegetative layer and will resemble nearby hillsides with similar height, scale, and form.

The Board finds that the design of the proposed expansion takes into account the surroundings and when completed, capped, and vegetated, the expansion will not have an unreasonable adverse effect on the scenic character of the surrounding area as required pursuant to 38 M.R.S. § 1310-N(2-F)(C) siting standards and in 06-096 C.M.R. ch. 400, § 4(F)(1).

D. Noise

A Sound Level Assessment Report, dated July 2015, was prepared for the applicant by Epsilon Associates, Inc. to evaluate sound levels from the proposed expansion. The Rules include noise standards, as noise is considered unwanted sound and sound levels can be measured in decibels (dBA = decibels adjusted to reflect the ear’s response to different frequency of sound). Table 3 includes the sound level limit standards of 06-096 C.M.R. ch. 400, § 4(F)(2).

Table 3: Sound Level Limit Standards

Sound Level Limit	Applicable Hours	Location
	Daytime: 7:00 am to 7:00 pm Nighttime: 7:00 pm to 7:00 am	
75 dBA	Daytime and Nighttime	Facility property boundary
60 dBA	Daytime	Protected location zoned or usage not predominantly commercial or industrial (i.e., residential)
50 dBA	Nighttime	

The assessment included existing sound levels around the operating landfill and measurement of potential noise sources (operations and equipment), computer

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modeling to predict future sound levels for various operating scenarios, and comparisons to the sound level limits. Sound levels from mobile equipment (excluding registered and inspected on-road vehicles), the Thiopaq® landfill gas treatment facility, and the anticipated future on site landfill gas-to-energy plant were included in the modeling. Operations for the proposed expansion were considered to be the same as current operations: 6:00 am to 6:00 pm Monday to Friday and 7:30 am to 2:30 pm Saturday and Sunday.

During periods of operations, modeled results were below the 75 dBA sound level limits for daytime and nighttime at the facility property boundary. However, residential areas are considered protected locations in the Rules and the western and northern property lines border residential properties. Additionally, there is a residential parcel to the south beyond the property boundary. These locations were assessed for compliance with the more restrictive sound level limits. The assessment results were below 60 dBA for the daytime operations, but were above 50 dBA for the one operating hour from 6:00 am to 7:00 am considered nighttime. To meet the sound level limit for this one hour of operation, the facility will be restricted to utilizing landfill equipment with a combined sound level of 77 dBA at 50 feet or less during the 6:00 am to 7:00 am hour when within 60 feet from the western solid waste boundary (approximately 480 feet from the western property line). This equates to utilizing a Caterpillar 836 compactor (77 dBA or less at 50 feet) or a Caterpillar 826 compactor (75 dBA or less at 50 feet), but not both compactors simultaneously.

The applicant will continue to maintain buffer vegetation between the proposed expansion and property lines to minimize sound levels from the facility, with the exception of tree clearing to install the relocated electrical line. The proposed pump stations, future gas-to-energy plant, and other mechanical structures will incorporate acoustical enclosures. Construction and maintenance activities will include environmental noise control devices in proper working condition and maintained as originally provided with the equipment by its manufacturer. Although vehicle warning signals and alarms are exempt from the sound limit levels, NEWSME has replaced the original backup alarms on operating equipment at the landfill with broadband backup alarms having less abrupt sounds.

The Board finds that the noise study for the proposed expansion indicates that routine operations will not generate excessive noise at the property boundary or at any protected location as defined by the Rules; provided that during the hour of 6:00 am to 7:00 am, only equipment with a combined sound level of 77 dBA at 50 feet or less are utilized if within 60 feet of the western solid waste boundary (approximately 480 feet from the western property line).

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E. Neighboring Property

The portions of the 780-acre parcel to be developed will be a continuation of the existing site use, with buffers as required by 06-096 C.M.R. ch. 401, §§ 1(C)(2) and (3). Existing land in the vicinity of the expansion is locally zoned for landfilling, rural residences, farming, and under resource protection. The setbacks and buffers from the solid waste boundary in comparison to the Rule requirements are listed in Table 4 (modified from Volume I of the application, Table 3-3, page 3-12):

Table 4: Proposed Expansion Setback and Buffers

Setbacks from the Solid Waste Boundary to:	Actual Proposed (feet)	Rules Setback Requirements (feet)
Prohibitive Siting Criteria		
Class AA or Class SA Waters	> 10,560 (> 2 miles)	1,000
Significant sand and gravel aquifer	5,230 (approximately 1 mile)	300
Fault displaced in Holocene time	None identified on 780-acre parcel. Nearest mapped fault approximately 6 miles northeast of site.	200
Restrictive Siting Criteria		
Nearest public road	2,400	300
Property boundary	420	300
Nearest residence	2,100	1,000
Stratified sand and gravel deposit	275	100
Classified surface water	950	100
Water supply spring or water supply well not owned by the applicant	2,100	1,000

The Board finds that the proposed facility will have no unreasonable adverse effect on existing uses of property neighboring the proposed expansion based on the facility's buffers and setbacks as required in State law and the Rules.

11. NO UNREASONABLE ADVERSE EFFECT ON AIR QUALITY

The solid waste facility may not unreasonably adversely affect air quality pursuant to the siting standards of 38 M.R.S. § 1310-N(2-F)(C) and 06-096 C.M.R. ch. 400, § 4(G)(1). The facility must obtain an air emission license, if required; control fugitive dust and

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nuisance odor; and prohibit open burning of solid waste other than clean or painted wood waste.

A. Air Emission License

Air emission license renewal #A-921-70-B-R was issued on October 7, 2014 for the existing landfill facility with findings that emissions from the source will receive Best Practical Treatment, will not violate applicable emissions standards, and will not violate applicable ambient air quality standards in conjunction with emissions from other sources. The air emission license renewal includes State and federal emission limits and operational requirements associated with landfill gas collection and control, as well as monitoring and reporting requirements.

The 2014 air emission license renewal addresses control of landfill gas emissions through use of a landfill gas collection and control system, with the extracted and collected landfill gas passing through a Thiopaq® sulfur removal system, then being combusted in either the main flare (Flare #4) or back-up flares prior to release to the atmosphere. In the future, a landfill gas-to-energy facility may be located at the site, at which time the extracted Thiopaq® treated gas may be combusted in engines to produce power as an alternative to flaring. The Thiopaq® system was required to be installed to decrease total reduced sulfur (mainly H₂S) prior to combustion to reduce sulfur dioxide air emissions. Thiopaq® operations began in early 2015, with a sulfur removal Sulfatreat® system installed as backup. In addition to monitoring air emissions from the control equipment, as well as control equipment parameters, the facility is also required by the Federal New Source Performance Standards (NSPS) to perform periodic gas surface scans on the landfill.

An LFG System Expansion Design Report, dated June 2015, was prepared by Sanborn, Head & Associates, Inc. for the proposed expansion consisting of estimates of future landfill gas generation, descriptions of the proposed gas collection and control system, and how the proposed system would connect to the existing gas collection system infrastructure. The report stated that Flare #4 is adequate for the proposed expansion. Flare #4 capacity and operations are addressed in the air emission license renewal.

The Board finds that the applicant has an air emission license, as required by State law and the Rules.

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B. Fugitive Dust

The measures to control dust at the proposed expansion will include utilizing water spray trucks to wet secondary roads during dry weather, paving the primary access road to the proposed expansion, and making use of a road sweeper to remove dirt buildup on paved roadways. Calcium chloride may be utilized on an as-needed basis, primarily on internal cell access roads.

On the landfill’s active working area, ash will be off-loaded and primarily utilized as a mix within daily cover or as a bulking agent for sludge. The ash will not be prone to being windblown due to quenching, which is to occur at the point of generation, and the placement of ash and ash mixtures on the active landfill area.

The Board finds that the dust control measures proposed by the applicant are sufficient to control fugitive dust as required by State law and the Rules.

C. Nuisance Odors and H₂S

Three potential primary sources of odor identified by the applicant were odors associated with incoming wastes, leachate storage and transport, and landfill related gases. The facility’s Odor Complaint Management and Response Plan to manage landfill-related odors and limit off-site odor migration is part of the facility’s current Operations Manual. Incoming waste types with the highest potential for odor generation are FEPR, MSW bypass, and wastewater treatment plant sludge. The leachate has potential for odor during storage at the facility and transport to the wastewater treatment facility. Landfill gases, including odorous H₂S, are produced as the waste in the landfill decomposes.

Measures for minimization of odor associated with incoming odorous waste streams will include placement within a small area in the cell, waste compaction, and placement of another lift (or layer) of non-odorous waste such as ash or CDD waste above it. Daily cover will be applied over the active portion of the landfill at the end of each day of waste placement. The facility will also utilize odor neutralizing spray systems, as needed, such as a bulldozer mounted system within the active cell, a trailer spray system for incoming and outgoing trailer loads, and a perimeter misting system.

To minimize leachate odors, the leachate will be collected and transported by piping systems and stored in an enclosed tank sized to hold all of the leachate generated at the landfill prior to being transported for treatment and disposal. Tanker trucks used to haul the leachate to the wastewater treatment facility will be

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required to have their tanker filling points tightly sealed during transportation and have the ability to add chemicals for odor reduction.

Odor from LFG produced as waste degradation occurs will be minimized by the installation of intermediate or final cover over non-active portions of the landfill and the operation of the facility's LFG collection and control system, which will be expanded to accommodate the proposed expansion.

The facility monitors H₂S concentrations through real-time data collected using six Honeywell Analytics Single Point Monitors, four located off-site (on the access road, West Coiley Road, Route 43, and Old Stagecoach Road), and two located on-site, one adjacent to the perimeter fence and one on NEWSME owned land on Route 16. The location and operation of the four off-site monitors have been pre-determined with the Department's approval. The two on-site monitors are solely utilized to assist in operations, and the location and operation of these monitors may change or cease based on ongoing operations. If the monitors detect concentrations of 15 parts per billion (ppb) or above at any of the off-site monitors, the scale house is alerted by automated telephone message. Personnel then report any alert to supervisory staff for follow-up. In addition to monitoring for compliance with the action level of 15 ppb, the monitor data can be utilized in assisting with odor complaints.

Odor complaints received by the facility will follow a specific procedure. Information will be obtained from the complainant and then given to the appropriate complaint response personnel. Follow-up steps will be taken during the complaint investigation including filling out a Complaint Record Form with data about the day, time, wind direction and speed, H₂S levels, unusual conditions at the landfill, and observed waste materials accepted at the time of complaint. Landfill personnel will communicate directly with the complainant, either in person or by phone. For all complaints, the following will also be documented: remedial actions taken, resolution of the complaint, comments made during the investigation, and any other recommendations.

During the licensing proceedings, the City of Old Town raised the issue of H₂S as it relates to odor and exposure. The City's consultant and expert witness, Denis St. Peter, P.E. of CES, Inc., recommended that the facility use acute action levels for concentrations of H₂S exceeding 15 ppb (for reporting of events in the facility's Monthly Status Report) and 30 ppb, with the Old Town Code Enforcement Officer to be contacted if H₂S levels exceed 30 ppb. The applicant agreed and has incorporated the action levels into the facility's Operations Manual. Mr. St. Peter also recommended that the City set forth its own evaluation protocol to review the effect of possible chronic (long-term) exposure

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to H₂S on members of the public since JRL does not currently use a chronic exposure standard. A portion of the Host Community funding will be used to hire a consultant to annually review the facility’s H₂S data, with the City reporting the findings to the applicant and the Department.

Intervenor Edward Spencer testified on the odor complaint procedure and suggested consideration be made to include law enforcement officials in the process to verify nuisance odors. In response to this concern, Jeremy Labbe, P.E., Environmental Manager at JRL, testified that the City of Old Town receives a summary of every odor complaint at JRL and that JRL can provide copies of individual completed complaint forms to the City if requested. Mr. Labbe further testified that any City employee or citizen may call in an odor complaint.

The Board finds that the applicant has proposed odor control mechanisms sufficient to control nuisance odors from the proposed expansion as required by State law and the Rules. The Board further finds that the facility’s current odor complaint procedure includes appropriate documentation and follow-up to odor complaints at this time.

12. NO UNREASONABLE ADVERSE EFFECT ON SURFACE WATER QUALITY

In accordance with the 38 M.R.S. § 1310-N(2-F)(C) siting standards of no unreasonable adverse effect on water quality and the requirements of 06-096 C.M.R. ch. 400, § 4(H)(1), the solid waste facility: may not discharge any water pollutants, directly or indirectly, that affect the state classification of a surface water body, as specified in 38 M.R.S. § 464; may not discharge any pollutant without first obtaining a license pursuant to 38 M.R.S. § 413 (waste discharge licenses); may not degrade water quality by contributing to the phosphorous concentrations in "waterbodies most at risk from new development" as defined in *Direct Watersheds of Lakes Most at Risk from New Development, and Urban Impaired Streams*, 06-096 C.M.R. ch. 502 (last amended December 27, 2006); and may not cause the discharge of a nonpoint source of pollution to waters of the United States that violates any requirement of an area-wide or State-wide water quality management plan that has been approved in compliance with Section 319 of the *Federal Water Pollution Control Act*, as amended.

The proposed expansion includes a leachate collection and off-site treatment system for precipitation that comes into contact with waste and stormwater management and erosion sedimentation control plans to control surface water runoff from covered portions of the facility, construction activities, and non-operational areas. The proposed expansion is not located within the watershed of a “lake at most risk from new development” or an “urban impaired stream.” The applicant submitted a Stormwater Management Plan and an Erosion Sedimentation Control Plan, both dated July 2015 and prepared by SME. The

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plans address effective drainage, flood prevention, and erosion control. The applicant’s best management practices include stormwater detention basins, low velocity (lined) ditches, and stone check dams within on-site ditches. The plans are described in more detail in Findings 14 and 17 of this license.

The facility holds a Multi-Sector General Stormwater Permit (#MER05B477) for the discharge of stormwater associated with industrial activity for Sector L: landfills. The facility also submitted the existing Stormwater Pollution Prevention Plan, originally prepared in April 2006 and most recently revised in June 2013. The Stormwater Pollution Prevention Plan will be updated as necessary to address construction as the proposed expansion is developed.

Leachate generated by the proposed expansion will be collected, stored onsite, and trucked off-site to the MFGR, LLC wastewater treatment plant in Old Town. The project was reviewed by the Department’s Bureau of Water Quality, which stated that the treatment plant is licensed to accept the leachate and is currently operating in compliance with that license (Department Order #W-002226-5O-O-R, entered into the evidentiary record). Leachate management is described in more detail in Findings 26(D) and 28(E) of this license.

The Board finds that the stormwater and leachate management systems for the proposed expansion meet the applicable State laws and Rules and are designed to prevent the discharge of sediment and other contaminants conveyed by stormwater from polluting the waters of the State and otherwise unreasonably affecting surface water quality.

13. NO UNREASONABLE ADVERSE EFFECT ON OTHER NATURAL RESOURCES

The solid waste facility may not unreasonably adversely affect other natural resources in the municipality or in neighboring municipalities pursuant to the 38 M.R.S. § 1310-N(2-F)(C) siting standards and 06-096 C.M.R. ch. 400, § 4(I)(1). The facility must conform to the standards of NRPA, 38 M.R.S. §§ 480-A to 480-Z, if proposed to be located in, on, over, or adjacent to a protected natural resource; and must be permitted by the federal government for any activities that require a Federal Wetlands permit.

Finding 38 of this license addresses impacts to protected natural resources under the NRPA and includes the Board’s findings regarding compliance with NRPA requirements. The applicant has applied to the U.S. Army Corps of Engineers for a permit for impacts to federally regulated wetlands located in and adjacent to the expansion area.

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14. SOIL TYPES THAT ARE SUITABLE AND WILL NOT CAUSE UNREASONABLE EROSION

In accordance with 38 M.R.S. § 1310-N(2-F)(D) siting standards and 06-096 C.M.R. ch. 400, § 4(J)(1), the solid waste facility must be located on soil types suitable to the nature of the undertaking and the facility must not cause unreasonable erosion of soil or sediment.

An Erosion and Sediment Control Plan, dated July 2015 and prepared by SME, was submitted with the application to address the site setting including watersheds, wooded areas, and surficial soils; existing and proposed drainage structures, timing and sequence of land disturbance activities during cell construction, landfill operations, and cover placement; temporary, permanent, and standard erosion control measures; and maintenance and inspection of erosion control features to ensure proper function. In addition, a site assessment report was submitted with the application consisting of site investigation findings and site characteristics, along with other analyses.

The surficial soils were investigated with the use of site test pits and soil borings and through the use of the Natural Resources Conservation Service Web Soil Survey of Penobscot County, Maine 2014. The surficial soils under and around the proposed expansion footprint are primarily Plaisted very stony loam and Howland very stony loam. On-site observations and a review of soils mapping did not identify areas near the proposed expansion that would be prone to or highly susceptible to erosion, such as exposed sideslopes.

The design and implementation of all erosion control measures will follow the requirements of the Rules and will be in accordance with the appropriate version of Maine’s Erosion and Sediment Control Best Management Practices (BMP) Manual, most recently updated in March 2015 for Contractors and in October 2016 for Designers and Engineers (the previous version was dated 2003). BMP’s to minimize erosion from the proposed expansion will include utilizing grass lined and riprap lined channels, catch basins, sediment detention ponds, culverts, ditches, storm drains, riprap aprons, riprap plunge pools, and level spreaders. Analyses were performed to appropriately size and locate these structures. Some existing structures will be utilized as they exist without modifications and others will be modified or removed. For example, Detention Ponds 1 and 9 will be modified, Detention Pond 5 will be removed, Detention Ponds 2 and 6 will remain unmodified, and Detention Ponds 10, 11, and 12 will be added.

Prior to disturbance of soil during development, appropriate erosion and sedimentation control measures will be put in place. Temporary measures will include silt fences, temporary seeding, mulching, and stone check dams. Permanent measures will include downspouts, sedimentation ponds, permanent seeding, mulching, and culvert inlet and

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outlet protection. The amount of area disturbed at any one time will be minimized by the phased development of the landfill over time.

The Board finds that the construction and operation of the proposed expansion will not cause unreasonable sedimentation or erosion of soil and that suitable soil types underlie the landfill, meeting the applicable State laws and Rules; provided that the erosion and sedimentation control plan is implemented as proposed, incorporating any future revisions as a result of the Department’s review and approval of each new cell construction as detailed in a specific design package as phased landfill development occurs.

15. NO UNREASONABLE RISK THAT A DISCHARGE TO A SIGNIFICANT GROUND WATER AQUIFER WILL OCCUR

Pursuant to 38 M.R.S. § 1310-N(2-A), the 38 M.R.S. § 1310-N(2-F)(E) siting standards, and 06-096 C.M.R. ch. 400, § 4(K)(1), the proposed solid waste facility may not: overlie any significant sand and gravel aquifers; pose an unreasonable threat to the quality of a significant sand and gravel aquifer; pose an unreasonable threat to the quality of an underlying fractured bedrock aquifer; or pose an unreasonable risk that a discharge to a significant ground water aquifer will occur. Significant ground water aquifer is defined in 06-096 C.M.R. ch. 400, §§ 1(Ccc) as “a porous formation of ice contact and glacial outwash sand and gravel supplies or fractured bedrock that contains significant recoverable quantities of water likely to provide drinking water supplies”, with a similar definition found in 38 M.R.S. § 1310-N(2-A).

The application included a comprehensive Site Assessment Report dated July 2015, prepared by SME, of the geologic and hydrogeologic characteristics of the site, in addition to the water quality of the site, future water quality monitoring, and travel time analyses.

The Maine Geological Survey maps (Open File 08-87, Tolman and Lanctot, 2008) show the nearest mapped sand and gravel aquifer in the vicinity of the proposed expansion is approximately one mile east of the landfill. There are no stratified sand and gravel deposits mapped by the Maine Geological Survey within the facility site (Borns and Thompsom, 1981; Foster and Smith, 2001). Therefore, the proposed expansion does not overlie any significant sand and gravel aquifers.

An investigation was performed to determine whether the proposed expansion would pose a risk or affect the quality of a significant sand and gravel aquifer or a bedrock aquifer. Although no mapped stratified sand and gravel deposits are located near the proposed expansion and ground water from bedrock beneath, directly adjacent to, and immediately downgradient of the proposed site is not likely to be used for domestic

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consumption due to the State’s ownership of land 400 feet downgradient of the proposed solid waste boundary, two formations were evaluated further. These formations consist of the isolated stratified sand zones contained within the basal till greater than 100 feet beyond the southeast side of the proposed expansion boundary and the off-site bedrock immediately adjacent to the site property boundary.

The on-site stratified sand and off-site bedrock formations were evaluated utilizing the time of travel analysis and the contaminant transport analysis included in the application. These analyses are described in more detail in Findings 25 and 29 of this license, respectively.

The Board finds that the proposed expansion will not be located over a significant sand and gravel aquifer and that the facility poses no unreasonable risk to a significant sand and gravel aquifer or underlying fractured bedrock aquifer, as required by State law and the Rules. Adequate protection of water quality will be provided by the soils under the proposed expansion, the design of the proposed expansion, the ground water flow conditions, and implementation of the Water Quality Monitoring Program discussed further in Finding 33 of this license.

16. **ADEQUATE PROVISION FOR UTILITIES AND NO UNREASONABLE ADVERSE EFFECT ON EXISTING OR PROPOSED UTILITIES**

The applicant shall provide for adequate utilities, including adequate water supplies and appropriate sanitary wastewater disposal, and the facility may not have an unreasonable adverse effect on existing or proposed utilities in the municipality or area served by those utilities, in accordance with the 38 M.R.S. § 1310-N(2-F)(F) siting standards and in 06-096 C.M.R. ch. 400, § 4(L)(1).

Existing sanitary wastewater disposal systems located at the maintenance buildings (on the southeast side of the facility) and the office building and scale house (currently located on the north side of the facility) will continue to be utilized by personnel. However, with the development of Cell 12, the office building and scale house will be relocated northeast from its current position and a well and new on-site sanitary wastewater disposal system will be installed.

Water for dust control, leachate pipe cleaning, and other needs of the facility will continue to be met by the existing on-site water supply sources. The leachate generated by the landfill will continue to be collected and stored on-site and treated off-site.

As part of the proposed expansion, an approximate 3,700-foot portion of the facility’s three-phase, 480-volt power electrical service will be relocated. This electrical service enters the site along the existing access roadway which will be modified to accommodate

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the development of the proposed expansion. The new leachate pump stations associated with the proposed expansion will require three-phase, 480-volt power, which will be supplied to each pump station through additional on-site electrical cables to be installed along the site access roads.

The Board finds that the applicant has provided for adequate utilities and the proposed facility will not have an unreasonable adverse effect on existing or proposed utilities in the municipality or area served by the utilities, pursuant to the applicable State law and Rules.

17. NOT UNREASONABLY CAUSE OR INCREASE FLOODING

The solid waste facility may not unreasonably cause or increase flooding on-site or on adjacent properties nor create an unreasonable flood hazard to a structure pursuant to the 38 M.R.S. § 1310-N(2-F)(G) siting standards. As set forth in 06-096 C.M.R. ch. 400, § 4(M)(1), the facility may not be located in a 100-year flood plain or restrict the flow of a 100-year flood. In addition, the facility must include a stormwater management system that controls run-on and run-off; and infiltrates, detains, or retains precipitation falling on the facility site during a storm of an intensity up to and including a 25-year, 24-hour storm, such that the rate of flow of stormwater from the facility after construction does not exceed the rate of outflow of stormwater from the facility site prior to the construction of the facility.

The most recent Federal Emergency Management Agency (FEMA) flood plain map of the proposed expansion's location shows that the proposed expansion is not located on a 100-year flood plain (Quad panel number 2301120002A, dated April 1978).

The Stormwater Management Plan prepared by SME and dated July 2015 for the proposed expansion application included pre-and post- development stormwater analyses, for storm events up to and including a 25-year, 24-hour storm event. The post-development design includes modifications to some of the existing stormwater structures, along with the addition of three detention ponds and various drainage ditches, catch basin, storm drains, and culverts. The stormwater analyses showed that post-development peak flows did not exceed pre-development peak flows. The results of the submitted analyses are shown in Table 5 (Volume I of the application, Appendix J, Table 4-1, page 9). Changes in precipitation data, requirements, or cell development plans may result in revisions to the analyses as the proposed expansion is developed.

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Table 5: Summary of Peak Flows

Analysis Point	Peak Flow (cubic feet per second, cfs)					
	Pre-Development			Post-Development		
	2-Year	10-Year	25-Year	2-Year	10-Year	25-Year
1	29.5	92.6	130.9	16.2	50.4	68.3
2	10.2	26.6	36.0	9.8	24.6	33.2
3	29.1	74.1	100.3	29.1	74.1	100.3
4	36.1	92.1	124.5	33.4	84.7	112.5
5	6.2	14.6	19.3	5.7	13.4	17.7

Note: Peak flow of analysis point after routing through the detention pond and/or reaches.

Dr. Stephen Coghlan, Intervenor Spencer’s expert witness, raised concerns in pre-filed direct testimony on the date of the 1978 flood plain map used by the applicant. Department staff verified through a website search of FEMA’s floodplain maps that the most recent map for the proposed expansion area was utilized, as required. Dr. Coghlan also testified on the potential for extreme rainfall events and flooding due to climatic changes and questioned the adequacy of an analysis based upon a 25-year, 24-hour storm event. Michael Booth, P.E. of SME, one of the applicant’s expert witnesses, testified that the rules require that an event of intensity up to and including a 25-year, 24-hour storm be utilized in the analysis. In addition, Mr. Booth testified that the stormwater ponds include structures that also allow stormwater flow from a 100-year storm to be managed without impacting the integrity of the structures and that with respect to the age of the flood plain maps, the expansion is located on a high point and not susceptible to flooding.

The Board finds that the facility will not be located in a 100-year flood plain and that adherence to the facility’s stormwater management plan will control run-on and run-off; and will infiltrate, detain, or retain water falling on the facility site during a storm of an intensity up to and including a 25-year, 24-hour storm, such that post-development stormwater flows from the facility are below pre-development stormwater flows from the facility site. These findings meet the applicable requirements of State law and the Rules.

18. **SOLID WASTE MANAGEMENT HIERARCHY**

A. Applicable Law

As stated in 38 M.R.S. § 1310-N(1)(D) and 06-096 C.M.R. ch. 400, § 4(N)(1), the purpose and practices of the solid waste facility must be consistent with the State’s solid waste management hierarchy (hierarchy) set forth in 38 M.R.S. § 2101(1), which reads as follows:

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Priorities. It is the policy of the State to plan for and implement an integrated approach to solid waste management for solid waste generated in the State and solid waste imported into this State, which must be based on the following order of priority:

- A. Reduction of waste generated at the source, including both amount and toxicity of the waste;
- B. Reuse of waste;
- C. Recycling of waste;
- D. Composting of biodegradable waste;
- E. Waste processing that reduces the volume of waste needing land disposal; including incineration; and
- F. Land disposal of waste.

For the purpose of 06-096 C.M.R. ch. 400, § 4(N):

reducing, reusing, recycling, composting and/or processing waste to the “maximum extent practicable” prior to disposal means handling the greatest amount of waste possible through means as high on the solid waste management hierarchy as possible, resulting in maximizing waste diversion and minimizing the amount of waste disposed, without causing unreasonable increases in facility operating costs or unreasonable impacts on other aspects of the facility’s operation. Determination of the “maximum extent practicable” includes consideration of the availability and cost of technologies and services, transportation and handling logistics, and overall costs that may be associated with various waste handling methods.

In addition, 38 M.R.S. § 2101(2) establishes that “it is the policy of the State to actively promote and encourage waste reduction measures from all sources and maximize waste diversion efforts by encouraging new and expanded uses of solid waste generated in the State as a resource.”

The Department’s rule at 06-096 C.M.R. ch. 400, § 4(N)(2)(a) states that for a solid waste disposal facility, the applicant must affirmatively demonstrate consistency with the hierarchy, including the following:

that the waste has been reduced, reused, recycled, composted, and/or processed to the maximum extent practicable prior to incineration or landfilling, in order to maximize the amount of material recycled and reused, and to minimize the amount of waste

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being disposed. Such evidence shall include, but is not limited to, a description of the reduction, reuse, recycling, composting and/or processing programs/efforts that the waste is or will be subject to, and that are sufficiently within the control of the applicant to manage or facilitate, including relevant metrics to evaluate effectiveness; and a description of ongoing efforts to increase the effectiveness of these programs/efforts.

State law also imposes limits on the origin of wastes accepted at a State-owned solid waste facility. In accordance with 38 M.R.S. § 1310-N(11),

a solid waste facility owned by the State may not be licensed to accept waste that is not waste generated within the State. For the purposes of this subsection, “waste generated within the State” includes residue and bypass generated by incineration, processing and recycling facilities within the State or waste, whether generated within the State or outside of the State, if it is used for daily cover, frost protection or stability or is generated within 30 miles of the solid waste disposal facility.

B. Applicant’s Summary of Proposed Waste Streams Relative to the Hierarchy

In its application (Volume I) and the testimony of Toni King, P.E., Regional Engineer for Casella Waste Systems, Inc.’s Eastern Region, the applicant provided information, summarized below, on the wastes proposed to be disposed in the expansion and the viable waste management options for these wastes as related to the hierarchy that are sufficiently within the control of the applicant to manage or facilitate:

- (1) *CDD* – JRL has received, and is expected to continue to receive in the expansion, CDD from Casella-owned companies and others. Typically, about 30% of the material disposed of at JRL is CDD. In 2014, Casella-owned companies delivered approximately 87,324 tons of CDD material to JRL. Approximately 3,335 tons of clean wood and metals had been removed from this material and JRL has a wood waste handling area which received 46 tons of clean wood and stumps in 2014. These materials were ground and recycled as alternative daily landfill cover. Additionally, Casella controlled/operated transfer stations divert tonnage from JRL, including clean and processed wood and metal, which is removed from the CDD before the CDD is sent to JRL. These Casella facilities also direct or supply CDD to processing facilities such as ReEnergy in Lewiston for beneficial use or recycling.

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- (2) *FEPR* – FEPR currently comes to JRL from the PERC incinerator in Orrington. PERC’s FEPR is approximately 20% by weight of the non-combustible portion of the facility’s MSW that cannot be incinerated and is removed mechanically prior to combustion of the refuse-derived fuel. FEPR is currently utilized at JRL as part of the 5-foot layer, referred to as the “soft layer”, which is placed above the landfill liner and leachate collection systems as a protective layer. This usage is also proposed for the expansion. At this time, there is no other disposal option allowed in Maine other than secure landfill disposal for FEPR. The applicant states that if FEPR were not available, the facility would need to purchase other materials such as tire chips and sand to provide a soft layer.

- (3) *MSW Incinerator Ash and Multi-Fuel Boiler Ash* – The use or reuse of MSW incinerator ash is currently not allowed by regulatory beneficial use standards in Maine due to its chemical characteristics; therefore, the current disposal method is landfilling. Multi-fuel boiler ash is similar to MSW incinerator ash regarding the allowable disposal method, with the exception of a few ashes, such as clean wood ash. Clean wood ash may be land spread or used in the production of flowable fill for certain construction needs. Casella Organics, NEWSME’s sister company, has developed, and continues to develop, programs to reuse and recycle suitable clean wood ash, diverting various amounts from the landfill. JRL will utilize ash in its operations as daily cover at the proposed expansion, eliminating the need to use virgin soil (non-waste material) to serve that purpose.

- (4) *CDD Processing Fines* – The residue from the processing of CDD is currently utilized as landfill grading, shaping, and alternative daily cover material and is expected to be used in the same manner for the proposed expansion. The current allowable disposal methods for CDD processing fines are either reuse as daily cover or disposal in secure landfills. Use of CDD fines as alternative daily cover materials at landfills is a beneficial use/recycling activity. Approximately 126,000 tons of CDD fines were received at JRL in 2014 and used as alternative daily cover.

- (5) *OBW* – OBW is not currently generated by entities within the control of BGS and NEWSME, and there are no prevalent, viable mechanisms for reuse, reduction, or recycling of OBW that are within the control of BGS and NEWSME. The primary management option is landfill disposal for OBW.

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- (6) *Municipal Wastewater Treatment Plant Sludge* – Municipal wastewater treatment plant sludge not land applied, composted, or alternatively managed is proposed as acceptable waste at the expansion. Casella Organics has developed, and continues to develop, alternative sludge usage programs; however, the usage options for municipal wastewater treatment plant sludge from Maine communities is limited due to factors such as the quality of sludge, available acres for land application, facility capacity restrictions and cost considerations. Landfilling is the disposal option for municipal wastewater treatment plant sludge not otherwise land applied, composted or alternatively managed.
- (7) *Industrial Wastewater Treatment Plant Sludge and Residuals* – As with municipal wastewater treatment plant sludge, industrial wastewater treatment plant sludge and residuals are expected to be disposed of in the proposed expansion. Maine industries with wastewater or process treatment plants (the generator of this type of sludge) are responsible for reducing and recycling this waste material to the maximum extent practicable. As stated above, Casella Organics has an active alternative sludge usage program to divert some of this waste material from the landfill; however, the sludge not otherwise processed is landfilled. For example, in 2014 Casella Organics handled approximately 42,000 tons of short paper fiber from the Cascades Auburn Fiber pulp mill in Auburn, Maine, all but 8000 tons of which was diverted from disposal to beneficial uses.
- (8) *Contaminated Soils and Oil Spill Debris* – Contaminated soils and oil spill debris are currently accepted at JRL at an estimated amount of about 1% of the total tonnage (approximately 6,500 tons in 2014) and are expected to be accepted in the proposed expansion. This waste type often is the result of accidental spills and releases and is managed in accordance with regulated practices (such as facility spill prevention, control, and countermeasure plans). While some of these wastes can be used in construction projects or in secure settings, reuse is typically limited due to physical and/or chemical characteristics or practical limitations such as transportation costs. Alternate use decisions are within the control of the generator, not BGS or NEWSME.
- (9) *Miscellaneous Special Wastes* – Generators of miscellaneous special wastes are responsible for reducing to the maximum practicable extent the amount of these wastes that are landfilled. These special waste streams are handled either through individual one-time or ongoing special waste permits when there is not an alternative to landfilling based on regulatory

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standards and practical cost and transportation considerations. Alternative use decisions are within the control of the generator, not BGS or NEWSME.

- (10) *MSW Bypass from Maine MSW Incinerators* – The only MSW that will be disposed of in the JRL expansion is bypass from Maine MSW incinerators (pre-filed testimony by Ms. King page 10; pre-filed testimony by Jeremy Labbe, Environmental Manager at JRL, page 13; hearing testimony by Michael Barden, the State’s Manager for State-owned landfills, pages 15 and 147 of the hearing transcript; and during questioning of Intervenor Edward Spencer page 419 of the hearing transcript). These incinerators are required by their licenses to provide an alternative management method (bypass) if the facility receives MSW that is in excess of its ability to accept, process, and/or combust that waste (i.e., during planned shutdowns or unplanned production problems). The decision to bypass and where to dispose of the bypass is made by the incinerator facility and is not within the control of BGS or NEWSME.

C. Testimony Regarding the Hierarchy

Compliance with the State’s solid waste management hierarchy was a major issue at the hearing.

The applicant testified that the proposed expansion will be developed and operated consistent with the hierarchy and that JRL will promote and encourage waste reduction measures and maximize the waste diversion efforts of JRL users to the maximum extent practicable. Toni King, Regional Engineer for Casella Waste Systems, Inc.’s Eastern Region, testified that a high percentage of material to be disposed of in the proposed expansion is ranked in the State Plan (Maine Materials Management Plan: 2014 State Waste Management and Recycling Plan Update & 2012 Waste Generation and Disposal Capacity Report, January 2014, prepared by the Maine Department of Environmental Protection) as either a high or medium option for landfill disposal; i.e., landfill disposal is the primary management technique available (high) or a middle option (medium). Ms. King testified that approximately 30% of the waste material accepted at JRL is utilized in landfill operations and is considered recycling in accordance with the applicable State laws and Rules. This includes residuals from waste processing facilities used as alternative daily cover, thereby offsetting the amount of landfill capacity used by non-waste materials. Ms. King noted in her testimony that the Department evaluated JRL’s use of alternative daily cover as part of the Public Benefit Determination for the proposed expansion and concluded that the amount

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used at JRL is comparable to the amount used at the Crossroads landfill in Norridgewock, Maine.

Ms. King also testified that NEWSME’s parent company operates Casella Recycling, LLC and Casella Organics, both of which contribute to the reduction of waste landfilled. Casella Recycling, LLC, a Zero-Sort facility in Lewiston, recycled approximately 87,700 tons of material in 2014 and the non-recyclable residuals (9% of the waste stream) were sent to the Mid Maine Waste Action Committee (MMWAC) incinerator in Auburn, with ecomaine in Portland available as backup. Casella Organics composts and land applies organic wastes, landfilling their customers’ waste only when the physical or chemical properties of the material do not allow for beneficial reuse, if there is a lack of site access for land application, or when reuse/recycling outlets are not available.

Intervenor Edward Spencer addressed the following issues in his testimony and post-hearing brief: a concern that wastes have been coming into JRL without adequate assurance of source reduction; wastes sent to JRL should have been handled according to the State’s hierarchy at their source, their point of discard, including wastes discarded outside of Maine and subsequently sent to Maine processing facilities; the definition of “waste generated within the State” is concerning since CDD processing facilities can accept out-of-state wastes but once processed, those wastes (fines, OBW, etc.) are considered in-state waste; and as a state-owned landfill, the focus should be on preserving capacity by exerting more control over the waste accepted for disposal.

With respect to CDD and associated residuals, Mr. Spencer testified that for the last five years (2011 through 2015) wastes categorized as CDD, OBW, and CDD process fines when combined accounted for over 57% of inputs to JRL. Mr. Spencer expressed concern over the origin of CDD ultimately disposed of at JRL, and testified that the majority of wastes entering the Lewiston processing facility (ReEnergy) and “continuing to JRL” were not discarded in Maine. Mr. Spencer expressed concern about the amount of OBW in the CDD, and questioned the amount of effort that goes into recycling various components of OBW such as mattresses, appliances, and furniture. Mr. Spencer argued in support of an annual limit on the amount of OBW disposed of at JRL and for waste audits of processing facilities as set forth in the Public Benefit Determination for the proposed expansion.

Intervenor Dana Snowman raised similar concerns regarding the amount and origin of wastes coming to JRL and the statutory definition of “waste generated within the State” in his questioning of the applicant’s witnesses.

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In response to these concerns, Michael Barden, the State’s Manager for State-owned landfills, testified that out-of-state wastes are “excluded wastes” and disposal at JRL is prohibited, and he affirmed that JRL accepts only waste which meets the definition of “waste generated within the State.”

Ms. King further testified that discussion of the “point of discard” is irrelevant; the State’s solid waste rules do not require evidence of the point of origin. With respect to CDD and associated residuals, Ms. King testified that CDD processing facilities in Maine must demonstrate that they are complying with Maine State law “by recycling or processing into fuel for combustion all wastes accepted at the facility to the maximum extent practicable, but in no case at a rate of less than 50%.” Ms. King testified that two processing facilities cited by Mr. Spencer, ReEnergy in Lewiston and ARC in Eliot, reported recycling rates in 2015 of 78.7% and 84%, respectively, (BGS/NEWSME Exhibits #49 and #50), and have met their statutory recycling and source reduction requirements. Therefore, residuals, including CDD fines and OBW, from these facilities are legally “waste generated within the State” and may be accepted at JRL.

Ms. King testified that the question for the applicant is whether the applicant could further reduce, reuse, compost, or incinerate the post-processing CDD material that JRL receives from these processing facilities. Her response was that it could not; she testified that the fines are used as alternative daily cover (a use which is defined as recycling), the primary option for handling of OBW is landfilling, and that these materials cannot be further reduced, incinerated or composted.

With respect to mattresses, a component of OBW, Ms. King testified that Casella has had limited experience with mattress recycling at other facilities in New England, but that by the time mattresses arrive at JRL, they are in poor condition (fabric contaminated, wood broken) and are not easily recycled.

Ms. King testified that waste streams entering JRL are, and will continue to be, managed consistent with the hierarchy to the extent within the applicant’s control and to the maximum extent practicable, and that the hierarchy does not require a solid waste facility to control those who generate waste.

D. Board Finding

The Board finds that Casella-owned facilities have active recycling and reuse programs that divert waste from JRL. In addition, the waste management options available for most of the materials proposed to be disposed of in the landfill expansion, as set forth in the State Plan, are at or near the bottom of the hierarchy.

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The concern that OBW from CDD processing facilities are landfilled without limitation is addressed by the establishment of an OBW limit for the proposed expansion in Finding 37 of this license. Compliance with the recycling and source reduction provisions of State law is further addressed in Finding 19 of this license.

With respect to intervenors Edward Spencer and Dana Snowman’s argument that generators located outside Maine should be subject to Maine’s laws governing recycling and source reduction, the Board finds that under current law, provided the Maine solid waste processing facilities which accept waste from outside Maine are in compliance with the terms of their licenses and State law regarding recycling, residue and bypass generated by these Maine facilities’ operations sent to JRL is “waste generated within the State” and may be disposed of in the proposed JRL expansion.

The Board further finds that the applicant’s purpose and practices of the proposed expansion are consistent with the applicable State laws and Rules relating to the hierarchy; provided that evolving waste management techniques and practices sufficiently within the control of the applicant continue to be explored and implemented as appropriate to reduce, reuse, recycle, compost, and/or process to the maximum extent practicable prior to landfilling. In each Annual Report, the applicant must summarize the steps taken by the facility in the respective reporting year to meet the hierarchy, submitting relevant metrics to evaluate effectiveness (i.e., tons of material diverted from landfill disposal by Casella companies; tons of materials reused, reduced, recycled at the landfill), a description of ongoing efforts to increase the effectiveness of these programs/efforts, and any additional pertinent hierarchy-related information.

19. RECYCLING

In addition to demonstrating compliance with the State’s solid waste management hierarchy as described in Finding 18 of this license, State law at 38 M.R.S. § 1310-N(5-A) requires the applicant to demonstrate that the proposed solid waste disposal facility will accept solid waste that is subject to recycling and source reduction programs, voluntary or otherwise, at least as effective as those in the statute and other provisions of State law; and the applicant has shown consistency with the recycling provisions of the State Plan. Similarly, 06-096 C.M.R. ch. 400, § 6(B) requires a determination by the Department that the volume of the waste and the risks related to its handling and disposal have been reduced to the maximum practical extent by recycling and source reduction prior to being landfilled or incinerated, consistent with state recycling programs and the State Plan.

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The applicant submitted the information presented in Table 6 below (Volume I of the application, Table 5-1, page 5-2 and BGS/NEWSME Pre-filed Direct Testimony Exhibit #4 appended to the testimony of Toni King) to address opportunities for recycling of the waste streams proposed to be accepted for disposal in the proposed expansion. The applicant testified that the tonnages of the various waste types in the table were estimated for design purposes and were not intended to be limits on the amounts received.

Table 6: Waste Management Techniques for Proposed Expansion Materials

Material Category	Proposed Waste Types to be Accepted in Expansion		Is Material a Residual from a Processing Facility that reduced the amount of material landfilled?	Is Material subject to recycling efforts by generator or otherwise prior to landfilling or is its use in the landfill considered recycling?	State Plan ¹ Ranking of Landfill Disposal as Current Management Method	State Plan ¹ Ranking for Source Reduction, Recycle, Compost, Beneficial Reuse Processing As Current Management Method
	Tons	Percentage of Total Tonnage				
Waste Treatment Plant Sludges and Biosolids	70,000	10	No	Yes	L	H,L,N,N/A
Contaminated Soils	30,000	4.3	No	Yes	H	N/A,N
Municipal Solid Waste Incinerator Ash	58,000	8.3	Yes	No	H	N/A
Front-End Processing Residue ²	54,000	7.6	Yes	No	H	N/A
Biomass and Fossil Fuel Combustion Ash	35,000	5	Yes	Yes	M/H	N/A,M
Construction and Demolition Debris	195,000	27.9	No	Yes	H,M	N/A,N, M
Construction and Demolition Debris Processing Facility Fines	138,000	19.7	Yes	Yes	N/E	N/E
Oversized Bulky Waste	60,000	8.6	No	No	H	L

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Material Category	Proposed Waste Types to be Accepted in Expansion		Is Material a Residual from a Processing Facility that reduced the amount of material landfilled?	Is Material subject to recycling efforts by generator or otherwise prior to landfilling or is its use in the landfill considered recycling?	State Plan ¹ Ranking of Landfill Disposal as Current Management Method	State Plan ¹ Ranking for Source Reduction, Recycle, Compost, Beneficial Reuse Processing As Current Management Method
	Tons	Percentage of Total Tonnage				
Miscellaneous special waste	35,000	5	No	No	M,H	N/A,N,M
MSW Bypass and Soft Layer Material ³	25,000	3.6	Yes	Yes	M, H	N, N/A
Total⁴	700,000	100	44.2	70.5		

Notes: ¹ Source: MEDEP Maine Materials Management Plan, January 2014, Appendix C Current Management of Maine's Solid Waste by Type; N=None L=Low; M=Medium; H=High; N/A = Not Applicable (not possible); N/E Not Evaluated.
² Listed as shredder residuals.
³ Note included in Table as an individual category compared to MSW Other Organics.
⁴ Values are percent of total material landfilled except tons total.

The applicant also presented evidence on Casella's efforts to facilitate recycling of a number of other waste streams and thereby decrease the volume of wastes landfilled including Casella Recycling's Zero-Sort system used by Maine municipalities (which recycles paper, cardboard, plastic, glass and metals) and Casella Recycling's offer of waste audits to commercial and industrial customers to assist with the recycling of difficult to recycle items (Pre-filed direct testimony of Ms. King).

A summary of testimony at the hearing regarding recycling and source reduction and the hierarchy, and the applicant's responses, are summarized in Finding 18 of this license.

As shown in Table 6, it is expected that 44.2% of waste disposed will be residuals (MSW incinerator ash, 8.3%; FEPR, 7.6%; Biomass and fossil fuel combustion ash, 5.0%; CDD processing fines, 19.7%; and MSW bypass, 3.6%) from processing facilities that already reduce the amount of materials landfilled. Approximately 70.5% of the waste disposed will be materials (waste treatment plant sludges and biosolids, 10%; contaminated soils, 4.3%; biomass and fossil fuel combustion ash, 5.0%; CDD, 27.9%; CDD processing fines, 19.7%; and MSW bypass, 3.6%) subject to recycling at its source or are considered recycling based upon the landfill's use.

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While the percentages in the table may vary with actual operations, a review of the data indicates that overall the facility follows the State Plan ranking for recycling. A high percentage of material to be disposed of is ranked in the State Plan as either a high or medium option for landfill disposal; i.e., landfill disposal is the primary management technique available (high) or a middle option (medium). The only low landfill disposal ranked material that will be accepted at JRL includes waste treatment plant sludges and biosolids. Casella Organics, a subsidiary of NEWSME's parent company Casella, does actively compost and reuse this material at the Hawk Ridge Compost Facility in Unity, Maine. The record indicates that in 2014, 29,068 tons of waste water treatment plant sludges and biosolids were manufactured into compost and mulches, while 38,000 tons were brought to JRL for disposal (Volume I of the application, page 5-3).

The Board finds that the applicant has demonstrated that material proposed to be landfilled in the JRL expansion has been reduced to the maximum practical extent by recycling and source reduction prior to being landfilled in accordance with applicable State law and Rules provided the facility's Annual Report includes updates on recycling information similar to that in Table 6 for the waste disposed, as specified by the Department.

20. PUBLIC BENEFIT DETERMINATION

Pursuant to the provisions of 38 M.R.S. § 1310-AA and in accordance with 06-096 C.M.R. ch. 400, § 5, proposals for new or expanded solid waste disposal facilities must be found by the Commissioner to provide a substantial public benefit.

As stated in Finding 1(B)(7) of this license, the applicant originally proposed to expand JRL by 21.9 million cubic yards. The Commissioner issued a PBD approval, with conditions, for a 9.35 million cubic yard capacity increase of JRL on January 31, 2012. On appeal, the Board affirmed the Commissioner's PBD in a decision dated July 19, 2012. Pursuant to 38 M.R.S. §1310-N(3-A)(B), the Commissioner's determination of public benefit is not subject to review by the Board as part of this licensing process.

In the PBD, the Commissioner concluded that the proposed expansion will provide a substantial public benefit, provided the expansion is limited to 9.35 million cubic yards, and provided an annual limit on OBW disposal in the expansion is established. The approval included the following conditions (among others):

3. The applicant shall, if, and when, a license is issued for the construction and operation of the 9.35 million cubic yard expansion, comply with the limit, and any subsequent modifications to the limit, established by the Department in the license on the tonnage of OBW that may be disposed in the 9.35 million cubic yard expansion.

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4. Periodic independent third party audits of CDD processing operations that are anticipated to transport more than 10,000 tons of OBW to the 9.35 million cubic yard expansion for disposal on an annual basis shall be conducted to verify the results of the demonstrations required under the provisions of 06-096 [C.M.R. ch. 409, § (2)(C)], focused on the nature and volume of processing residues being sent to JRL for disposal. Third party audits will be conducted by a qualified consultant selected by the Department in consultation with the affected CDD processing facilities and Casella. Casella shall reimburse the Department for the cost of the audits. The first such audit(s) shall occur prior to the disposal of OBW from these processing facilities in the 9.35 million cubic yard expansion. Audits will be conducted at 2 year intervals, unless or until the Department approves their discontinuation.

These conditions of the PBD are included in the conditions of this license. See Finding 37 of this license for further discussion of a limitation on the annual amount of OBW that may be accepted at JRL.

21. HAZARDOUS AND SPECIAL WASTE HANDLING AND EXCLUSION PLAN

Pursuant to 06-096 C.M.R. ch. 400, § 9(A), only permitted wastes may be accepted for handling at a solid waste facility; the operator shall comply with all applicable Federal and State laws regarding the detection, identification, handling, storage, transportation and disposal of special wastes, biomedical wastes and hazardous wastes; and the operator shall develop and implement a Hazardous and Special Waste Handling and Exclusion Plan for the detection, identification, handling, storage, transportation and disposal of any and all wastes that may be delivered to the facility.

Consistent with JRL's current license, only non-hazardous waste will be allowed to be accepted in the proposed expansion. The types of acceptable wastes for disposal are further described in Finding 37 of this license. Included in the facility's Operations Manual is a Hazardous and Special Waste Handling and Exclusion Plan which will apply to the waste delivered to the proposed expansion. This plan includes provisions for waste inspection at the gate and at the point of offloading, as well as procedures to follow if non-acceptable waste does enter the site.

Based upon the information provided by the applicant, the Board finds that the facility will not be licensed to accept hazardous waste and has an appropriate Hazardous and Special Waste Handling and Exclusion Plan for the detection, identification, handling, storage, transportation and disposal of delivered wastes. The Hazardous and Special

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Waste Handling and Exclusion Plan will be updated as necessary with the annual review and revision of the facility's Operations Manual.

22. LIABILITY INSURANCE

The Department's rule at 06-096 C.M.R. ch. 400, § 10 requires a solid waste disposal facility, except public entities, to submit proof of liability insurance for the active life and closure of the solid waste disposal facility. The applicant is a public entity and is exempt from the liability insurance requirements of 06-096 C.M.R. ch. 400, § 10. Liability insurance is required by the OSA, Section 21. NEWSME submitted the current certificate of insurance maintained for the facility and NEWSME will provide copies of the updates to the current certificate of insurance in the facility's Annual Report during operation of the proposed expansion.

The Board finds that the applicant is exempt from the liability insurance requirements of 06-096 C.M.R. ch. 400, § 10 of the Rules; however, liability assurance is being maintained by NEWSME as the current operator of JRL and will be maintained for the expansion.

23. CRIMINAL OR CIVIL RECORD

In accordance with 38 M.R.S. § 1310-N(7) and 06-096 C.M.R. ch. 400, § 12, a license for a solid waste facility or activity may be denied if the owner or the operator or any person having a legal interest in the applicant or the facility has been convicted of any criminal law or adjudicated or otherwise found to have committed any civil violation of environmental laws or rules of the State, other states, the United States, or another country.

Civil and criminal disclosure statements were submitted for the BGS and NEWSME as part of the application. The disclosure statements included those for NEWSME's operation of JRL, a related entity New England Waste Services of ME, Inc. (operator of the Pine Tree Landfill), and the five officers, directors, and partners of the two businesses. Additionally, in response to the Department's review and comment on the application, the applicant submitted an organizational chart of the Casella companies authorized to do business in Maine.

In the five year environmental compliance history submitted for New England Waste Services of ME, Inc., four notices of violations and one administrative order were listed. These have been addressed through responses required by the notices of violation and administrative order.

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Based upon information in the application, the Board finds that the applicant filed complete disclosure statements as required by applicable State law and Rule. Based on the disclosure statements submitted and the evaluation criteria contained in 06-096 C.M.R. ch. 400, § 12(B), the Board finds no basis for denying the license.

24. VARIANCES

Pursuant to 06-096 C.M.R. ch. 400, § 13, an applicant may seek a variance to the requirements of the Rules for establishing, altering, operating or closing a solid waste facility or handling solid waste provided the applicant demonstrates that its proposal will comply with the intent of State laws and the Rules.

The applicant requested no variances from the Rules for siting, design, or operation of the proposed expansion. The applicant submitted two variance requests related to construction practices regarding the maximum barrier soil lift thickness required by the Rules. In lieu of the variance requests, Department staff commented that the alternative design process required by 06-096 C.M.R. ch. 401, § 2(E) should be used to clearly and convincingly demonstrate the technical equivalency of the proposed alternative (see Department technical memorandum dated January 20, 2016 from S. Farrar, V. Eleftheriou, and K. Libbey). The alternative design standard procedure was agreed to by the applicant and is addressed in Finding 27 of this license.

SOLID WASTE SITING, DESIGN, AND OPERATION

25. SITE ASSESSMENT: GEOLOGIC AND HYDROGEOLOGIC

In accordance with 06-096 C.M.R. ch. 401, § 2(B) and (C), an applicant must submit the results of site investigations and assessments performed to properly describe the surficial stratigraphy and bedrock beneath and adjacent to the proposed solid waste boundary; ground and surface water investigations performed to determine water table information and horizontal and vertical ground water flow gradients and for phreatic surface (water table) observations; and geotechnical investigations to support the stability and settlement assessments. The applicant submitted a Site Assessment Report dated July 2015 prepared by SME (Volume II of the application). The applicant must demonstrate the proposed expansion meets the performance standards and siting criteria in 06-096 C.M.R. ch. 401, § 1(C).

Department staff reviewed the geological and hydrogeological aspects of the proposed expansion prior to the hearing and submitted comments to the applicant in several memoranda. The applicant addressed a number of the staff's comments and made a number of adjustments to the application in response to those comments.

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A. General Site Geology Description

Information submitted by the applicant shows that the site of the proposed expansion is in an area underlain by glacial till, on an elongated hill oriented in a northwest-southeast direction understood to have been formed as a glacial drumlin. Dense, silt-clay glacial till is primarily beneath the proposed expansion, with occasional thin, isolated portions of washed till observed typically just above the bedrock. Marine clay was observed over till beyond the proposed expansion boundary. The glacial till ranges from less than 5 feet to greater than 50 feet thick beneath the proposed expansion footprint (average thickness between the landfill base grades and bedrock surface is an estimated 24.5 feet), with approximately 3.6 acres of the footprint having an existing overburden thickness of less than 5 feet. The near-surface till was determined to be fractured above the frost/desiccation zone due to weathering and frost action.

Bedrock beneath the proposed expansion is mapped as interbedded metamorphosed quartzite, siltstone, graywacke, and phyllite of the Vassalboro Formation (Maine Geological Survey mapping, Griffen, 1979a, Osberg et al, 1985), with no bedrock faults mapped within the site. Core samples were primarily metagraywacke and phyllite, with some metasiltstone. Four bedrock outcroppings were observed directly adjacent to the proposed expansion with fracture groupings oriented northwest/southeast and northeast/southwest. The bedrock is only slightly broken, weathered, and stained within the upper several feet, but is generally hard, unweathered, and competent with depth.

Hydraulic conductivities were measured during previous JRL investigations, with the following results: brown and gray glacial tills ranged from 1.8×10^{-5} to 2.4×10^{-8} centimeters per second (cm/sec); discontinuous washed till and sandy zones within the basal till had a geometric mean of 5.3×10^{-4} cm/sec; and bedrock ranged from 3.2×10^{-3} to 9.2×10^{-8} cm/sec.

Based upon the information in the application and supporting documents in the record, the Board finds that the applicant characterized the site geology in accordance with the requirements of 06-096 C.M.R. ch. 401, § 2(B)(1).

B. General Site Ground and Surface Water Description

The application includes information showing that the total 780-acre parcel is divided into four watersheds which drain to the east, northwest, northeast, and southwest. There is a relatively shallow water table from approximately 5 to 10 feet beneath much of the facility property due to the relatively low hydraulic conductivities of the natural soils and bedrock; therefore, the ground water flow

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generally follows the topography and is expected to flow from the higher elevations towards the west and east following the drumlin as a ground water divide. Recharge at the higher topographical elevations occurs primarily through precipitation and snowmelt, with ground water moving mainly horizontally and discharging to locations along streams and low-lying topography. Upward vertical seepage gradients are located on the east and west lower portion of the drumlin beyond the proposed expansion footprint.

There are no stratified sand and gravel deposits mapped by the Maine Geological Survey within the landfill site. Further discussion of standards related to significant ground water aquifer can be found in Finding 15 of this license.

Based upon the information in the record, the Board finds that the applicant characterized the site hydrogeology in accordance with the requirements of 06-096 C.M.R. ch. 401, § 2(B)(2).

C. Site Investigations and Proposed Expansion Area Specifics

The applicant submitted data and summaries of site-specific investigations conducted within and around the proposed expansion area from 2004 to the present, including:

- (1) Wetlands delineation within 2,000 feet of the proposed expansion footprint;
- (2) Subsurface test pits and borings to sample and evaluate soil and bedrock lithologies;
- (3) Bedrock coring for mapping, fracture frequency measurement, and porosity estimation;
- (4) Surficial geophysical surveys using electrical earth resistivity and Very Low Frequency-Electromagnetic (VLF-EM) methods to identify bedrock fracture zones and other features;
- (5) Borehole geophysical logging to identify and quantitatively characterize bedrock fracture orientation and structural features;
- (6) Installation of multi-level piezometer clusters and monitoring wells to determine seasonal ground water flow rates and direction;

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- (7) In-situ hydraulic conductivity testing in monitoring wells and piezometers for both till and bedrock;
- (8) Testing of soil properties;
- (9) Laboratory hydraulic conductivity testing of undisturbed till samples for vertical hydraulic conductivity;
- (10) Natural gradient ground water tracer tests to measure ground water velocities in till and bedrock;
- (11) Ground water age-dating for ground water velocity verification;
- (12) Bedrock pumping tests for fracture interconnectivity; and
- (13) Water quality testing of the natural background ground water.

The information collected, specific methods used, and the results of the evaluations were included in the application. The results of the evaluations were utilized to confirm the site characteristics and in the design of the proposed expansion.

The water table (ground water phreatic surface depth) was found to vary between 0 and 2 feet below the existing ground surface during the wet season, whereas the dry season water table varies between 5 and 10 feet beneath the existing ground surface. Due to the shallow water table depth, the northeast side of the proposed expansion will be subject to upward ground water seepage into the construction excavations; therefore, the applicant will install an underdrain in the 12.7-acre area. It is expected that the seepage into the underdrain will continue, but then will eventually diminish since there will be less recharge once the area is covered, first by the liner systems, and eventually by a final cover system.

Information provided by the applicant shows that the fine-grained glacial till can be considered to provide some natural containment under the proposed expansion. The applicant used a variety of hydrogeological methods to estimate the horizontal ground water velocities. The calculated ground water velocities ranged from 1 to 24 feet per year (ft/yr) through the till. The natural gradient tracer test revealed a range of horizontal ground water velocities of about 10 to 24 ft/yr for the near surface weathered till. Subsequent estimates of travel time to sensitive receptors incorporated conservative estimates of horizontal ground water velocities.

Ground water movement through the bedrock under the proposed expansion is a function of the overall interconnectivity of the bedrock’s fracture and joint openings. Based on pumping tests, bedrock tracer tests, and other investigative methods, the applicant concluded that the degree of bedrock fracture interconnectivity beneath the proposed expansion allows for a level of predictability of ground water movement through the site’s bedrock and could be utilized for controlling ground water flow directions by means of ground water extraction wells if a leachate leak were to occur. The applicant’s estimates of site-wide horizontal bedrock ground water velocities range from about 0.4 to 10 feet per day. Based on its ground water modeling, the applicant estimated that post-construction ground water flow directions beneath the proposed expansion are projected to be in a generally southerly direction.

Over the course of the review and comment period on the application, Department staff requested the collection of supplemental data from three additional boreholes at suggested locations within the proposed expansion footprint, and the geophysical downhole logging of those boreholes and the two water supply wells serving the office and scale house. The applicant conducted the requested drilling and geophysical downhole logging and submitted the results of the data collected in a report to the Department on June 7, 2016.

During its review of the application, Department staff raised several questions regarding the interpretation of the pumping test data and resulting ground water level drawdowns. The applicant responded to the Department’s questions through additional correspondence, resulting in a Department memorandum dated June 21, 2016 from R. Behr stating that the Department’s concerns have been addressed.

In his testimony and cross-examination, intervenor Edward Spencer posed questions regarding the site geology, including the impact of glacial rebound on landfill stability, the use of an underdrain system below ground water level, and potential ground water flow beyond the site. One of the applicant’s expert witnesses, John Sevee, P.E., C.G., testified that glacial rebounding will have no effect on the integrity of the landfill or the slope of the drainage pipes since the crustal rebound is occurring over the entire region surrounding the landfill. Michael Booth, expert witness for the applicant, testified that the underdrain system was primarily designed to facilitate construction and will be monitored as part of the water quality monitoring program. Mr. Sevee testified that ground water flow paths were investigated through wells and borings, along with utilizing ground water simulations which indicated that ground water emanating from the landfill site does not pass to ground water users along Route 16, Route 43, or Stagecoach Road.

Based upon the information in the record, the Board finds that the applicant has submitted a site assessment report and subsequent information addressing Department staff's review comments, identified the site characteristics and recommendations for landfill design and construction, identified potential impacted sensitive receptors, and estimated ground water flow time of travel as required by 06-096 C.M.R. ch. 401, §§ 2(B) and (C). See Finding 33 of this license for further discussion regarding the Water Quality Report and Ground Water Monitoring Program.

The Board further finds that the underdrain system was included and designed specifically to minimize ground water intrusion during construction and that, in the future, the ground water level will flatten due to less recharge once the proposed liner system is placed. Addressing the concern of ground water flow beyond the site, the Board finds that extensive site assessments have been undertaken and submitted in the past and with this application to characterize the geology and hydrogeology at the site and to serve as the basis for the selection of the design of the proposed expansion.

D. Geotechnical Investigation

The applicant submitted the results of its geotechnical investigations as part of the site assessment. Based on the information provided by the applicant in the site investigations, including published data, on-site field and laboratory data, and specific seismic information, the Board finds that the applicant gathered sufficient information to support the stability and settlement assessments described in Findings 28A and B of this license, as required by 06-096 C.M.R. ch. 401, § 2(B)(3).

E. Time of Travel Calculations

The applicant submitted a time of travel analysis to demonstrate conformance with the Rule's performance standard of greater than 6 years from the bottom of the landfill to sensitive receptors and greater than 3 years from leachate storage structures and pump stations to sensitive receptors set forth in 06-096 C.M.R. ch. 401, § 1(C)(1)(c). Improvement allowances for the leak detection system and a composite secondary liner system were included in the calculations as described in Finding 26B of this license. An imported soil layer of 12 inches of compacted, low permeability, marine clay to be placed below the secondary liner system in the proposed expansion area was also taken into account in the calculations as allowed in 06-096 C.M.R. ch. 401, § 2(C)(2), based on the use of improvement allowances and the hydraulic conductivity and effective porosity of the marine

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clay. The analysis included time of travel from each of the proposed expansion cells and the two proposed permanent leachate sumps. The applicant did not include the existing leachate storage tank in its calculations because it was previously addressed in license #S-020700-WD-N-A, dated April 9, 2004.

The sensitive receptors were selected based on the requirements in the Rules and site-specific characteristics and are listed in Table 7 (Volume II of the application, Table 7-1, page 7-6).

Table 7: Identified Site Sensitive Receptors

Identification	Location Description
Point A	Southeast sandy zone
Point B	Hypothetical Groundwater Supply Well at Closest Property Boundary on Eastern Side.
Point C	Surface Water Discharge to the East. An Unnamed tributary to Judkins Brook.
Point D	Surface Water Discharge to the Southwest. An Unnamed Tributary to Pushaw Stream.
Point E	Hypothetical Groundwater Supply Well at Closest Northern Corner of Property Boundary on Western Side.
Point F	Hypothetical Groundwater Supply Well at Closest Southern Corner of Property Boundary on Western Side.
Point G	Surface Water Discharge to the Northwest. An Unnamed Tributary to Pushaw Stream.

The applicant provided results of the time of travel calculations as shown in Table 8 (based on combining two tables in the application, Volume II, Tables 7-3 and 7-4 on page 7-11, and the applicant’s update in the second response to comments dated May 13, 2016, with added footnotes for clarity). The analysis was performed twice: under current conditions and under future conditions when the ground water table flattens due to the cutoff of precipitation recharge when the area is covered (first by the liner system, then eventually by the final cover system).

Table 8: Calculated Travel Times to Site Sensitive Receptors

Landfill Node	Site Sensitive Receptor	Offset Credits ¹ (yrs)	Imported Soils ² (yrs)	Existing Conditions		Future Conditions		Rule Requirement (yrs)
				Calculated Travel Time in Soil and Bedrock (yrs)	Total Travel Time (yrs)	Calculated Travel Time in Soil and Bedrock (yrs)	Total Travel Time (yrs)	
Cell 11 Southern End	Point A	3	3	10.5	16.5	10.5	16.5	6
Cell 11 Center	Point B	2	3	3.9	8.9	3.9	8.9	6

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Landfill Node	Site Sensitive Receptor	Offset Credits ¹ (yrs)	Imported Soils ² (yrs)	Existing Conditions		Future Conditions		Rule Requirement (yrs)
				Calculated Travel Time in Soil and Bedrock (yrs)	Total Travel Time (yrs)	Calculated Travel Time in Soil and Bedrock (yrs)	Total Travel Time (yrs)	
Cell 12 Center	Point C	2	3	11.3	16.3	11.4	16.4	6
Cell 13 Center	Point C	2	3	11.0	16.0	11.2	16.2	6
Cell 13 Leachate Sump	Point C	2	3	35.8	40.8	36.1	41.1	3
Cell 14 Center	Point D	3	3	47.7	53.7	62.2	68.2	6
Cell 14 Center	Point E	3	3	3.3	9.3	17.7	23.7	6
Cell 15 Center	Point F	2	3	1.2	6.2	1.4	6.4	6
Cell 16 Center	Point G	2	3	4.7	9.7	5.3	10.3	6
Cell 16 Leachate Sump	Point G	3	3	10.3	16.3	10.3	16.3	3

Notes: ¹ Improvement allowance offset credits are described in Finding 26B of this license.
² 06-096 C.M.R. ch. 401, § 2(C)(2) allows for imported soils used for base preparation below liner systems to account for up to three years in the time of travel calculations, as appropriate.

Intervenor Edward Spencer testified that time of travel calculations appear to be an acknowledgement that a landfill leak will occur. Michael Booth, an expert witness for the applicant, testified that the time of travel analysis is required by the Rules and is utilized as a design evaluation tool.

Based on the information in the record, the Board finds that the applicant meets the Rule requirements of ground water time of travel from the bottom of the landfill liner systems (greater than 6 years) and leachate storage structures and pump stations (greater than 3 years) to all identified sensitive receptors. The applicant installed piezometers and water table observation wells at a sufficient number of locations to enable a calculation of ground water time of travel and performed the calculations with the appropriate information in accordance with the Rules.

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26. DESIGN STANDARDS: ENGINEERING

The Department’s rule at 06-096 C.M.R. ch. 401, § 2(D) requires an engineering design for a proposed landfill to meet specific design and performance standards. The applicant submitted engineering design information in support of the proposed expansion. As noted previously, a number of rounds of comments and responses occurred between Department staff and the applicant on the technical aspects of the proposed expansion design.

In general, the applicant’s design of the proposed expansion consists of an underdrain and augmented secondary liner system over portions of the proposed expansion footprint, two liner systems (primary and secondary), a leak detection system, leachate and gas collection and control systems, and intermediate and final cover systems. The outer side slopes are designed at 3H:1V (3 horizontal to 1 vertical), with a maximum final elevation of 390 feet above mean sea level. Six operational cells are proposed. The applicant submitted a detailed engineering design including drawings, contract administrative documents, technical specifications and a construction quality assurance plan for Cell 11 with the application. Similar detailed engineering designs are required to be submitted for Department review and approval prior to each subsequent cell’s construction.

A. Liner System Requirements

The liner system proposed for the expansion includes a composite primary liner, a leak detection system, and a secondary liner system. The proposed liner system consists of the following from top to bottom:

- (1) A composite primary liner system consisting of an 80-mil HDPE textured geomembrane, a GCL, and a 12-inch compacted clay layer (hydraulic conductivity less than or equal to 1×10^{-7} cm/sec);
- (2) A leak detection system consisting of a 12-inch layer of sand (average hydraulic conductivity greater than or equal to 1×10^{-2} cm/sec and a minimum hydraulic conductivity of 5×10^{-3} cm/sec), a network of 6-inch diameter perforated HDPE pipe, and a drainage geocomposite; and
- (3) A secondary liner system consisting of a 60-mil HDPE textured geomembrane. The secondary liner system will be augmented with a GCL and 12 inches of compacted clay (hydraulic conductivity less than or equal to 1×10^{-7} cm/sec) on approximately 11 acres where the existing soil depth between the bedrock and landfill base grades is less than 10 feet.

Intervenor Edward Spencer voiced concerns in his testimony that the liner systems will eventually leak. In response, Michael Booth, expert witness for the applicant, countered the claim that all liner systems must necessarily leak, focusing on the following proposed expansion items: the expansion primary and secondary liner system was specifically designed to address potential leak issues, the construction process will include an electrical leak location survey of the primary geomembrane, the specifications for the geomembranes require compliance with ASTM standards (including stress cracking standards), construction specifications and practices will mitigate pressure points beneath the geomembrane that could lead to stress cracks, and the proposed expansion design eliminates liner penetrations for piping.

The Board finds that the liner system proposed by the applicant was designed in accordance with 06-096 C.M.R. ch. 401, § 2(D)(1). The Board also finds that the proposed HDPE geomembranes for both the primary and secondary liner systems are thicker than the 60-mil and 40-mil Rule requirements, respectively. The Board finds that the geomembranes, GCLs, drainage geocomposites, and soils proposed will meet the performance requirements of the Rules, including material characteristics (i.e., Geosynthetic Research Institute standards and American Society for Testing and Materials (ASTM) standards) and installation requirements. Further, the applicant will be required to submit detailed design packages including the engineering design, drawings, contract administrative documents, technical specifications and a construction quality assurance plan to the Department for review and approval prior to the construction of each cell.

B. Improvement Allowance System (Time of Travel)

The Department’s rule at 06-096 C.M.R. ch. 401, § 2(D)(2) allows for the use of improvement allowance offsets when calculating existing ground water time of travel to achieve the minimum 6 year time of travel to sensitive receptors.

The applicant incorporated improvement allowance offsets in the time of travel demonstration. Finding 25(E) of this license includes additional time of travel information.

The Board finds that the applicant utilized the allowance offsets appropriately as permitted by the Rules for the following two design improvements: a two year offset for the addition and monitoring of a leak detection system and geomembrane secondary liner for the areas of the proposed expansion where the design is applied; and a three year offset for the addition of a composite liner system (secondary liner augmented by a GCL) and leak detection system for the

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areas where the bottom of the secondary liner system and the bedrock surface is generally less than 10 feet.

C. Base Preparation Below Liner Systems

The base preparation below the liner system proposed by the applicant includes grading native till subgrades, filling with native till material (maximum 12-inch lift), placement of an underdrain system (12 inches of sand and 4-inch collection pipes) where the proposed grades are below the phreatic surface, and placement of 12 inches of compacted clay soils (maximum hydraulic conductivity of 1×10^{-7} cm/sec).

Based upon the information provided by the applicant, the Board finds that the base preparation below the liner system proposed by the applicant was designed in accordance with 06-096 C.M.R. ch. 401, § 2(D)(3). The proposed grading plan will result in positive drainage to the perimeter of the landfill for the underdrain, leak detection, and leachate collection systems. The materials and placement will meet the performance criteria in the Rules, including gradation, moisture content, density, and hydraulic conductivity.

D. Leachate Conveyance System and Storage Structure Standards

The applicant submitted leachate collection and conveyance system designs for the proposed expansion to handle the predicted leachate, leak detection, and landfill gas condensate flows. The leachate management system components include leachate collection, leak detection, landfill gas condensate collection, leachate transport from the landfill to on-site storage, and the on-site leachate storage tank. The leachate, leak detection, and gas condensate systems include pumping systems and force mains to pump flows from each collection point to the tank. The design of the piping system for collection and conveyance accounts for the stresses due to dynamic and static loading conditions and climate effects anticipated over the life of the landfill. System designs also address filter criteria such as sizing of piping perforations, soil gradation, and component interfaces, so that clogging of the systems will be minimized. The systems were designed for use during operations, closure, and post-closure. All piping components are designed with access for inspection and cleaning.

(1) Leachate Collection System

The applicant designed the leachate collection system to allow all leachate to drain to a collection sump at the low point of the individual landfill cells. Components of the leachate collection system include 6-inch and 8-

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inch diameter HDPE collection piping, 12 inches of sand (average hydraulic conductivity greater than 1×10^{-2} cm/sec and minimum hydraulic conductivity of 5×10^{-3} cm/sec), filter stone and drainage stone around the piping, and a drainage geocomposite.

The applicant used the U.S. Environmental Protection Agency (EPA)'s Hydrogeologic Evaluation for Landfill Performance (HELP) model to estimate leachate generation rates for the proposed expansion. The leachate depth (head) over the primary liner system will be limited to 12 inches, except in leachate sumps. The leachate levels within the landfill cells will be monitored using pressure transducers located at the bottom of each cell.

The application shows that a five-foot layer of select waste will be placed directly over the drainage sand component of the leachate collection system for frost protection, to protect the liner from puncture by other wastes placed in the landfill, and to serve as a filter medium.

In his testimony, intervenor Edward Spencer questioned whether the horizontal pipes in the leachate collection system may collapse. Michael Booth, expert witness for the applicant, testified that the leachate collection pipes are specifically designed for the expansion setting.

Based on the information in the application and hearing record, the Board finds the leachate collection system proposed by the applicant was designed in accordance with 06-096 C.M.R. ch. 401, § 2(D)(4). The Board further finds that the applicant performed static and seismic stability and settlement analyses to address potential movement of the piping in addition to including piping specifications in the application.

(2) Leak Detection System

The application shows that a leak detection system for the proposed expansion will be located under the primary liner system and will consist of the following, from top to bottom: 12-inches of drainage sand, crushed stone, perforated 6-inch diameter HDPE pipe surrounded with drainage stone and a drainage geocomposite. The applicant designed the leak detection system to detect leachate from each cell's primary liner system within 30 days. The fluids collected in the leak detection system will drain by gravity to individual collection sumps located at the low point of each cell and will be pumped to the leachate collection system and from

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there pumped into the leachate transport system. Each pump will include a flow meter and sampling ports.

The Board finds the leak detection system proposed by the applicant was designed in accordance with 06-096 C.M.R. ch. 401, § 2(D)(4).

(3) Landfill Gas Condensate System

The application shows that the LFG condensate collection system for the proposed expansion consists of U-shaped condensate traps at low points in the gas conveyance pipe to remove liquid. Condensate collected in the traps will drain to a primary leachate collection system pipe. From there it will be conveyed to an existing landfill leachate header pipe and transported to the on-site leachate storage tank.

The Board finds that the applicant has appropriately addressed collection of LFG condensate as required by 06-096 C.M.R. ch. 401, § 2(D)(4).

(4) Leachate Transport

As stated in the application, leachate transport for the proposed expansion includes temporary and permanent internal cell pump stations that will deliver leachate to dual-walled force mains (6-inch by 10-inch diameter) located within the eastern and western perimeter berms. Temporary pump stations will be installed in each of Cells 11, 12, 14, and 15 and will be utilized during each cell's active period, to be discontinued when each cell becomes inactive and the subsequent lower grade cells are developed. The inactive cell's leachate piping will be connected to the next cell's piping system. The permanent pump stations will be located in Cells 13 and 16 at the lowest base grades and will be operated during active and post-closure periods. Both the temporary and permanent leachate pump stations will utilize a sump and pump design that avoids penetrations of the liner system. The pump stations were sized using the HydroCAD Model to account for storm events and storage volume. Sample ports will be included in all pump stations to allow for the sampling of leachate and each pump will have continuous recording flow meters.

The Board finds the applicant has appropriately addressed the transport of the leachate pursuant to 06-096 C.M.R. ch. 401, § 2(D)(4).

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(5) Leachate Storage

As stated in the application, calculations demonstrate that the existing 921,000 gallon above ground glass-lined leachate storage tank is capable of handling the maximum anticipated leachate during the life of the proposed expansion. The storage tank is surrounded by a secondary containment structure with an available volume of 110 percent of the tank. The storage tank was addressed during the issuance of Department license #S-020700-WD-N-A. From the storage tank, tanker trucks will remove the leachate and transport it to the MFGR, LLC wastewater treatment plant in Old Town for treatment and disposal as described in the Leachate Disposal Agreement between MFGR, LLC and NEWSME, effective April 27, 2016. The City of Brewer wastewater treatment plant is available as a back-up disposal facility as described in Industrial Wastewater Discharge Permit #37-2679-07, effective March 3, 2013.

The Board finds the applicant has appropriately addressed on-site leachate storage and off-site treatment and subsequent disposal in accordance with 06-096 C.M.R. ch. 401, § 2(D)(4).

E. Seismic Impact Zone

Information in the application shows that the proposed expansion is located in a seismic impact zone as identified by U.S.G.S. Seismic Hazard Maps. The facility's structures, including liner systems, leachate collection systems, and surface water control systems for the proposed expansion were designed to withstand the maximum horizontal acceleration identified by the Hazard Maps. Additional seismic discussion can be found in Finding 28(A) of this license.

Based upon information in the record, the Board finds that the proposed expansion has been designed to meet the seismic requirements of 06-096 C.M.R. ch. 401, § 2(D)(5).

F. Phased Operations

As set forth in the application, the proposed expansion was designed for phased construction, taking into account waste operations and cover placement, stormwater run-on and run-off, leachate management, protection of the liner system from freeze and thaw effects, and stability. Individual cell size was based on the design waste disposal rates, resulting in approximately 2 years of active waste placement in each cell. Final cover will be installed in a phased manner during construction seasons when new cells are not being developed.

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The Board finds that the submitted cell development plans for the 6 proposed cells meet the requirements of 06-096 C.M.R. ch. 401, § 2(D)(6).

27. ALTERNATIVE DESIGN PROCESS

Pursuant to 06-096 C.M.R. ch. 401, § 2(E), an applicant may propose alternatives to the minimum design standard and requirements of section 2(D) of the rule. An applicant is required to submit documentation to clearly and convincingly demonstrate technical equivalency of the proposed alternative.

A. Liner System Barrier Soil Lift Thickness

The landfill liner system requirements include a barrier soil layer placed in maximum lift thicknesses of 9 inches pursuant to 06-096 C.M.R. ch. 401, § 2(D)(1)(g)(iv). The applicant has proposed a barrier soil lift thickness of 12 inches, as has been utilized in the past during construction of Cells 7, 8, and 9 at the existing landfill. The test pad programs utilized during the construction of these cells demonstrated that the performance criteria required in the Rules (densities, moisture content, hydraulic conductivity, soil remolding, and lift bonding) were met utilizing the current available compaction techniques and equipment and project specific soils.

The Board finds that the applicant has submitted documentation referencing past practices that clearly and convincingly demonstrates technical equivalency of placing barrier soil in a 12-inch lift thickness compared to a 9-inch lift thickness, provided that a test pad program is undertaken as proposed in the application and described in Finding 28(L) of this license during construction of each cell of the proposed expansion to demonstrate that the required performance criteria will be met and the results submitted to the Department at least 7 days prior to full scale construction. If the applicant cannot demonstrate technical equivalency, the maximum barrier soil lift thickness will remain 9 inches.

B. Base Preparation Below Liner Systems Lift Thickness

The requirements for constructed base materials below liner systems include a base material maximum allowable compacted lift thickness of 9 inches pursuant to 06-096 C.M.R. ch. 401, § (2)(D)(3)(e). Similar to the liner system barrier soil request described in Finding 27(A) above, the applicant has proposed the placement of barrier soil in a 12-inch lift thickness compared to the required 9-inch lift thickness.

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Based on the same reasons noted above for the liner system barrier soil lift thickness, the Board finds that the applicant has submitted documentation during past practices that clearly and convincingly demonstrates technical equivalency of placing barrier soil in a 12-inch lift thickness compared to a 9-inch lift thickness for base material placement, provided that a test pad program is undertaken as proposed in the application and described in Finding 28(L) of this license during construction of each cell of the proposed expansion to demonstrate that the required performance criteria will be met and the results submitted to the Department at least 7 days prior to full scale construction. If the applicant cannot demonstrate technical equivalency, the maximum barrier soil lift thickness will remain 9 inches.

28. ENGINEERING REPORT

The Department’s rule at 06-096 C.M.R. ch. 401, § 2(F) requires the applicant to submit an engineering report detailing the basis for engineering design and the proposed construction procedures, utilizing site specific factors and analyzing potential modes and significance of engineered system failures. The application and subsequent information submitted by the applicant addressing Department review comments, included data, calculations, assumptions, and evaluations for the following aspects of the proposed expansion:

A. Stability Assessment

The application for the proposed expansion included a slope stability assessment which analyzed static and seismic loads during construction, operation, and post-closure periods. The stability evaluation included four cross-sections of the proposed expansion representing the steepest base liner slope angle, the steepest final sideslope angles, the greatest waste thickness, and the tallest and steepest exterior waste grades. The geotechnical properties were based on data collected from previous field and laboratory studies and construction projects. The data included density, internal and external friction properties, and cohesion/adhesion as applicable.

The applicant used two potentiometric surfaces in its assessment of landfill stability based on the following: maintenance of the leachate level within the base liner system and a conservative assumption that the potentiometric surface beneath the entire landfill is coincident with the bottom of the base liner system. A sensitivity analysis was completed to evaluate the potential impact of higher water levels. Seismic slope stability was evaluated, utilizing site specific Hazard Maps and the acceptable accelerations. As part of the seismic stability evaluation, the applicant also submitted a liquefaction and deformation analysis. In addition,

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a sensitivity analysis was performed on two of the cross-sections for horizontal deformation (strain) of the base liner system.

The site specific data and design parameters were used by the applicant as input to the slope stability computer analysis program SLOPE/W. The resultant calculated factors of safety exceeded the minimum acceptable values required by the Rules, demonstrating that in-place waste and foundation soils beneath and adjacent to the waste can support the proposed expansion loads. The results of the stability assessment and comparison to the applicable safety factor requirements are presented in Tables 9 and 10 (based on the application, Volume III, Table 3-9, page 3-21 and separated into two tables for presentation clarity).

**Table 9: Stability Assessment Result Summary
 Calculated Slope Stability Minimum Factors of Safety
 for Construction and Operations**

Cross-Section	Static Condition				Seismic Condition			
	Waste, Shallow surficial	Liner, Block	Foundation (circular)	Rule Minimum	Waste, Shallow surficial	Liner, Block	Foundation (circular)	Rule Minimum
A-A'	1.91	1.73	2.65	1.3	1.54	1.37	2.14	1.1
B-B'	2.43	2.01	2.93		1.88	1.50	2.26	
C-C'	1.90	1.75	2.17		1.53	1.39	1.75	
D-D'	1.92	1.82	2.61		1.55	1.45	2.07	

**Table 10: Stability Assessment Result Summary
 Calculated Slope Stability Minimum Factors of Safety
 for Post Closure**

Cross-Section	Static Condition				Seismic Condition			
	Waste, Shallow surficial	Liner, Block	Foundation (circular)	Rule Minimum	Waste, Shallow surficial	Liner, Block	Foundation (circular)	Rule Minimum
A-A'	1.81	1.72	2.65	1.5	1.11	1.00	1.62	1.0
B-B'	2.33	1.98	2.90		1.32	1.05	1.64	
C-C'	1.81	1.74	2.17		1.11	1.01	1.33	
D-D'	1.84	1.81	2.54		1.11	1.04	1.52	

As the proposed expansion development occurs, the applicant will perform individual slope and interface stability assessments as part of each cell design to

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confirm the construction and operational phase stability. Similar assessments for each cover system construction project will also be performed.

Based on the information provided in the application, the Board finds that the applicant has met the requirements in 06-096 C.M.R. ch. 401, § 2(F)(1) for static and seismic stability factors of safety, as demonstrated in a slope stability assessment for static and seismic loads during construction, operation, and post-closure periods.

B. Settlement Assessment

The applicant submitted a settlement assessment to predict total and differential settlements of the landfill liner systems, leachate management systems, and cover system components. The settlement assessment quantified the anticipated primary and secondary settlements of the landfill waste and foundation soils and evaluated the effect of the settlements on the base liner system, leachate collection, and cover system components.

The foundation soils below the proposed expansion are a dense to very dense glacial till. Settlement of the foundation soils is predicted to be between 0.0 to 0.3 feet. It was determined that neither the base liner nor leachate collection systems will be compromised by the predicted settlement, since the strains on the geosynthetics (i.e., geomembrane, GCL, drainage geocomposite) will be within acceptable limits, the base liner slopes are estimated to change by less than 0.1% from the design slopes, and the leachate collection piping would continue to maintain positive drainage.

The waste and cover settlement was projected based on the similar composition and behavior of waste existing at the facility. The calculated combined primary and secondary settlements would be between 0 to 8 feet at the end of the 30-year post-closure period. The applicant does not expect these settlements to compromise the cover system since the settlement is projected to occur in a uniform, gradual manner, the cover system's initial slope angles are sufficient to maintain positive drainage even with the predicted settlement, and tensile strains at 0.1% are well below the allowable strain for the textured, linear low density polyethylene (LLDPE) or HDPE geomembrane to be used as a component of the final cover system.

The Board finds that the applicant has met the settlement requirements in 06-096 C.M.R. ch. 401, § 2(F)(2), confirming future predicted settlement will not adversely affect the landfill liner system, leachate collection system, and cover system components.

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C. Stability and Settlement Monitoring Plan

The Stability and Settlement Monitoring Plan submitted in the Design Report prepared by SME (Volume III, Section 3.1.5, page 3-26) and the referenced geotechnical monitoring plan (Operations Manual, Volume IV, Appendix N of the application) proposed for the expansion include the installation and monitoring of pore-water pressure transducers at the base of each cell and geotechnical slope stability and settlement inspections of the facility. The pressure transducers will be connected to the pump station control panels and will measure leachate head on the liner system to confirm the leachate collection system design assumptions. The annual inspections will be performed by a qualified geotechnical engineer to observe slopes for cracks, sloughs, seeps, leachate breakouts, displacements, toe-heaving, areas of stressed vegetation; to observe any water ponding; and to compare recent waste placement topographic maps with the previous year's information.

As part of the annual geotechnical inspection, the applicant proposes to conduct an annual review of waste types, quantities, location of waste placement; evaluation of pore pressure data; and review of site aerial topographic surveys. If the design assumptions such as waste streams and pore pressures have changed, then a reassessment may be warranted. A summary of the geotechnical inspections and evaluations will be included in the facility's Annual Report.

The Board finds that the Stability and Settlement Monitoring Plan submitted by the applicant meets the requirements of 06-096 C.M.R. ch. 401, § 2(F)(3) and that the applicant must include the results of the geotechnical inspections and evaluations in a geotechnical report submitted in the Annual Report.

D. Water Balance

EPA's Hydrologic Evaluation of Landfill Performance (HELP) Model was used by the applicant to evaluate the rates and volumes of leachate, including consolidation water, to be generated by the landfill during operations, closure, and post-closure periods. The model results identified the most critical leachate generation conditions over the life of the proposed expansion and were used to design the leachate collection system. Three simulations were performed under conditions of open active waste filling assuming 10 feet of waste and no cover, an intermediate covered condition assuming 90 feet of waste and 18 inches of soil cover, and a final cover condition. The average daily leachate flows were estimated to be approximately 48,000 gallons per day from the entire facility during the operation of the proposed expansion, with an average daily flow during

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the peak monthly condition of approximately 57,500 gallons per day. The estimated yearly flows ranged from approximately 22.9 million gallons per year during the operation of Cell 12 to approximately 13.8 million gallons per year during the operation of Cell 15.

The Board finds that the applicant has met the requirements in 06-096 C.M.R. ch. 401, § 2(F)(4) for adequately designing the leachate collection system to convey the predicted leachate flow from the proposed expansion.

E. Leachate Management

The Rules require the applicant to select an appropriate leachate management method and require a leachate management plan. In accordance with 06-096 C.M.R. ch. 401, § 2(F)(5), leachate management options available to the applicant include “off-site transport to a licensed wastewater treatment facility for treatment and disposal.” The applicant has proposed to continue the method currently employed at the existing landfill; namely, leachate will be collected and conveyed through a series of pipes above the primary liner system, pumped to the on-site leachate storage tank and trucked to the MFGR, LLC (MFGR) wastewater treatment plant in Old Town (disposal agreement signed April 27, 2016). A contingency plan for leachate disposal limitations at contracted treatment facilities is required in 06-096 C.M.R. ch. 401, § 2(F)(5)(e)(iii), including a letter of intent or service contracts for such proposed contingencies. To meet this requirement, the applicant has provided a back-up agreement for leachate treatment, held with the City of Brewer wastewater treatment plant (disposal agreement effective March 3, 2013). Both MFGR and City of Brewer disposal agreements have a term of 5 years and both treatment facilities hold current wastewater licenses from the Department, as required by the Rules.

The design calculations and drawings for the leachate collection and transport system were submitted with the application and are further described in Finding 26(D) of this license. The leak detection system, located beneath the primary liner system, includes the capability to measure both flow and quality of liquid collected by the system. The leak detection system was based on a design leakage rate as defined in 06-096 C.M.R. ch. 400. The design leakage rate for the primary liner component of the system was calculated to be 0.26 gallons per acre per day, based on potential variables such as geomembrane imperfections, the head above the primary liner, the uniformity of contact between the geomembrane and underlying soil/GCL, and the hydraulic conductivity of the material in contact with the primary liner. In conjunction with the siting and design specifics of the proposed landfill, the design leakage rate is required to be taken into account for assessing hypothetical failures. The leak detection system was designed to detect

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leaks from each cell's primary liner system within 30 days, and have sufficient hydraulic capacity to transmit the flow associated with the Action Leakage Rate (ALR) for the proposed expansion. The applicant proposed to determine leachate leakage by comparing the measured specific conductance to values calculated using the selected ALR, leachate specific conductance, and baseline measurements. The monitoring methodology was included in the Liner Action Plan (LAP), submitted as part of the proposed expansion application in the Operations Manual.

During review of the application, Department staff commented on the proposed LAP and recommended an initial two-tiered ALR program based on 20 and 100 gallons per acre per day, followed by consultation with Department staff to determine the appropriate response action (Department technical memorandum dated January 20, 2016 from S. Farrar, V. Eleftheriou, and K. Libbey). Specific conductance could then be utilized to determine further action, but would not be the primary ALR method initially. The applicant may request revisions to the LAP upon submittal of actual field data as the proposed expansion is developed for the Department's approval through changes to the Operations Manual.

Contingency plans were built into the designs for conveyance and transport system failures as described in the application, including conservative design factors and assumptions; materials to be used; periodic maintenance, cleaning, and inspection; monitoring pressure transducers and pressure gauges; alarm systems; back-up pumps and generators; force main dual-containment piping; and easy access to cell pumps.

The volume of leachate generated will be measured through the use of flow meters at each pump station. Leachate and the leak detection system quality will be monitored in accordance with the facility's Environmental Monitoring Plan (EMP), as described in Finding 33 of this license. The leachate management system will be maintained, inspected, and cleaned periodically, as addressed in the facility's Operations Manual section on site maintenance and inspection.

As stated above, the applicant has proposed to transport leachate off-site to the MFGR wastewater treatment facility for treatment and subsequent disposal. Taking into account the proposed expansion, leachate hauling is expected to be approximately 48,000 gallons per day, with an estimated 57,500 gallons per day during peak months. This represents an increase from current hauling loads which average 30,000 gallons per day and 46,000 gallons per day during peak months. The quality of the leachate to be taken off-site and treated is expected to be consistent with the current leachate quality since there is no change in accepted waste types proposed. Leachate samples will be routinely collected from the on-

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site storage tank and the leachate and leak detection pump stations for characterization. Data on characteristics of the leachate will be sent to the wastewater treatment facility.

During the hearing, intervenor Edward Spencer questioned the adequacy of the MFGR wastewater treatment facility given closure of the pulp and papermaking operations at the former mill site. Mr. Spencer’s witness, Dr. Steve Coghlan, expressed concerns regarding the potential for the discharge of pollutants including metals from the wastewater treatment plant to adversely impact the Penobscot River.

The Board finds that evidence in the record indicates that MFGR’s waste discharge license was most recently renewed and amended on October 12, 2016 to reflect the change in wastewater loading to the facility including leachate from JRL. The MFGR license specifically recognizes that “the wastewater characteristics are no longer representative of a kraft pulp mill operation as sources of wastewater are primarily storm water, landfill leachate from JRL, wastewater from the commercial LaBree’s Bakery, filter backwash from the Orono-Veazie Water District and septage dewatering filtrate, leachate and storm water runoff from a composting facility” (Department license #W-002226-5O-O-R). In addition to State standards, MFGR’s wastewater application was evaluated for compliance with National Effluent Guidelines set forth in 40 CFR, Part 445, *Landfills Point Source Category*, Subpart B, *RCRA Subtitle D Non-Hazardous Waste Landfill*.

MFGR’s wastewater treatment license places limits on the concentration of various pollutants in the discharge and requires that discharges from the MFGR wastewater treatment facility be monitored for a range of parameters including, but not limited to, flow, pH, biological oxygen demand, total suspended solids, mercury, whole effluent toxicity, and priority pollutants. The license states that the wastewater treatment facility modifies its treatment protocols as appropriate based on operating parameters such as influent flow, strength, and temperature to meet the effluent limits, including those for metals (metals can be present in the sludge and also within the discharged effluent at allowable levels). In issuing MFGR’s renewal license, the Commissioner concluded, based upon a knowledge of the influent and the operation of the MFGR facility, that all applicable licensing criteria for the proposed waste discharge had been met and that the “discharge, either by itself in combination with other discharges, will not lower the quality of any classified body of water below such classification” and that “the provisions of the State’s antidegradation policy, 38 M.R.S., § 464(4)(F), will be met.”

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The Board finds that the applicant has met the applicable requirements in 06-096 C.M.R. ch. 401, § 2(F)(5) for leachate management, based on the submitted leachate management design plans and utilization of a licensed wastewater treatment facility, along with a back-up licensed wastewater treatment facility as the contingency plan, for the treatment of the collected leachate; provided that the applicant maintains a valid leachate disposal contract(s) with licensed waste water treatment facility(ies) for the treatment and disposal of leachate from the proposed expansion.

F. Gas Management

The Landfill Gas Expansion Design Report dated June 2015, prepared by Sanborn Head & Associates, Inc. and submitted with the application, addresses LFG management for the proposed expansion. The existing active LFG extraction system will be expanded to accommodate gas generated from future waste placement. The LFG collection and control system consists of horizontal extraction trenches and vertical extraction wells. Once extracted, the LFG passes through a moisture separator, followed by treatment at a Thiopaq® sulfur removal system to reduce hydrogen sulfide, and is then combusted at the flare. The June 2015 report demonstrates that the existing H₂S removal equipment and flares as addressed in the landfill's existing air license renewal are adequate to handle the LFG from the proposed expansion. A landfill gas to energy facility may be proposed in the future as an alternative to flaring and to generate electricity.

The application states that the LFG collection and control system is utilized to control air emissions, including methane and odors from hydrogen sulfide, as described previously in Finding 11(A) of this license. The existing facility is required to meet the EPA's New Source Performance Standards, 40 CFR Part 60, Subpart WWW, *Standards of Performance for Municipal Solid Waste Landfills* (initially published in 61 FR 9919, March 12, 1996). The application included reference to Subpart WWW, but in 2016, 40 CFR Part 60, Subpart XXX, *Standards of Performance for Municipal Solid Waste Landfills that Commenced Construction, Reconstruction, or Modification after July 17, 2014* (published in 81 FR 59368, Aug. 29, 2016) was promulgated. The proposed expansion will be subject to 40 CFR Part 60, Subpart XXX upon commencing construction of Cell 11. Requirements in the federal regulation include operational standards for gas collection and control systems, as well as provisions for compliance and monitoring.

In the application, Sanborn Head & Associates estimated the LFG generation rate using the EPA's *Landfill Gas Emissions Model, Version 3.02* (LandGEM) for the years 2004 to 2050, with a peak collection rate of approximately 3,600 standard

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cubic feet per minute (scfm) in 2031, assuming LFG at 50% methane and taking into account the proposed expansion construction to commence in 2018. The application states that the LFG collection system will be installed in phases as the proposed expansion cells are built. Horizontal extraction trenches will be located in the waste mass, constructed 4-feet wide by 5-feet deep, and contain a 6-inch perforated HDPE pipe surrounded by coarse aggregate. The trenches will be installed approximately every 40 feet in vertical elevation and spaced approximately 100 feet apart. The permanent vertical extraction wells will be constructed of 8-inch diameter schedule 80 polyvinyl chloride pipe, slotted on the lower portion. They will be installed approximately 100 feet on center. Conveyance HDPE pipes will vary from 4 inches to 24 inches in diameter and will be sloped to provide condensate drainage and account for settlement.

LFG management at the facility also includes the installation of intermediate and final cover on non-active portions of the landfill to promote efficient gas collection.

Intervenor Edward Spencer questioned in testimony whether the horizontal pipes in the landfill gas collection system may collapse. Michael Booth, an expert witness for the applicant, testified that the horizontal gas collector trenches are only a temporary collection method and only need to function until the permanent vertical extraction wells are installed once the appropriate waste depth is achieved.

The Board finds that the applicant has met the requirements in 06-096 C.M.R. ch. 401, § 2(F)(6) for LFG collection and control based on the submitted LFG design report and cell development plans, and the proposed expansion will be subject to the requirements of 40 CFR Part 60, Subpart XXX when JRL commences construction on the proposed expansion. The Board further finds that the design and operation of the LFG collection and control system will minimize LFG related nuisance odors.

G. Cell Development Plan

A Cell Development Plan was submitted with the application which illustrates the sequence of development for the proposed expansion in a phased manner, allowing operation in an active landfill cell while construction occurs on the next cell. Phased intermediate and final cover placement are also proposed. Table 11 includes general cell development information, with a schedule for new cell construction approximately every two years. Table 11 was compiled from information in the application, Volume III, Section 3.5.1. Specific plan details with layout of cells, projected grades, location and timing of intermediate and

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final cover, location and construction of cell access, relevant aspects of leachate and stormwater management measures, relevant aspects of erosion and sedimentation control measures, and other pertinent facility-specific features are included in the facility’s Operations Manual and will be updated with the facility’s Annual Report.

Table 11: Proposed Expansion Cell Development Plan Summary*
 (cell construction listed from first to last, occurring every two years)

Cell Number	Size (acres)	Disposal Capacity (cubic yards)	Construction Items of Note
11	9.5	1,460,000	<ul style="list-style-type: none"> Expansion of existing Detention Pond 9; Year following Cell 11 construction, final cover placed over approximately 14.3 acres of existing landfill.
12	12.6	1,500,000	<ul style="list-style-type: none"> Construction of Detention Pond 10; Relocation of the administration building; Year following Cell 12 construction, final cover placed over approximately 18.6 acres of existing landfill.
13	11.8	1,580,000	<ul style="list-style-type: none"> Construction of Detention Pond 11; Relocation of the scale house; Year following Cell 13 construction, final cover placed over approximately 14.6 acres of existing landfill.
14	6.7	1,670,000	<ul style="list-style-type: none"> Year following Cell 14 construction, final cover placed over approximately 13.3 acres of existing landfill.
15	6.0	1,500,000	<ul style="list-style-type: none"> Year following Cell 15 construction, final cover placed over approximately 15.0 acres of existing landfill.
16	7.1	1,640,000	<ul style="list-style-type: none"> Construction of Detention Pond 12; Over a several year period following Cell 16 construction, final cover placed over remaining 45.5 acres.
Note: *Size and capacity information is approximate. Variations in construction scheduling may occur as development progresses.			

The Board finds that the applicant has met the Cell Development Plan Rule requirements in 06-096 C.M.R. ch. 401, § 2(F)(7), including cell development sequencing and phased placement of intermediate and final cover. The Board further finds that the applicant shall update the Cell Development Plan on an annual basis as the proposed expansion is developed.

H. Phased Final Cover System Proposal

The applicant proposed a phased final cover system for the expansion consisting of the following, from top to bottom: 12 inches of vegetative soil, 12 inches of

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drainage sand, a 40-mil LLDPE or HDPE textured geomembrane, and 24 inches of barrier soil. Prior to each phase of final cover system construction, an engineering report, construction contract bid documents, including drawings, technical specifications, and contract administrative documents and a quality assurance plan will be submitted to the Department for review and approval. The applicant anticipates that final cover system construction will occur about every other year.

The Board finds that the applicant has met the requirements in 06-096 C.M.R. ch. 401, § 2(F)(8) for a phased cover system; provided that an engineering report, construction contract bid documents, including drawings, technical specifications, and contract administrative documents and a quality assurance plan are submitted to the Department for review and approval at least four months prior to each proposed application of a phased final cover system.

I. Waste Storage, Staging, and Burn Areas Design

The applicant has not proposed additional waste storage and staging areas outside of the solid waste boundary, or a burn area for wood waste or CDD. Rather, the applicant proposes to use the existing permitted wood waste handling area adjacent to the maintenance facility for the proposed expansion. In addition, areas within the existing landfill may be used to temporary stockpile soft layer material to be placed in the bottom of newly constructed cells.

The Board finds that the applicant is not proposing additional waste storage and staging areas outside of the solid waste boundary, or a burn area for wood waste or CDD and will utilize the existing permitted wood waste handling area. Therefore, the provisions requiring submittal of a design and operating plan in accordance with 06-096 C.M.R. ch. 401, § 2(F)(9) do not apply to the proposed expansion; however, the facility shall continue to operate the existing storage and burn area in accordance with the applicable operating requirements.

J. Waste Characterization and Design Compatibility

The Department’s rule at 06-096 C.M.R. ch. 401, § 2(F)(10) requires that the wastes proposed to be accepted at the expansion must be characterized to enable the Department to determine that the wastes to be landfilled are non-hazardous and suitable for disposal in accordance with the proposed design, and to support the analytical parameters proposed in the Environmental Monitoring Plan (EMP).

The procedures for the characterization, testing and acceptance of waste at JRL are included in the facility’s Solid Waste Characterization Plan in the Operations

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Manual. The wastes proposed to be accepted in the expansion are similar to the wastes currently approved for JRL, with the exception of MSW (except for bypass) which will not be accepted in the proposed expansion. Generally, the waste types include wastewater treatment plant and miscellaneous sludge, FEPR, contaminated soils, MSW incinerator ash, biomass and fossil fuel ash, MSW bypass from incinerators, CDD, OBW, CDD process fines, and miscellaneous waste. Finding 37 of this license addresses the acceptable wastes in more detail.

The applicant states that the currently accepted waste types have been previously determined by the Department and JRL to be non-hazardous, compatible for commingling, and compatible with the engineered systems components.

The Board finds that the applicant has provided appropriate waste characterization procedures for the proposed expansion as required by 06-096 C.M.R. ch. 401, § 2(F)(10).

K. Surface Water Control Plans

The Department's Rules at 06-096 C.M.R. ch. 401, § 2(F)(11) require that an applicant submit two surface water control plans: an erosion and sedimentation control plan which meets the standards and submission requirements of 06-096 C.M.R. ch. 400, § 4(J) and a stormwater management plan which meets the standards and submission requirements of 06-096 C.M.R. ch. 400, § 4(M). The applicant's Erosion and Sedimentation Control Plan and the Stormwater Management Plan are described in Findings 14 and 17 of this license.

The Board finds that the applicant has submitted the two required surface water control plans required by 06-096 C.M.R. ch. 401, § 2(F)(11) and that these plans meet the requirements of 06-096 C.M.R. ch. 400, §§ 4(J) and 4(M) as set forth in Findings 14 and 17 of this license.

L. Test Pad Submission

The applicant has proposed to utilize test pads to demonstrate that the proposed barrier soil material and construction methods will result in barrier soil meeting the specified requirements. The test pad program will evaluate the construction techniques to determine conformance with the project technical specifications, similar to the program used during construction of the existing cells at JRL. For base grade, liner, and final cover system construction, a test pad covering an area of approximately 50,000 square feet will be constructed in the cell or cover area. During placement and compaction of the test pad, testing will be performed for moisture, density, and in-place hydraulic conductivity at the appropriate locations

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and frequencies. Once the performance criteria is met, up to four shallow test pits will be excavated in the test pad area to evaluate the remolding and bonding of the barrier soil. If the entities involved in construction and oversight, including the Department, concur with the results, the construction techniques utilized on the test pad will continue for the project and the frequency of in-place hydraulic conductivity testing may be reduced with approval from the Department. If the borrow source or material properties change during the course of construction, a new test pad will be required.

The Board finds that the applicant has submitted an appropriate test pad program as required by 06-096 C.M.R. ch. 401, § 2(F)(12). Any reduction in the frequency of the in-place hydraulic conductivity testing must be authorized by the Department.

M. Special Construction Requirements

In accordance with 06-096 C.M.R. ch. 401, § 2(F)(13), at facilities where ground water monitoring in bedrock is anticipated or is being conducted, the applicant must submit information on all measures to be taken to minimize the disturbance of soil material within five feet of the bedrock surface.

The applicant submitted information on measures to be taken to minimize the disturbance of soil material within 10 feet of the bedrock surface where the augmented secondary liner system will be installed. In these areas, the base grade will be cut one foot to accommodate the additional foot of compacted clay to be placed under the secondary liner system. To achieve minimal soil disturbance, the excavator will complete the cut prior to placement of imported soils.

In other areas of the site where the proposed base grades are below the phreatic surface, the applicant has proposed to install an underdrain system to assist with dewatering and to facilitate base liner system construction.

The Board finds that the applicant has submitted measures to minimize soil disturbance that meet the 5 feet to bedrock separation requirement in 06-096 C.M.R. ch. 401, § 2(F)(13).

29. CONTAMINANT TRANSPORT ANALYSIS

In accordance with 06-096 C.M.R. ch. 401, § 2(G), an applicant is required to provide a thorough analysis of the proposed site and the adjacent area that could be affected during operation and after closure of the landfill in the event of releases of contaminants to ground water beyond engineered systems to assess the potential for an unreasonable

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threat to sensitive receptors and to identify any operational or monitoring measures needed to ensure protection of sensitive receptors. As defined in the Rules, the potential for an unreasonable threat to a sensitive receptor is an arrival time of less than 6 years from the landfill or less than 3 years from leachate storage structures and pump stations of a concentration of a pollutant which would result in contamination of that sensitive receptor.

The contaminant transport analysis submitted by the applicant consisted of modeling potential leakage scenarios using information from site investigations and appropriate inputs and assumptions. An analytical three-dimensional ground water solute transport equation was used to simulate leachate concentrations from hypothetical leaks. Evaluated hypothetical scenarios included complete failure of the liner system, a leaking liner system, and a leaking leachate force main. The leachate constituents modeled were iron, nitrate, alkalinity, arsenic, chloride, and ammonia since these constituents have the highest concentrations in leachate relative to the ground water and surface water criteria. A sensitivity analysis was also performed.

Based upon information in the application, the Board finds that under the hypothetical failure scenarios, the results of the analysis showed that sensitive receptors in the vicinity of the proposed expansion will not be unreasonably threatened by leachate leaks; the proposed monitoring locations and monitoring frequency will be sufficient to detect changes in water quality from potential failures; and the currently proposed design will provide greater than six years travel time from the landfill's base liner to the sensitive receptors.

The Board further finds that the applicant provided an analysis of potential releases of contaminants to ground water that meets the requirement of the 06-096 C.M.R. ch. 401, § 2(G) and has demonstrated that the proposed expansion will not pose unreasonable threats to sensitive receptors.

30. PLAN VIEW AND PROFILE VIEW DRAWINGS

The Department's rules at 06-096 C.M.R. ch. 401, § 2(H) require that an applicant submit plan and profile drawings that provide information specified in the rule.

The Board finds that the applicant submitted the drawings required in 06-096 C.M.R. ch. 401, § 2(H), including the drawings for existing site conditions, site development, site base grading, underdrain piping, leak detection piping, leachate collection piping, the gas collection and control system, final site drainage, final site development, landfill cross-sections, and specific details of engineered systems.

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31. QUALITY ASSURANCE PLAN

The Department's rules at 06-096 C.M.R. ch. 401, § 2(I) requires that an applicant submit a Quality Assurance Plan to assure that design specifications and performance requirements for all facility components are met during construction. The Quality Assurance Plan submitted by the applicant for the proposed expansion includes the following, as related to construction: quality assurance measures to be implemented; the relationship between the Quality Assurance Plan, construction quality control, and the construction contract bid documents; responsible authorities and a resolution process; qualifications of quality assurance personnel and testing laboratories; inspections and tests to be performed for construction conformance; sampling details; recordkeeping and reporting requirements; and a list and description of all items requiring quality assurance certification.

The Board finds that the applicant has submitted a Quality Assurance Plan that addresses the items required by 06-096 C.M.R. ch. 401, § 2(I) to verify conformance with construction design specifications and performance requirements.

32. CONSTRUCTION CONTRACT BID DOCUMENTS

Pursuant to 06-096 C.M.R. ch. 401, § 2(J), an applicant is required to submit construction bid documents. The applicant may submit draft documents at the time the application is filed, and subsequently submit final detailed construction contract bid documents to the Department for review and approval on a schedule approved by the Department.

The application included construction bid documents for Cell 11 consisting of contract administrative documents, technical specifications, and drawings.

The Board finds that the applicant provided the construction contract bid documents for Cell 11 in accordance with the Rules. Prior to the construction of individual subsequent cells (Cells 12 through 16), detailed construction contract bid documents shall be submitted to the Department for review and approval four months prior to commencing construction activities at each cell.

33. WATER QUALITY REPORT AND PROPOSED MONITORING PROGRAM

In accordance with 06-096 C.M.R. ch. 401, § 2(K), an applicant is required to provide a water quality report addressing the site characterization requirements of 06-096 C.M.R. ch. 405, including a water quality monitoring program.

The application includes information on the water quality monitoring program which was established at the site in 1990 and currently includes periodic sampling of 22 monitoring

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wells, 3 ground water discharge locations, 6 surface water locations, 10 underdrain locations, and 1 leachate location. The specific sampling and monitoring procedures utilized are detailed in the facility’s EMP. The proposed expansion will be integrated into the existing water quality monitoring program, with updates and revisions as appropriate.

The proposed expansion will include the addition of 45 monitoring locations consisting of: background and downgradient piezometers and wells, additional surface water and pore water sampling points, and leak detection and underdrain system monitoring points. The locations will be phased in with the development of the proposed cells over a 10 to 12 year period.

Leachate monitoring for the proposed expansion will consist of sampling at the leachate tank; each leak detection sump discharge; and underdrain discharge. Ground water monitoring for the proposed expansion will consist of sampling of 23 new monitoring wells and 11 existing wells and piezometers. Several existing ground water monitoring wells, piezometers, and open-boreholes in the area of the proposed expansion footprint will be abandoned in accordance with the provisions of 06-096 C.M.R. ch. 405, § 5(H). Surface water monitoring will include sampling of two additional locations to characterize potential shallow ground water discharge and runoff impacts to nearby streams and wetland areas. Water quality sampling for the leachate tank, underdrain and leak detection systems, and monitoring wells will be performed three times a year. The leak detection sump discharges and underdrain discharge will be assessed monthly for flow and specific conductance (the Liner Action Plan, included in the Operations Manual, addresses steps to be taken if water quality changes occur).

During review of the application, Department staff commented that the ground water flow directions are anticipated to change with proposed expansion development and that the EMP should provide for an annual assessment of ground water flow directions (Department technical memorandum dated April 1, 2016 from R. Behr).

As set forth in the application, the water quality monitoring program will continue to be adjusted annually based on the operational status of the cells, development at the facility, the previous year’s water quality evaluation, and the results of the Department’s annual review of the water quality data.

The Board finds that the applicant submitted a water quality report which both characterized the existing site and proposed a water quality monitoring program as required by the Rules. Water quality monitoring shall be performed according to the EMP for the site. An Annual Water Quality Report evaluating JRL’s water quality and an assessment of ground water flow directions as the proposed expansion is developed shall

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be compiled each year and submitted with the facility's Annual Report. Proposed changes to the water quality monitoring program shall require Department approval.

34. OPERATIONS MANUAL

In accordance with 06-096 C.M.R. ch. 401, § 2(L), a copy of the facility's operations manual must be submitted as part of the application. The facility's Operations Manual was prepared in accordance with 06-096 C.M.R. ch. 401, § 4(A) and contains revisions to JRL's existing operations manual to address the proposed expansion. As required, the Operations Manual will be reviewed annually by the operator and will be updated as necessary. Since the July 2015 version of the Operations Manual submitted with the application, updates to portions of the Operations Manual have been submitted to the Department as a result of Department comments during the application review process.

The Board finds that the applicant has submitted an Operations Manual in accordance with the requirements of 06-096 C.M.R. ch. 401, § 2(L).

35. CONSTRUCTION

The proposed expansion is subject to the regulatory requirements of 06-096 C.M.R. ch. 401, § 3 during construction, as summarized below:

A. Preconstruction Conference

Unless waived by the Department, a pre-construction conference will be held between the applicant and/or the agents of the applicant and the Department, with at least a 7-day advance notice given to the Department.

B. Quality Assurance Plan

The Quality Assurance Plan (QAP) must be implemented at the beginning of construction. Construction Quality Assurance (CQA) must include continuous site inspections by the CQA personnel. Geosynthetics and barrier soil layers must be inspected, tested, and certified by qualified CQA personnel separate from the owner/operator and contractor.

C. Liner Installation

Before installation of any type of liner system, the applicant must evaluate the impacts of climatic conditions, proposed installation procedures, and the proposed installation schedule on liner system integrity. Results and recommendations from the test pad program must be submitted to the Department for review and

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approval. Liner systems may be installed only between April 15 and November 1, and only when the ambient temperature exceeds 32 degrees Fahrenheit, unless a specific cold weather installation plan is submitted to the Department for review and approval.

D. Changes from Approved Plans and Specifications

Prior to implementing any changes to the approved landfill design, the leachate management systems, or project specifications, the applicant must receive approval from the Department through an amendment or minor revision, or through a change order approval.

E. Weekly Inspection Reports

The CQA team responsible for construction inspection at the landfill shall keep daily and weekly construction inspection reports and provide a copy to the Department within one week after each construction week.

F. Photographic Documentation

In the final construction report, the applicant shall provide the Department with representative photographic documentation of each stage of construction.

G. Record Drawings

The applicant shall provide record drawings, signed and stamped by a State of Maine Licensed Professional Engineer, to the Department within 45 days after construction completion of each cell.

H. Final Construction Report and Commencement of Operations

The applicant shall submit a written request that the Department conduct an inspection of the completed construction for a finding of compliance with the facility license. The applicant may commence operations of the landfill upon Departmental approval or ten working days after submitting the written certification stating that the project was constructed in accordance with the approved plans and specifications, and after the Department conducts or waives the need for a final construction inspection. The Department may delay commencement of operations pending resolution of issues identified during its inspection and/or during review of the written certification.

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The applicant shall submit a final construction report to the Department within 45 days following construction completion of each cell which includes the items specified in the Rules. The written certification is required as part of the final construction report, but may be submitted prior to the final report in order to expedite approval for commencement of operations.

The Board finds that the applicant must follow the applicable regulatory requirements of the Rules during construction.

36. OPERATIONS

The proposed expansion is subject to the regulatory requirements of 06-096 C.M.R. ch. 401, § 4 during landfill operations, as summarized below.

A. Operations Manual

The Operations Manual must be reviewed annually by the operator and updated as necessary. These updates shall be distributed to the entities holding certified copies, including the Department and key operating and management personnel of the landfill. The landfill operator shall familiarize operating personnel with relevant sections of the Operations Manual.

B. Operator Training and Certification Program

At least two key personnel must be trained in the operation of, and regulatory requirements for, the landfill and be certified as required by the Rules.

C. Operating Requirements

The policy and procedures utilized by JRL to meet the operating requirements in the Rules are addressed in the facility's Operations Manual. These operating requirements include, but are not limited to, updating the Operations Manual on an annual basis, accepting only wastes allowed by the facility's licenses and characterizing these wastes appropriately, and providing for facility inspection and maintenance on a regular basis. Requirements for utilization of an approved cell development plan, environmental monitoring and the appropriate installation of daily, intermediate and final cover are also outlined in the Operations Manual.

D. Annual Report

Pursuant to 38 M.R.S. § 1310-N(6-D) and as stated in 06-096 C.M.R. ch. 401, §(4)(D), an Annual Report and fee shall be submitted to the Department in the

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timeframe stated in the Rules, currently by April 30 of each year. The Annual Report shall contain the applicable information required by the Rules. The operator shall keep copies of the Annual Reports submitted to the Department throughout the operational and the post-closure care period of the landfill.

The Board finds that the applicant has submitted an Operations Manual for the proposed expansion in accordance with the applicable requirements of the Rules, as also discussed in Finding 34 of this license.

37. ACCEPTABLE WASTE AND OBW LIMIT

A. Acceptable Waste

JRL is currently licensed to accept non-hazardous waste generated within the State, including up to 81,000 tons of MSW a year until March 31, 2018 (license #S-020700-WD-BG-Z issued June 19, 2014). The proposed expansion will be licensed to accept similar waste types; however, the proposed expansion will be prohibited from accepting municipal solid waste, except MSW bypass material. For the purpose of this license, MSW bypass is defined as any MSW that is destined for disposal or processing at a solid waste incinerator, but that cannot be disposed of or processed at that incinerator because of the incinerator’s malfunction, insufficient capacity, inability to process or burn, down-time, or any other comparable reason as approved by the Department.

Table 12 is a summary of the non-hazardous waste generated within the State currently allowed in the existing landfill (Volume IV of the application, Table 7-1, page 7-2) and also proposed for disposal in the expansion with the exception of MSW as referenced in the paragraph above.

Table 12: Summary of Acceptable Waste for Disposal in the Proposed Expansion

Air & Water Filtration Media	Leather Scrap Waste
Approved Landfill Utilization Wastes	Municipal Solid Waste (MSW)/MSW Bypass
Asbestos (non-friable)	Municipal Solid Waste Ash
Biomass Boiler Ash	Non-hazardous Chemical Related Products
Biomedical Incinerator Ash	Oversized Bulky Wastes
Burned Railroad Ties & Associated Ash	Pigeon Waste
Catch Basin Grit	Pulp & Paper Mill Sludge
Clean Wood Open Burn Ash	Sandblast Grit
Construction & Demolition Debris	Spoiled Foods
Dredged Spoils from Waterways	Sulfur Scrubbing Residue
Dried Paint Residue & Related Debris	Treated Biomedical Waste
Filter Press Cake & Collagen Scrapings	Urban Fill-type Soils

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Fossil Fuel Boiler Ash	Virgin Petroleum Contaminated Soil & Debris
Gasoline Contaminated Soil & Debris, Surface Spill	Waste Oil Contaminated Soil & Debris (Oily Debris)
Gasoline Contaminated Soil & Debris, (UST)	Wastewater Treatment Plant Sludge
Grit Screening Waste	Water Treatment Plant Sludge
Laundry Sludge	

In addition to the above waste streams, JRL may accept individually approved wastes after obtaining the proper special waste licenses from the Department.

In accordance with 38 M.R.S. § 1310-N(11), a solid waste disposal facility owned by the State may not be licensed to accept waste that is not waste generated within the State. As set forth in 38 M.R.S. § 1310-N(11) “waste generated within the State” is defined as including “residue and bypass generated by incineration, processing and recycling facilities within the State or waste, whether generated within the State or outside of the State, if it is used for daily cover, frost protection or stability or is generated within 30 miles of the solid waste disposal facility.”

During the hearing, intervenor Edward Spencer and a number of commenters at the public session voiced concerns that incinerators, and processing and recycling facilities are allowed to accept waste from out of state, and once the material is processed by these Maine facilities, the residue and bypass is then considered in-state waste that may be taken to JRL for operational use or disposal. Mr. Spencer and commenters raised concerns that waste with out-of-state point of origins would be allowed to be disposed in a state-owned landfill.

The Board finds that the definition of “waste generated within the State” applies to wastes to be disposed of in the proposed expansion. The Board has no authority to alter State statute.

The Board finds that all waste streams accepted at the facility must be characterized (i.e., tested) and accepted following the procedures in the facility’s Solid Waste Characterization Plan. For actual delivery onto JRL’s site, waste haulers must have the proper manifest documentation as required in the Operations Manual.

B. OBW Limit

Condition 3 of the PBD requires the applicant to comply with a Department-established OBW tonnage disposal limit, and any subsequent modification to this limit, for the proposed expansion. The PBD condition is stated in full in Finding 20 of this license.

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Condition 4 of the PBD requires periodic independent third party audits of CDD processing operations that are anticipated to transport more than 10,000 tons of OBW to the proposed expansion on an annual basis, focusing on the nature and volume of processing residues sent to JRL for disposal. The third party audits are to be conducted by a qualified consultant selected by the Department in consultation with the affected CDD processing facilities and the applicant, with the applicant providing reimbursement for the cost of the audits. The first audit(s) is(are) to occur prior to the disposal of OBW from these processing facilities in the proposed expansion and at subsequent 2-year intervals, unless or until the Department approves their discontinuation. The PBD condition is stated in full in Finding 20 of this license.

The term OBW is not defined in regulation or statute; therefore, for the purpose of this licensing action, OBW refers to the standard industry meaning that includes large items that may be difficult to process, such as mattresses, furniture, appliances, and certain other components of demolition debris.

During the hearing, the applicant and the intervenors presenting testimony were asked to propose an OBW limit. The City of Old Town did not propose a limit. Intervenor Edward Spencer testified that he would need to perform calculations utilizing data from other waste disposal facilities and consider the population to determine a limit. Toni King, Regional Engineer for Casella Waste Systems, Inc.'s Eastern Region, initially testified that no OBW limit was necessary since circumstances related to OBW management have changed since the PBD was issued. Later in the hearing, Ms. King testified that if a limit was to be set, she suggested an OBW limit of 118,000 tons, based on the rounded 2011 amount of 99,000 tons and a 3% Consumer Price Index (CPI) annualized to current time. With respect to the amount of 60,000 tons, as listed in Finding 19, Table 6 of this license, Ms. King testified that 60,000 tons was used in the application for design purposes and was not a proposed OBW quantity limit.

In order to establish an appropriate OBW tonnage limit for the proposed expansion, the Board took into consideration the intent of the PBD condition, the expected operating conditions of the proposed expansion, currently available recycling options and potential future conditions. Table 13 below presents the actual data of OBW disposed at JRL over the last 5 years (excerpted from information submitted in the August 1, 2016 letter from Donald Meagher, NEWSME; note added for clarification).

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Table 13: Historical Disposal of OBW at Juniper Ridge Landfill

Year	Generator	Tons	Generator	Tons	Generator	Tons	Generator	Tons	Total
2011	KTI Biofuels	97,584	MERC	1,129	PERC	174	-	-	98,887
2012	KTI Biofuels	62,945	MERC	1,700	PERC	44	-	-	64,689
2013	KTI Biofuels	29,873	MERC	126	PERC	24	ReEnergy	24,330	54,353
2014	-	-	-	-	-	-	ReEnergy	48,219	48,219
2015	-	-	-	-	-	-	ReEnergy	47,388	47,388
Note: From 2011 to 2012 operational efficiencies and recovery capability improvements occurred at the KTI Biofuels facility which reduced the volume of OBW sent to JRL.									

The median disposal amount of OBW for the five years was determined to be 54,353 tons. The median CPI from this 5 year timeframe was determined to be 1.5% (the five-year period CPIs were 3.0% (2011), 1.7% (2012), 1.5% (2013) 0.8% (2014), and 0.7% (2015)). During hearing cross-examination, Ms. King noted that 10,000 tons of OBW from the PERC facility will likely need to be disposed of annually at JRL due to an operations change at PERC (based on current 2016 data). Utilizing this information, a calculation consisting of the median plus the estimated PERC amount multiplied by the median CPI was performed with a result of approximately 65,000 tons OBW $[(54,353 + 10,000) \times 1.015] = 65,000$.

The Board finds that an OBW limit of 65,000 tons on an annual basis at the proposed expansion is consistent with the intent of Condition 3 of the PBD and is appropriate to meet the State's current OBW solid waste needs provided that the OBW limit is evaluated annually and adjusted as necessary based on current OBW recycling opportunities, economic factors, and other relevant factors at the time of the annual evaluation. If a limit adjustment is required, the OBW limit will be revised either through the provisions of 38 M.R.S. § 341-D(3) or a license application submitted by the applicant through the provisions of 38 M.R.S. § 344(9) and 06-096 C.M.R. chs. 2 and 400. The Board further finds that the Department will coordinate periodic independent third party audits of CDD processing operations that are anticipated to transport more than 10,000 tons of OBW to the proposed expansion on an annual basis consistent with Condition 4 of the PBD.

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NATURAL RESOURCES PROTECTION ACT

38. NATURAL RESOURCES PROTECTION ACT AND WATER QUALITY CERTIFICATION

In accordance with the Natural Resources Protection Act, 38 M.R.S. § 480-D, the Department shall grant a permit when it finds that the applicant has demonstrated that the proposed activity meets the applicable standards including provisions pertaining to the following: existing scenic, aesthetic, recreational and navigational uses; soil erosion; harm to habitats and fisheries; interference with natural water flow; water quality; flooding; sand or gravel supply; and outstanding river segments. NRPA standards applicable to the proposed expansion are discussed in this Finding section.

To identify and assess impacts to protected natural resources, the applicant submitted a natural resources assessment for the expansion prepared by Stantec Consulting Services, Inc. (Stantec).

The natural resources assessment indicates that the proposed expansion will impact approximately 2.04 acres of primarily forested freshwater wetlands through direct filling and 0.1 acres of the critical terrestrial habitat of one significant vernal pool (SVP) due to clearing for a relocated perimeter fence and an electric line. The impacts to the NRPA regulated SVP were authorized in a permit-by-rule that was accepted by the Department on July 29, 2015 and are not further considered in this licensing proceeding. With the exception of the one vernal pool addressed in the permit-by-rule, the wetlands that will be impacted by the expansion are not Wetlands of Special Significance as defined in 06-096 C.M.R. ch. 310, § 4.

Stantec evaluated the functions and values of the impacted wetlands and prepared a Wetlands Compensation Plan which was submitted in support of its NRPA permit application. The Wetlands Compensation Plan also addresses 12 vernal pools within and adjacent to the expansion area which are regulated by the U.S. Army Corps of Engineers but which are not regulated by the Department under NRPA.

A. Existing Scenic, Aesthetic, Recreational, or Navigational Uses

Pursuant to 38 M.R.S. § 480-D(1), the applicant must demonstrate that the activity will not unreasonably interfere with the existing scenic, aesthetic, recreational or navigational uses of the protected natural resources. The Department’s rule 06-096 C.M.R. ch. 315, guides the Department in its analysis of impacts to existing scenic and aesthetic uses resulting from activities in, on, over or adjacent to protected natural resources subject to NRPA.

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In support of its application and in accordance with 06-096 C.M.R. ch. 315, the applicant submitted a copy of the Department's Visual Evaluation Field Survey Checklist as Appendix A to the NRPA application along with a description of the property and the proposed project. The applicant also submitted several photographs of the proposed project site including an aerial photograph. The Board visited the project site on June 23, 2016 to view the physical features of the site, including portions of the wetlands that will be filled by the expansion, and the nature of the surrounding area.

An unreasonable adverse visual impact is defined in 06-096 C.M.R. ch. 315, § 4 as one that is “expected to unreasonably interfere with the general public’s visual enjoyment and appreciation of a scenic resource.” The freshwater wetland impacted by the expansion does not meet the definition of a scenic resource as set forth in 06-096 C.M.R. ch. 315 § 10 in that it is not one of the listed scenic resources nor is it a wetland that is “visited by the general public, in part, for the use, observation, enjoyment and appreciation of its natural and cultural visual qualities.”

Finding 10(C) of this license analyzes and makes findings on the proposed expansion’s compliance with the scenic character criteria under the solid waste Rules.

There is no evidence of any existing recreational or navigational uses of the impacted wetlands.

Based upon the information in the record including the applicant’s scenic assessment, photographs of the site, and the site visit, the Board finds that the proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational or navigational uses of the protected natural resource.

B. Soil Erosion

In accordance with 38 M.R.S. § 480-D(2), the applicant must demonstrate that the activity will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

As discussed in Finding 14 of this license, the applicant conducted an assessment of surficial soils at the site and submitted an Erosion and Sedimentation Control Plan, dated July 2015, prepared by SME. The applicant proposes to install silt fence and other temporary erosion control measures, detention ponds and berms for each landfill cell prior to the construction of the cells. Once a cell has been

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completed and filled with waste, the cell cover will be installed, and final stabilization measures will be taken. The applicant states that the design and implementation of all erosion control measures will follow the requirements of the solid waste Rules and will comply with Maine’s Erosion and Sedimentation Control Best Management Practices.

Based upon the information in the record including the construction plan with phased development of landfill cells and the Erosion and Sedimentation Control Plan, the Board finds that the proposed expansion will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment, as required by 38 M.R.S. § 480-D(2).

C. Habitat Considerations

Pursuant to 38 M.R.S. § 480-D(3), the applicant must demonstrate the activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine or marine fisheries or other aquatic life.

The expansion will impact 2.04 acres of primarily forested freshwater wetland due to filling. Impacts to these wetlands and associated compensation are discussed in Finding 38(F). Additionally, the proposed expansion is located approximately 800 feet from an unnamed intermittent brook, 950 feet from an unnamed tributary to Pushaw Stream, and approximately 2,350 feet from Judkins Brook. All of these streams are located in the watershed of the Penobscot River which contains Atlantic salmon, and Judkins Brook is located within federally mapped Critical Habitat for Atlantic salmon.

Intervenor Edward Spencer’s expert witness, Dr. Steve Coghlan, testified that the expansion could negatively impact Atlantic salmon, Atlantic sturgeon, and shortnose sturgeon due, in part, to the potential for stormwater and leachate to contaminate adjacent waterways and ultimately the Penobscot River.

The applicant responded that its natural resources assessment prepared by Stantec inventoried and assessed potential impacts to natural resources at the site, including rare, threatened and endangered species. Stantec concluded that the project would not have an unreasonable adverse impact on these resources due in part to the location of the expansion relative to the protected resources, the design of the expansion, and management of stormwater and leachate.

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Dr. Coghlan’s concerns and the applicant’s response are discussed further in Finding 9 of this license which is incorporated herein.

Additionally, Mr. Spencer commented that pumping groundwater to allow for construction will have an impact on the adjacent wetlands and Atlantic salmon habitat. Many of the wetlands surrounding the site are forested wetlands and their hydrology is not due to groundwater discharge, but rather results from surface water perched on the low permeability glacial till. Furthermore, the technical design of the underdrain system is that the underdrains (sand and piping) will collect and transport groundwater by gravity, not by active pumping, over portions of three cells where the bottom of the cell will be below the groundwater table. It is expected that the seepage into the underdrain will continue, but then will eventually diminish over time.

The Maine Department of Marine Resources (DMR) reviewed the proposed project and stated that it should not cause any significant adverse impact to Atlantic salmon or other marine resources.

The Maine Department of Inland Fisheries and Wildlife (MDIFW) reviewed the proposed project and stated that, with the exception of one SVP (impacts to which were authorized in the permit-by-rule), there are no other essential or significant wildlife habitats at the project site.

Based on the setback of the expansion from the streams, the evidence supplied by the applicant in its natural resources assessment and related expert testimony, and the review comments submitted by sister agencies DMR and MDIFW, the Board finds that the activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine or marine fisheries or other aquatic life pursuant to 38 M.R.S. § 480-D(3).

D. Water Quality Considerations

Pursuant to 38 M.R.S. § 480-D(4), the applicant must demonstrate that the activity will not unreasonably interfere with the natural flow of any surface or subsurface waters. Pursuant to 38 M.R.S. § 480-D(5) and Section 401 of the Federal Water Pollution Control Act, the applicant must demonstrate that the activity will not violate any state water quality law, including those governing the classification of the State’s waters.

As set forth above, the expansion will be located approximately 800 feet from an unnamed intermittent brook, 950 feet from an unnamed tributary to Pushaw

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Stream, and approximately 2,350 feet from Judkins Brook. Information in the record shows that the nearest mapped sand and gravel aquifer is located approximately one mile east of the landfill expansion area.

As discussed more fully in Findings 12, 14, and 15 of this license, the applicant submitted a Stormwater Management Plan and an Erosion and Sedimentation Control Plan, dated July 2015, prepared by SME to manage surface water runoff and minimize impacts to surface water quality from siltation. Additionally, the landfill expansion is designed in accordance with the Department’s solid waste Rules to minimize the potential for contamination of groundwater. Leachate from the expansion will be collected, stored on-site, and trucked off-site to the MFGR, LLC wastewater treatment plant in Old Town which is licensed to accept the leachate. The project was reviewed by the Department’s Division of Water Quality Management which stated that the treatment plant is currently operating in compliance with its license.

The Board finds that the proposed expansion meets state water quality law, including those governing the classification of the State’s waters based on the location of the expansion relative to the protected natural resources, the existing and proposed Stormwater Management System, the Erosion and Sedimentation Control Plan, and the collection and subsequent treatment of the leachate at a licensed wastewater treatment facility.

E. Flooding

In accordance with 38 M.R.S. § 480-D(6), the applicant must demonstrate that the activity will not unreasonably cause or increase the flooding of the alteration area or adjacent properties.

As discussed in Finding 17, the expansion will not be located in a 100-year flood plain or restrict the flow of a 100-year flood. The applicant also submitted a Stormwater Management Plan which included pre- and post-development stormwater analyses up to and including a 25-year, 24-hour storm event which demonstrate that post-development peak flows will not exceed pre-development peak flows.

Based upon the location of the expansion outside the floodplain and the Stormwater Management Plan, the Board finds that the expansion will not unreasonably cause or increase the flooding of the alteration area or adjacent properties.

F. Wetlands and Waterbodies Protection Rules

The applicant proposes to directly alter 2.04 acres of primarily forested freshwater wetlands to construct the proposed landfill expansion. Including this proposed project and the previous projects on this site, the total cumulative amount of wetland alteration at the site will be 3.35 acres.

The Department’s rule at 06-096 C.M.R. ch. 310 elaborates on the NRPA criteria for obtaining a permit. The rules guide the Department in its determination of whether a project’s impacts would be unreasonable. A proposed project would generally be found to be unreasonable if it would cause a loss in wetland area, functions and values and there is a practicable alternative to the project that would be less damaging to the environment. Each application for a NRPA permit that involves a freshwater wetland alteration must provide an analysis of alternatives.

(1) Alternatives Analysis

The applicant provided an alternatives analysis (Volume V, Attachment 2 of the Application) which summarized the need for the project and examined alternatives to the selected project site and project design, including: development of alternative sites, a “no build” alternative, waste reduction/alternative waste management strategies, and alternative designs on-site that would impact less wetland area. The applicant stated that alternative State-owned landfill sites, such as Dolby in Millinocket and Carpenter Ridge in T2R8 NWP (currently undeveloped), and the one commercial landfill (Crossroads in Norridgewock) were not viable options because JRL was the only site which had a Public Benefit Determination. The applicant stated that the “no build/do nothing” option was not viable because existing landfills could not accommodate the anticipated waste volumes and a need for 9.35 million cubic yards of additional landfill capacity had already been documented and approved in the PBD for JRL. The alternatives analysis also considered waste management options (discussed in Findings 18 and 19 of this license). Finally, the analysis examined the placement of the expansion on the site and the design of the expansions cells in relationship to the existing waste disposal cells at JRL.

Intervenor Edward Spencer questioned whether the applicant would be required to demonstrate that the proposed expansion could not occur at another location, such as the state-owned Dolby Landfill in Millinocket or by development of the state-owned site at Carpenter Ridge. In response, the Board Chair ruled in the Third Procedural Order that since the Commissioner had issued a PBD for a 9.35 million cubic yard expansion

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at JRL, consideration of alternative sites and the no-build alternative were not issues to be addressed in the current licensing proceeding. The Third Procedural Order states:

The Applicant has received a Public Benefit Determination for the proposed expansion at the Juniper Ridge site and that determination was upheld by the Board on appeal. As stated in the Second Procedural Order, statute prohibits the Board from revisiting the Public Benefit Determination in this licensing proceeding (38 M.R.S. § 1310-N(3-A)(B)). Therefore, the Board will not allow testimony or cross-examination by the parties regarding the need for the proposed 9.35 million cubic yard expansion. Additionally, testimony that the State should seek to develop other landfill sites is not relevant to the current licensing proceeding. However, to the extent the Public Benefit Determination imposes conditions on any license that may be issued in this proceeding, including limits on the types and volumes of waste, those limits are arguably relevant and may be addressed in testimony and cross-examination (Third Procedural Order).

The Board finds that the amount of capacity needed and the general location of disposal were settled with the Commissioner's issuance of the PBD, leaving only the question of whether or not the proposed project could be located on the subject parcel and designed to avoid and minimize wetland impacts.

(2) Avoidance of On-Site Impacts

As discussed above, the applicant submitted an alternatives analysis for the proposed project dated July 2015. The applicant considered two other on-site designs for the JRL expansion, a 70-acre expansion which would have resulted in 4.5 acres of wetland impact and a 60-acre expansion which would have resulted in 3.4 acres of wetland impact. The design submitted for approval and which is the subject of this license will expand the solid waste footprint at JRL by approximately 54 acres and will directly impact 2.04 acres of freshwater wetlands. In its application, the applicant stated that it has located all roads, stormwater ponds, administrative buildings, and other infrastructure to avoid the greatest amount of wetland impacts. According to the applicant, in order to meet

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the stated project purpose, some impacts to freshwater wetlands are unavoidable.

(3) Minimization of On-Site Impacts

In accordance with 06-096 C.M.R. ch. 310, § 5(B), the amount of freshwater wetland to be altered must be kept to the minimum amount necessary for meeting the overall purpose of the project. The applicant’s design of the expansion utilizes upland areas for a majority of the expansion. The applicant proposes to build cells vertically, thereby minimizing the horizontal footprint and associated wetland impacts. Finally, additional capacity is obtained by utilizing the “in-fill” areas between existing landfill cells and the proposed expansion cells. The Board finds that the applicant’s design minimizes impacts to wetlands to the greatest extent practicable.

(4) Compensation

In accordance with 06-096 C.M.R. ch. 310, § 5(C), compensation is the off-setting of a lost wetland function with a function of equal or greater value. The goal of compensation is to achieve no net loss of freshwater wetland functions and values. The amount of compensation required to replace lost functions depends on a number of factors including: the size of the alteration activity, the functions of the wetlands to be altered, the type of compensation to be used, and the characteristics of the compensation site. When wetland preservation is the type of compensation proposed, Department rules generally require a ratio of 8:1 (area preserved to area impacted). As stated previously, the applicant’s Wetlands Compensation Plan was designed to address both NRPA and Corps requirements.

The applicant proposes to preserve a 266-acre area on the same parcel as the landfill expansion to address NRPA compensation requirements as well as Corps compensation requirements. The proposed preservation area is adjacent to an existing 16-acre preservation area along Judkins Brook. The functions and values of the freshwater wetlands on the parcel were evaluated by the applicant using the U. S. Army Corps of Engineers Highway Methodology (September, 1999). The functions and values of the freshwater wetlands proposed to be impacted by the project include flood flow alteration, nutrient removal, sediment and toxicant removal, and wildlife habitat. There are no SVPs (other than the one which was the

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subject of the permit-by-rule) or other significant wildlife habitats in the wetlands to be impacted.

The preservation area contains 57 acres of freshwater wetland, 25 vernal pools, and upland habitat. Three of the vernal pools are SVPs and eight others are highly functioning vernal pools that met the biological criteria to be considered an SVP, but did not meet all of the necessary criteria. The functions and values of the preservation area include sediment and toxicant removal, flood flow alteration, nutrient removal, and wildlife habitat. Bryan Emerson, professional wetland scientist and witness for the applicant, testified that the applicant has proposed compensation in excess of that required by both NRPA and the Corps. NRPA requires approximately 16.3 acres of wetland compensation for the 2.04 acres of direct impact to wetlands. The Corps compensation requirements differ from those of the Department and require a greater ratio of acres preserved to acre impacted.

The applicant proposes to preserve the area through the use of a Declaration of Covenants and Restrictions (Declaration) and submitted proposed language that meets Department standards. The City of Old Town has agreed to be the Third Party under the Declaration, with third party rights of administration and enforcement. Prior to the start of construction, the applicant must record the Declaration in the Registry of Deeds and must submit a copy of the recorded deed to the Department's Bureau of Land Resources within 60 days of recording.

Based on the Public Benefit Determination, the applicant's alternatives analysis, the project's design, and the land preservation proposal, the Board finds that the applicant has avoided and minimized freshwater wetland impacts to the greatest extent practicable, and has provided compensation for wetland impacts in accordance with Department rules and in exceedance of NRPA requirements. The Board further finds that the proposed project represents the least environmentally damaging alternative that meets the overall purpose of the project provided that, prior to construction, the applicant records the Declaration of Covenants and Restrictions and submits a copy to the Department's Bureau of Land Resources as described above.

BASED on the above Findings of Fact, and subject to the Conditions listed below, the Board makes the following CONCLUSIONS pursuant to 38 M.R.S. §§ 1310 to 1319-Y, 38 M.R.S. § 2101, and the applicable Department Rules:

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1. The applicant has submitted evidence that the proposed expansion will not pollute any water of the State, contaminate the ambient air, constitute a hazard to health or welfare, or create a nuisance pursuant to 38 M.R.S. § 1310-N(1)(A) and 06-096 C.M.R. ch. 400, § 3(D).
2. The applicant has complied with the public and local participation and notification requirements pursuant to 38 M.R.S. §§ 1310-S(1) and 1310-N(12) and 06-096 C.M.R. ch. 2, §§ 10, 13, and 14.
3. The applicant has demonstrated sufficient title, right, or interest in all of the property which is proposed for development or use pursuant to 06-096 C.M.R. ch. 400, § 4(A).
4. The applicant has provided a sufficient demonstration of financial ability and assurance and technical ability for the permitting, design, construction, operation, closure, and post-closure care of the proposed landfill expansion pursuant to 38 M.R.S. §§ 1310-N (2-F)(A) and § 1310-Y, and 06-096 C.M.R. ch. 400, §§ 4(B)(1) and 4(C)(1), provided NEWSME submits the appropriate financial assurance package updates in accordance with the Rules on an annual basis.
5. The applicant has provided a civil/criminal disclosure statement demonstrating that the entities are not in violation of environmental or criminal law pursuant to 38 M.R.S. § 1310-N(7) and 06-096 C.M.R. ch. 400, § 4(C)(1)(b) and § 12.
6. The applicant has provided sufficient provisions for safe and uncongested traffic movement of all types into, out of, and within the proposed landfill expansion pursuant to 38 M.R.S. § 1310-N (2-F)(B) and 06-096 C.M.R. ch. 400, § 4(D)(1); provided the facility continues to encourage waste haulers to use I-95 as a primary hauling route.
7. The applicant has provided sufficient provisions for fitting the proposed landfill expansion harmoniously into the existing natural environment; has provided buffer strips of sufficient size and quality to adequately protect aquatic and wildlife habitat and the natural environment; and will not unreasonably adversely affect protected natural resources and rare, threatened and endangered plant and animal species pursuant to 38 M.R.S. § 1310-N(2-F)(C) and 06-096 C.M.R. ch. 400, § 4(E)(1).
8. The applicant has sufficiently demonstrated that the proposed expansion will not unreasonably adversely affect existing uses and scenic character, including bird hazard to aircraft, historical sites, established public viewing areas, excessive noise at the property boundary or at any protected location, or existing uses of neighboring property pursuant to 38 M.R.S. § 1310-N(2-F)(C) and 06-096 C.M.R. ch. 400, § 4(F)(1); provided equipment use is restricted in the operating hour of 6:00 am to 7:00 am to only equipment

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with a combined sound level of 77 dBA at 50 feet or less if within 60 feet of the western solid waste boundary (approximately 480 feet from the western property line).

9. The applicant has sufficiently demonstrated that the proposed expansion will not unreasonably adversely affect air quality pursuant to 38 M.R.S. § 1310-N(2-F)(C) and 06-096 C.M.R. ch. 400, § 4(G)(1).
10. The applicant has sufficiently demonstrated that the proposed expansion will not unreasonably adversely affect water quality or cause an unreasonable threat to the quality of a classified body of surface water pursuant to 38 M.R.S. §§ 1310-N(2-F)(C) and 1310-N(1-A) and 06-096 C.M.R. ch. 400, § 4(H)(1).
11. The applicant has sufficiently demonstrated that the proposed expansion will not unreasonably adversely affect other natural resources in the municipality or in neighboring municipalities pursuant to 38 M.R.S. § 1310-N(2-F)(C) and 06-096 C.M.R. ch. 400, § 4(I)(1).
12. The applicant has sufficiently demonstrated that the proposed expansion will not: overlie any significant sand and gravel aquifers; pose an unreasonable threat to the quality of a significant sand and gravel aquifer; pose an unreasonable threat to the quality of an underlying fractured bedrock aquifer, or pose an unreasonable risk that a discharge to a significant ground water aquifer will occur, pursuant to 38 M.R.S. §§ 1310-N(2-A) and 1310-N(2-F)(E), and 06-096 C.M.R. ch. 400, § 4(K)(1).
13. The applicant has made sufficient provisions for adequate utilities, including adequate water supplies and appropriate sanitary wastewater disposal, and sufficiently demonstrated that the facility will not have an unreasonable adverse effect on existing or proposed utilities in the municipality or area served by those utilities, pursuant to 38 M.R.S. § 1310-N(2-F)(F) and 06-096 C.M.R. ch. 400, § 4(L)(1).
14. The applicant has sufficiently demonstrated that the proposed expansion will be located on soils types suitable to the nature of the undertaking and the facility will not cause unreasonable erosion of soil or sediment pursuant to 38 M.R.S. §§ 1310-N(2-F)(D) and 1310-N(1-A)(A) and 06-096 C.M.R. ch. 400, § (4)(J)(1).
15. The applicant has sufficiently demonstrated that the proposed expansion will not unreasonably cause or increase flooding on-site or on adjacent properties nor create an unreasonable flood hazard to a structure pursuant to 38 M.R.S. §§ 1310-N(2-F)(G) and 06-096 C.M.R. ch. 400, § 4(M)(1).
16. The applicant has sufficiently demonstrated that the purpose and practices for the proposed expansion are consistent with the solid waste management hierarchy pursuant

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to 38 M.R.S. §§ 2101 and 1310-N(1)(D) and 06-096 C.M.R. ch. 400, § 4(N)(1), provided that a summary of continued efforts to meet the hierarchy and relevant supporting data are submitted annually in the Annual Report.

17. The applicant has sufficiently demonstrated that the proposed expansion will accept solid waste that is subject to recycling and source reduction programs, voluntary or otherwise, at least as effective as those in the statute and other provisions of State law; the volume of the waste and the risks related to its handling and disposal have been reduced to the maximum practical extent by recycling and source reduction prior to being landfilled or incinerated; and the applicant has shown consistency with the recycling provisions of the State plan pursuant to 38 M.R.S. § 1310-N(5-A) and 06-096 C.M.R. ch. 400, § 6(B).
18. The applicant is exempt from the liability insurance requirements of 06-096 C.M.R. ch. 400, § 10.
19. The applicant has clearly and convincingly demonstrated the technical equivalency of placing a barrier soil layer in a 12-inch lift thickness compared to the required 9-inch lift thickness, provided that a test pad program is undertaken during construction of each cell of the proposed expansion as described in the application and Finding 28(L) of this license to demonstrate that the required performance criteria have been met and the results are submitted to the Department at least 7 days prior to full-scale construction. If the applicant cannot demonstrate technical equivalency, the maximum barrier soil lift thickness will remain 9 inches.
20. The applicant has completed a site assessment report that adequately supports the design of the proposed expansion and will conduct water quality monitoring in accordance with the Rules.
21. The applicant has submitted a quality assurance plan and construction contract bid documents including drawings, technical specifications, and contract administrative documents for Cell 11 of the proposed expansion in accordance with 06-096 C.M.R. ch. 401, § 2 (I) and (J).
22. The applicant has proposed an expansion design meeting the requirements of the Rules, provided that, an engineering report, construction contract bid documents, including drawings, technical specifications, and contract administrative documents, a quality assurance plan and erosion and sedimentation control and stormwater management plans are submitted to the Department for review and approval at least four months prior to the commencement of construction activities within each subsequent cell (Cells 12 through 16) of the proposed expansion; and the applicant maintains a valid leachate disposal contract(s) with licensed waste water treatment facility(ies) for the treatment and disposal of leachate from the proposed expansion.

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23. The applicant has submitted a phased final cover system meeting the requirements of the Rules, provided that an engineering report, construction contract bid documents, including drawings, technical specifications, and contract administrative documents, and a quality assurance plan and erosion and sedimentation control and stormwater management plans are submitted to the Department for review and approval at least four months prior to the proposed application of a phased final cover system.
24. The applicant has submitted an Operations Manual that meets the operating requirements of 06-096 C.M.R. ch. 401, § 2(L), provided that the Operations Manual is reviewed annually and updated as necessary with the Annual Report.
25. The PBD partial approval issued by the Commissioner in 2012 requires that an annual limit be established in this license on the tonnage of OBW that may be disposed of in the proposed expansion, with future review and potential subsequent modification to the OBW limit, and established provisions for the independent third party audits of CDD processing operations that are anticipated to transport more than 10,000 tons of OBW to the proposed expansion for disposal on an annual basis.

BASED on the above Findings of Fact, and subject to the Conditions listed below, the Board makes the following CONCLUSIONS pursuant to 38 M.R.S. §§ 480-A through 480-JJ, Section 401 of the Federal Water Pollution Control Act, and the applicable Department rules:

26. The applicant has sufficiently demonstrated that the proposed expansion will not unreasonably interfere with existing scenic, aesthetic, recreational or navigational uses pursuant to 38 M.R.S. § 480-D(1).
27. The applicant has sufficiently demonstrated that the proposed expansion will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment pursuant to 38 M.R.S. § 480-D(2).
28. The applicant has sufficiently demonstrated that the proposed expansion will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine or marine fisheries or other aquatic life pursuant to 38 M.R.S. § 480-D(3), provided the applicant records the Declaration of Covenants and Restrictions as described in Finding 38(F) of this license above.
29. The applicant has sufficiently demonstrated that the proposed expansion will not unreasonably interfere with the natural flow of any surface or subsurface waters pursuant to 38 M.R.S. § 480-D(4).

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30. The applicant has sufficiently demonstrated that the proposed expansion will not violate any state water quality law, including those governing the classification of the State’s waters pursuant to 38 M.R.S. § 480-D(5) and Section 401 of the Federal Water Pollution Control Act.
31. The applicant has sufficiently demonstrated that the proposed expansion will not unreasonably cause or increase the flooding of the alteration area or adjacent properties pursuant to 38 M.R.S. § 480-D(6).

THEREFORE, the Board APPROVES the noted applications of the applicant, SUBJECT TO THE ATTACHED CONDITIONS, and all applicable standards and regulations:

1. The Standard Conditions of Approval for Solid Waste and NRPA, copies attached.
2. Severability. The invalidity or unenforceability of any provisions, or part thereof, of this license shall not affect the remainder of the provision or any other provision. This license shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.
3. Soil Erosion. The applicant shall take all necessary actions to ensure that its activities or those of its agents do not result in unnecessary or noticeable erosion of soils on site during construction and operation of the landfill expansion.
4. Financial Assurance. The applicant shall submit the appropriate financial assurance package updates in accordance with the Rules on an annual basis, including the most recent surety bond documentation.
5. New Cell Construction Submittals. At least 4 months prior to new cell construction and related infrastructure, the applicant must submit the detailed design package for the Department’s review and approval. The submittal shall contain the information required by the Rules, including, but not limited to an engineering report, construction contract bid documents consisting of technical specifications, drawings and contract administrative documents, a quality assurance plan and erosion and sedimentation control and stormwater management plans. If the Rules applicable to any aspect of the design and construction of the landfill expansion and its ancillary structures change during the development of the proposed expansion, the applicant shall address the new requirements in subsequent pertinent submittals.
6. Equipment Use - Noise Limitation. From the hour of 6:00 am to 7:00 am, the applicant shall limit equipment use within 60 feet of the western solid waste boundary

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(approximately 480 feet from the western property line) to equipment with a combined sound level of 77 dBA at 50 feet or less.

7. Hauler Policy. The applicant shall continue its policy of encouraging hauling trucks to utilize I-95 to reduce use of the Bennoch Road (Route 16).

8. Leachate Disposal Contracts. In accordance with the Rules, the applicant shall maintain valid leachate disposal contract(s) with licensed waste water treatment facility(ies) for the treatment and disposal of leachate from the proposed expansion. A contingency plan for leachate disposal limitations at contracted treatment facilities shall be in place, including a letter of intent or service contracts for such proposed contingencies. Subsequent updates to the leachate disposal documentation shall be submitted to the Department to demonstrate compliance with the leachate management requirements of the Rules.

9. Liner Action Plan (LAP). The LAP shall initially consist of two-tiered action leakage rates of 20 and 100 gallons per acre per day, requiring notification and follow-up interactions with the Department to determine the appropriate response action. Specific conductance shall be utilized as the secondary approach for determining additional response action. As the proposed expansion is developed and upon submittal of actual field data, the applicant may request revisions to the LAP through Operations Manual updates requiring Department approval through the Annual Report.

10. Acceptable Waste
 - A. In the landfill expansion, the applicant may accept the same non-hazardous waste generated within the State allowed in the existing landfill and under the previously issued waste stream licenses for the facility, with the exception of MSW.
 - B. The applicant is prohibited from accepting MSW in the landfill expansion. MSW bypass may be accepted in accordance with Condition 11 of this license.
 - C. OBW disposal at the proposed landfill expansion shall be limited pursuant to Condition 12 of this license.
 - D. Prior to accepting any waste for disposal not listed or referenced in the application and previously licensed, the applicant shall submit an application for the new waste to the Department for review and approval.
 - E. Allowable wastes shall be accepted at the landfill expansion in accordance with the facility's Solid Waste Characterization Plan and regulatory and statutory requirements.

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11. MSW Bypass

- A. The applicant shall not dispose of any unprocessed MSW from any source other than MSW bypass from MSW incinerators located in Maine.
- B. The applicant shall not accept MSW bypass from an incinerator without verifiable authorization from the owner/operator of an incinerator that a MSW bypass event has been called.
- C. The applicant shall notify the Department within 24 hours if a MSW bypass event continues from a particular incinerator for a period exceeding 2 days, and provide the reason for the MSW bypass event.

12. OBW

- A. The applicant shall be restricted to an OBW disposal limit of 65,000 tons on an annual basis in the proposed expansion.
- B. No OBW from the CDD processing operations subject to audit shall be disposed in the proposed expansion prior to the first independent third party audit of CDD processing operations conducted as set forth in Condition 12(D) of this license, unless otherwise approved by the Department.
- C. The OBW limit shall be evaluated annually by the Department and modified as needed based on current OBW recycling opportunities, economic factors, and other relevant factors. Modification of the OBW limit will be accomplished either through a license modification process pursuant to 38 M.R.S. § 341-D(3) or a license application submitted by the applicant pursuant to 38 M.R.S. § 344(9) and 06-096 C.M.R. chs. 2 and 400.
- D. NEWSME shall reimburse the Department for periodic independent third party audits of CDD processing operations that are anticipated to transport more than 10,000 tons of OBW to the expansion for disposal on an annual basis. The audits shall be conducted to verify the results of the demonstrations required under the provisions of *Processing Facilities*, 06-096 C.M.R. ch. 409, § 2(C), focused on the nature and volume of processing residues being sent to the JRL expansion for disposal. The independent third party audits shall be conducted by a qualified consultant selected by the Department in consultation with the affected CDD processing facilities and NEWSME. The first such audit(s) shall occur prior to the disposal of OBW from these processing facilities to the proposed expansion,

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unless otherwise approved by the Department. Audits will be conducted at 2-year intervals, unless or until the Department approves their discontinuation.

13. Monthly Activity Reports. Monthly activity reports shall be provided to the Department and include the quantities of the various waste types, and their sources, delivered to the proposed expansion.

14. Annual Reports

In addition to the specific requirements set forth in the Rules, the applicant shall include the following in the facility's annual reports submitted to the Department:

A. The amount of unprocessed MSW bypass received at the proposed expansion from each of the approved sources.

B. A summary of the steps taken by the facility in the reporting year to continue to meet the hierarchy, including relevant metrics to evaluate effectiveness (i.e., tons of material diverted from landfill disposal by Casella companies; tons of materials reused, reduced, recycled at the landfill); a description of ongoing efforts to increase the effectiveness of these programs/efforts; and any additional pertinent hierarchy-related information.

C. A geotechnical report, including a summary of the geotechnical inspections; the annual review of waste types, quantities, and location of waste placement; the evaluation of pore pressure data; and the review of site aerial topographic surveys.

15. EMP - Ground Water Quality and Flow. The applicant shall provide for an annual assessment of ground water quality and flow directions as the proposed expansion is developed through updates to the EMP which shall occur on an ongoing basis and in accordance with Department recommendations.

16. Construction Requirements. The applicant shall meet the construction requirements of 06-096 C.M.R. ch. 401, § 3 for the proposed expansion, including, but not limited to: implementing the Quality Assurance Plan; meeting liner installation requirements; receiving approval from the Department for changes to the approved plans and specifications; and documenting and reporting appropriately, including submittal of a final construction report. At least 7 days prior to full scale barrier soil construction, the applicant shall submit the results of a test pad to demonstrate the technical equivalency of placing barrier soil in a 12-inch lift thickness compared to a 9-inch lift thickness. If the applicant cannot demonstrate technical equivalency, the maximum barrier soil lift thickness shall remain 9 inches.

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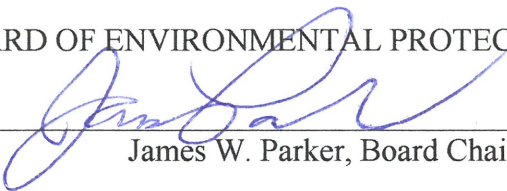
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17. Operating Requirements. The applicant shall meet the operating requirements of 06-096 C.M.R. ch. 401, § 4 for the landfill expansion, including, but not limited to: reviewing and updating the Operations Manual as applicable; training and certifying key personnel; operating the facility per the Rule requirements; and submitting an Annual Report and associated fee.
18. Federal Requirements - LFG Collection and Control System. The applicant shall meet the applicable requirements of 40 CFR Part 60, Subpart XXX for the LFG collection and control system for air emissions minimization and odor control.
19. Phased Final Cover. The applicant shall submit the engineering report, construction contract bid documents, consisting of technical specifications, drawings, and contract administrative documents, a quality assurance plan and erosion and sedimentation control and stormwater management plans for the placement of phased final cover to the Department for its review and approval at least 4 months prior to each proposed application of final cover.
20. Declaration of Covenants and Restrictions. Prior to the start of construction, the applicant shall record the Declaration of Covenants and Restrictions for the preservation area in the Registry of Deeds and shall submit a copy of the recorded deed to the Department's Bureau of Land Resources within 60 days of recording.
21. The Findings of Fact, Conclusions and Conditions remain as approved in Department license #L-19015-31-A-M dated August 24, 1995, and subsequent Licenses to date.

DONE AND DATED AT AUGUSTA, MAINE THIS 1st DAY OF June, 2017.

BOARD OF ENVIRONMENTAL PROTECTION

BY: 
James W. Parker, Board Chair and Presiding Officer

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

Date of initial receipt of application: July 21, 2015

Date of application acceptance: August 7, 2016 (solid waste); July 31, 2016 (NRPA)

Date filed with the Board of Environmental Protection:

XKT79512 and LC/L19015DN/ATS#79502



STANDARD CONDITIONS TO ALL SOLID WASTE LANDFILL LICENSES

STRICT CONFORMANCE WITH THE STANDARD AND SPECIAL CONDITIONS OF THIS APPROVAL IS NECESSARY FOR THE PROJECT TO MEET THE STATUTORY CRITERIA FOR APPROVAL. VIOLATIONS OF THE CONDITIONS UNDER WHICH A LICENSE IS ISSUED SHALL CONSTITUTE A VIOLATION OF THAT LICENSE AGAINST WHICH ENFORCEMENT ACTION MAY BE TAKEN, INCLUDING REVOCATION.

- 1. Approval of Variations from Plans.** The granting of this approval is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted and affirmed by the licensee. Any consequential variation from these plans, proposals, and supporting documents is subject to review and approval prior to implementation.
- 2. Compliance with All Applicable Laws.** The licensee shall secure and comply with all applicable federal, state, and local licenses, permits, authorizations, conditions, agreements, and orders prior to or during construction and operation, as appropriate.
- 3. Compliance with All Terms and Conditions of Approval.** The licensee shall submit all reports and information requested by the Department demonstrating that the licensee has complied or will comply with all terms and conditions of this approval. All preconstruction terms and conditions must be met before construction begins.
- 4. Transfer of License.** The licensee may not transfer the solid waste facility license or any portion thereof without approval of the Department.
- 5. Initiation of Construction or Development Within Two Years.** If the construction or operation of the solid waste facility is not begun within two years of issuance or within 2 years after any administrative and judicial appeals have been resolved, the license lapses and the licensee must reapply to the Department for a new license unless otherwise approved by the Department.
- 6. Approval Included in Contract Bids.** A copy of the approval must be included in or attached to all contract bid specifications for the solid waste facility.
- 7. Approval Shown to Contractors.** Contractors must be shown the license by the licensee before commencing work on the solid waste facility.
- 8. Background of key individuals.** A licensee may not knowingly hire as an officer, director or key solid waste facility employee, or knowingly acquire an equity interest or debt interest in, any person convicted of a felony or found to have violated a State or federal environmental law or rule without first obtaining the approval of the Department.



STANDARD CONDITIONS TO ALL SOLID WASTE LANDFILL LICENSES

9. **Fees.** The licensee must comply with annual license and annual reporting fee requirements of the Department's rules.
10. **Recycling and Source Reduction Determination for Solid Waste Disposal Facilities.** This condition does not apply to the expansion of a commercial solid waste disposal facility that accepts only special waste for landfilling.

The solid waste disposal facility shall only accept solid waste that is subject to recycling and source reduction programs, voluntary or otherwise, at least as effective as those imposed by 38 M.R.S. Ch. 13.

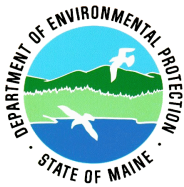
11. **Deed Requirements for Solid Waste Disposal Facilities.** Whenever any lot of land on which an active, inactive, or closed solid waste disposal facility is located is being transferred by deed, the following must be expressly stated in the deed:
- A. The type of facility located on the lot and the dates of its establishment and closure.
 - B. A description of the location and the composition, extent, and depth of the waste deposited.
 - C. The disposal location coordinates of asbestos wastes must be identified.



Natural Resources Protection Act (NRPA) Standard Conditions

THE FOLLOWING STANDARD CONDITIONS SHALL APPLY TO ALL PERMITS GRANTED UNDER THE NATURAL RESOURCES PROTECTION ACT, 38 M.R.S.A. § 480-A ET SEQ., UNLESS OTHERWISE SPECIFICALLY STATED IN THE PERMIT.

- A. Approval of Variations From Plans. The granting of this permit is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted and affirmed to by the applicant. Any variation from these plans, proposals, and supporting documents is subject to review and approval prior to implementation.
- B. Compliance With All Applicable Laws. The applicant shall secure and comply with all applicable federal, state, and local licenses, permits, authorizations, conditions, agreements, and orders prior to or during construction and operation, as appropriate.
- C. Erosion Control. The applicant shall take all necessary measures to ensure that his activities or those of his agents do not result in measurable erosion of soils on the site during the construction and operation of the project covered by this Approval.
- D. Compliance With Conditions. Should the project be found, at any time, not to be in compliance with any of the Conditions of this Approval, or should the applicant construct or operate this development in any way other the specified in the Application or Supporting Documents, as modified by the Conditions of this Approval, then the terms of this Approval shall be considered to have been violated.
- E. Time frame for approvals. If construction or operation of the activity is not begun within four years, this permit shall lapse and the applicant shall reapply to the Board for a new permit. The applicant may not begin construction or operation of the activity until a new permit is granted. Reapplications for permits may include information submitted in the initial application by reference. This approval, if construction is begun within the four-year time frame, is valid for seven years. If construction is not completed within the seven-year time frame, the applicant must reapply for, and receive, approval prior to continuing construction.
- F. No Construction Equipment Below High Water. No construction equipment used in the undertaking of an approved activity is allowed below the mean high water line unless otherwise specified by this permit.
- G. Permit Included In Contract Bids. A copy of this permit must be included in or attached to all contract bid specifications for the approved activity.
- H. Permit Shown To Contractor. Work done by a contractor pursuant to this permit shall not begin before the contractor has been shown by the applicant a copy of this permit.



DEP INFORMATION SHEET

Appealing a Department Licensing Decision

Dated: March 2012

Contact: (207) 287-2811

SUMMARY

There are two methods available to an aggrieved person seeking to appeal a licensing decision made by the Department of Environmental Protection's ("DEP") Commissioner: (1) in an administrative process before the Board of Environmental Protection ("Board"); or (2) in a judicial process before Maine's Superior Court. An aggrieved person seeking review of a licensing decision over which the Board had original jurisdiction may seek judicial review in Maine's Superior Court.

A judicial appeal of final action by the Commissioner or the Board regarding an application for an expedited wind energy development (35-A M.R.S.A. § 3451(4)) or a general permit for an offshore wind energy demonstration project (38 M.R.S.A. § 480-HH(1)) or a general permit for a tidal energy demonstration project (38 M.R.S.A. § 636-A) must be taken to the Supreme Judicial Court sitting as the Law Court.

This INFORMATION SHEET, in conjunction with a review of the statutory and regulatory provisions referred to herein, can help a person to understand his or her rights and obligations in filing an administrative or judicial appeal.

I. ADMINISTRATIVE APPEALS TO THE BOARD

LEGAL REFERENCES

The laws concerning the DEP's *Organization and Powers*, 38 M.R.S.A. §§ 341-D(4) & 346, the *Maine Administrative Procedure Act*, 5 M.R.S.A. § 11001, and the DEP's *Rules Concerning the Processing of Applications and Other Administrative Matters* ("Chapter 2"), 06-096 CMR 2 (April 1, 2003).

HOW LONG YOU HAVE TO SUBMIT AN APPEAL TO THE BOARD

The Board must receive a written appeal within 30 days of the date on which the Commissioner's decision was filed with the Board. Appeals filed after 30 calendar days of the date on which the Commissioner's decision was filed with the Board will be rejected.

HOW TO SUBMIT AN APPEAL TO THE BOARD

Signed original appeal documents must be sent to: Chair, Board of Environmental Protection, c/o Department of Environmental Protection, 17 State House Station, Augusta, ME 04333-0017; faxes are acceptable for purposes of meeting the deadline when followed by the Board's receipt of mailed original documents within five (5) working days. Receipt on a particular day must be by 5:00 PM at DEP's offices in Augusta; materials received after 5:00 PM are not considered received until the following day. The person appealing a licensing decision must also send the DEP's Commissioner a copy of the appeal documents and if the person appealing is not the applicant in the license proceeding at issue the applicant must also be sent a copy of the appeal documents. All of the information listed in the next section must be submitted at the time the appeal is filed. Only the extraordinary circumstances described at the end of that section will justify evidence not in the DEP's record at the time of decision being added to the record for consideration by the Board as part of an appeal.

WHAT YOUR APPEAL PAPERWORK MUST CONTAIN

Appeal materials must contain the following information at the time submitted:

1. *Aggrieved Status.* The appeal must explain how the person filing the appeal has standing to maintain an appeal. This requires an explanation of how the person filing the appeal may suffer a particularized injury as a result of the Commissioner's decision.
2. *The findings, conclusions or conditions objected to or believed to be in error.* Specific references and facts regarding the appellant's issues with the decision must be provided in the notice of appeal.
3. *The basis of the objections or challenge.* If possible, specific regulations, statutes or other facts should be referenced. This may include citing omissions of relevant requirements, and errors believed to have been made in interpretations, conclusions, and relevant requirements.
4. *The remedy sought.* This can range from reversal of the Commissioner's decision on the license or permit to changes in specific permit conditions.
5. *All the matters to be contested.* The Board will limit its consideration to those arguments specifically raised in the written notice of appeal.
6. *Request for hearing.* The Board will hear presentations on appeals at its regularly scheduled meetings, unless a public hearing on the appeal is requested and granted. A request for public hearing on an appeal must be filed as part of the notice of appeal.
7. *New or additional evidence to be offered.* The Board may allow new or additional evidence, referred to as supplemental evidence, to be considered by the Board in an appeal only when the evidence is relevant and material and that the person seeking to add information to the record can show due diligence in bringing the evidence to the DEP's attention at the earliest possible time in the licensing process or that the evidence itself is newly discovered and could not have been presented earlier in the process. Specific requirements for additional evidence are found in Chapter 2.

OTHER CONSIDERATIONS IN APPEALING A DECISION TO THE BOARD

1. *Be familiar with all relevant material in the DEP record.* A license application file is public information, subject to any applicable statutory exceptions, made easily accessible by DEP. Upon request, the DEP will make the material available during normal working hours, provide space to review the file, and provide opportunity for photocopying materials. There is a charge for copies or copying services.
2. *Be familiar with the regulations and laws under which the application was processed, and the procedural rules governing your appeal.* DEP staff will provide this information on request and answer questions regarding applicable requirements.
3. *The filing of an appeal does not operate as a stay to any decision.* If a license has been granted and it has been appealed the license normally remains in effect pending the processing of the appeal. A license holder may proceed with a project pending the outcome of an appeal but the license holder runs the risk of the decision being reversed or modified as a result of the appeal.

WHAT TO EXPECT ONCE YOU FILE A TIMELY APPEAL WITH THE BOARD

The Board will formally acknowledge receipt of an appeal, including the name of the DEP project manager assigned to the specific appeal. The notice of appeal, any materials accepted by the Board Chair as supplementary evidence, and any materials submitted in response to the appeal will be sent to Board members with a recommendation from DEP staff. Persons filing appeals and interested persons are notified in advance of the date set for Board consideration of an appeal or request for public hearing. With or without holding a public hearing, the Board may affirm, amend, or reverse a Commissioner decision or remand the matter to the Commissioner for further proceedings. The Board will notify the appellant, a license holder, and interested persons of its decision.

II. JUDICIAL APPEALS

Maine law generally allows aggrieved persons to appeal final Commissioner or Board licensing decisions to Maine's Superior Court, see 38 M.R.S.A. § 346(1); 06-096 CMR 2; 5 M.R.S.A. § 11001; & M.R. Civ. P 80C. A party's appeal must be filed with the Superior Court within 30 days of receipt of notice of the Board's or the Commissioner's decision. For any other person, an appeal must be filed within 40 days of the date the decision was rendered. Failure to file a timely appeal will result in the Board's or the Commissioner's decision becoming final.

An appeal to court of a license decision regarding an expedited wind energy development, a general permit for an offshore wind energy demonstration project, or a general permit for a tidal energy demonstration project may only be taken directly to the Maine Supreme Judicial Court. See 38 M.R.S.A. § 346(4).

Maine's Administrative Procedure Act, DEP statutes governing a particular matter, and the Maine Rules of Civil Procedure must be consulted for the substantive and procedural details applicable to judicial appeals.

ADDITIONAL INFORMATION

If you have questions or need additional information on the appeal process, for administrative appeals contact the Board's Executive Analyst at (207) 287-2452 or for judicial appeals contact the court clerk's office in which your appeal will be filed.

Note: The DEP provides this INFORMATION SHEET for general guidance only; it is not intended for use as a legal reference. Maine law governs an appellant's rights.

APPENDIX G

**JUNIPER RIDGE LANDFILL 2023 PRELIMINARY INFORMATION REPORT
DETERMINATION OF ENVIRONMENTAL FEASIBILITY**



JANET T. MILLS
GOVERNOR

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION



MELANIE LOYZIM
COMMISSIONER

November 6, 2023

Jeffrey Pelletier, Environmental Manager
NEWSME Landfill Operations, LLC
358 Emerson Mill Road
Hampden, ME 04444
(via e-mail)

Re: Juniper Ridge Landfill Expansion
Old Town, Maine
Determination of Environmental Feasibility

Dear Mr. Pelletier:

The Department has completed its review of the Preliminary Information Report (“PIR”) for a proposed expansion of the Juniper Ridge Landfill, prepared by Sevee & Maher Engineers, dated August 2023. The PIR was submitted by NEWSME Landfill Operations, LLC on behalf of the State of Maine, via the Bureau of General Services in the Department of Administrative and Financial Services.

The PIR provided the information required by the *Solid Waste Management Rules*, 06-096 C.M.R. ch. 401, §1(E) (last amended April 6, 2015). Based on our review of the information provided, the Department has determined that the proposed expansion is environmentally feasible and that the prohibitive siting criteria of 06-096 C.M.R. ch. 401, §1(C)(2) have been met. This determination of environmental feasibility does not constitute the Department’s approval of the expansion, the site, or any potential variance requests. This determination is the Department’s concurrence with the applicant that the site warrants further investigation to determine its suitability and to further define the facility design.

Sincerely,

KAREN KNUUTI
Division of Materials Management
Bureau of Remediation and Waste Management
Eastern Maine Regional Office

Copy (via e-mail): William Longfellow, DAFS, BGS
Rhonda Forrester, SME
Kathy Tarbuck, Sean Dougherty, MDEP
David Russell, City of Old Town

2023_11_06 JRL DEF ats91467

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826

BANGOR
106 HOGAN ROAD, SUITE 6
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769
(207) 764-0477 FAX: (207) 760-3143

APPENDIX H

JUNIPER RIDGE LANDFILL 2023 AERIAL SURVEY



APPENDIX I

MRC SOLID WASTE BOARD ORDER



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION



PAUL R. LEPAGE
GOVERNOR

PAUL MERCER
COMMISSIONER

July 14, 2016

Craig Stuart-Paul, CEO
Fiberight, LLC
1450 South Rolling Road
Baltimore, MD 21227

Greg Louder, Executive Director
Municipal Review Committee, Inc.
395 State Street
Ellsworth, ME 04605

RE: Solid Waste Processing Facility Application
Hampden, Maine, DEP #S-022458-WK-A-N

Dear Mr. Stuart-Paul and Mr. Louder:

Please find enclosed a signed copy of your Department of Environmental Protection solid waste license. Congratulations on reaching this important milestone! You will note that the license includes a description of your project, findings of fact that relate to the approval criteria the Department used in evaluating your project, conclusions reached, and conditions that are based on those findings, conclusions, and the particulars of your project. Please take several moments to read your license carefully, paying particular attention to the conditions of the approval. The Department reviews every application thoroughly and strives to formulate reasonable conditions of approval within the context of the Department's environmental laws. You will also find attached some materials that describe the Department's appeal procedures for your information.

If you have any questions about the license or thoughts on how the Department processed this application please get in touch with Lou Pizzuti directly. He can be reached at (207) 540-6467 or at Lou.S.Pizzuti@maine.gov. Again, congratulations on reaching this milestone in your project and we look forward to working with you as you continue to develop this project. We appreciate your cooperation in providing all the information necessary to reach this point.

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826

BANGOR
106 HOGAN ROAD, SUITE 6
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PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769
(207) 764-0477 FAX: (207) 760-3143

Letter to Mr. Stuart-Paul & Mr. Louder
July 14, 2016
Page 2 of 2

Sincerely,

A handwritten signature in cursive script that reads "David Burns".

David Burns, P.E.
Division of Technical Services
Bureau of Remediation & Waste Management

pc: Julie Churchill - Assistant Director, Office of Innovation & Assistance, MDEP
Denis St. Peter, P.E. – President, CES, Inc.
Victoria Eleftheriou, P.E. – Environmental Engineering Services Manager, MDEP
Lou Pizzuti – Project Manager, MDEP



DEPARTMENT ORDER

IN THE MATTER OF

MUNICIPAL REVIEW COMMITTEE, INC. AND	)	SOLID WASTE
FIBERIGHT, LLC	)	LICENSE
HAMPDEN, PENOBSCOT COUNTY, MAINE)	
SOLID WASTE PROCESSING FACILITY)	
#S-022458-WK-A-N)	
(APPROVAL WITH CONDITIONS)	)	NEW LICENSE

Pursuant to the provisions of the *Maine Hazardous Waste, Septage and Solid Waste Management Act*, 38 M.R.S. §§ 1301 to 1319-Y; the *Rule Concerning the Processing of Applications and Other Administrative Matters*, 06-096 C.M.R. ch. 2 (last amended October 19, 2015); and the *Solid Waste Management Rules: General Provisions*, 06-096 C.M.R. ch. 400 (last amended April 6, 2015); *Water Quality Monitoring, Leachate Monitoring, and Waste Characterization*, 06-096 C.M.R. ch. 405 (last amended April 12, 2015) and *Processing Facilities*, 06-096 C.M.R. ch. 409 (last amended July 27, 2014), the Department of Environmental Protection ("Department") has considered the application of the MUNICIPAL REVIEW COMMITTEE, INC. and FIBERIGHT, LLC, with its supportive data, agency review comments, staff summary, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. APPLICATION SUMMARY

- A. Application: The Municipal Review Committee, Inc. ("MRC") and Fiberight, LLC, ("Fiberight") have jointly applied to construct and operate a regional solid waste processing facility in Hampden, Maine.
- B. History:
- (1) The MRC is a non-profit organization comprised of 187 municipalities and inter-municipal entities in central, eastern and northern Maine that currently send their municipal solid waste ("MSW") to a waste-to-energy plant located in Orrington, Maine.
 - (2) The MRC was formed in 1991 to work with the waste-to-energy plant partnership to improve facility operations and economic performance. The MRC is governed by 9 directors elected by the membership.
 - (3) The MRC Board of Directors has the authority to manage investments and authorize the disbursement of funds as deemed appropriate under the terms and conditions of their bylaws and agreement(s) with each charter municipality.

MUNICIPAL REVIEW COMMITTEE, INC. AND	2	SOLID WASTE
FIBERIGHT, LLC	)	LICENSE
HAMPDEN, PENOBSCOT COUNTY, MAINE)	
SOLID WASTE PROCESSING FACILITY)	
#S-022458-WK-A-N)	
(APPROVAL WITH CONDITIONS)	)	NEW LICENSE

- (4) Fiberight is a privately held company founded in 2007 with current demonstration facility operations in Lawrenceville, Virginia. The company focuses on transforming post-recycled MSW and other organic feedstocks into next generation renewable biofuels.
- (5) Fiberight is recognized by Maine’s Bureau of Corporations, Elections and Commissions as a Foreign Limited Liability Company and it filed a Statement of Foreign Qualifications to Conduct Activities (Charter #20150853FC) with a nature of the business described as the solid waste processing of trash into biofuels.

C. Summary of Proposal: The MRC and Fiberight have established a contractual agreement to construct and operate a regional solid waste processing facility in Hampden, Maine. The Application for a Solid Waste Processing Facility (hereinafter “Application”) was prepared by CES, Inc. and is dated June 2015. The Application was subsequently revised with supplemental submittals with various dates. The proposed processing facility will accept and process MSW from numerous MRC member communities in central, eastern and northern Maine. The MRC and Fiberight also have an interest in accepting and processing MSW from in-state non-MRC communities that may decide to contract with the MRC and Fiberight. Pursuant to the provisions of 06-096 C.M.R. ch. 2, § 10, a pre-application meeting was held on March 19, 2015. On July 15, 2015, the Application was considered complete for processing.

2. PUBLIC PARTICIPATION

Written public comments were received by the Department including 5 requests for a public hearing pursuant to the provisions of 06-096 C.M.R. ch. 2, § 7(A). The written public comments and public hearing requests were made available to the public via the Department’s website.

- A. Written Public Comments: Written comments were received from local residents, several municipalities, the Maine Resource Recovery Association, and the Natural Resources Council of Maine.
- B. Public Hearing Requests: The Department received 5 requests for a public hearing. The requests included concerns regarding several components of the Application including but not limited to vernal pools, wetlands, a nearby stream, traffic, property values, air emissions, and the waste hierarchy. The Department determined that there was insufficient credible conflicting technical information regarding relevant licensing criteria to necessitate a public hearing. Based on the Commissioner’s discretion, a public meeting was held on November 19, 2015 in

MUNICIPAL REVIEW COMMITTEE, INC. AND	3	SOLID WASTE
FIBERIGHT, LLC	)	LICENSE
HAMPDEN, PENOBSBOT COUNTY, MAINE)	
SOLID WASTE PROCESSING FACILITY)	
#S-022458-WK-A-N)	
(APPROVAL WITH CONDITIONS)	)	NEW LICENSE

accordance with the provisions of 06-096 C.M.R. ch. 2, § 8. The purpose of the meeting was to provide an overview and opportunity to comment on the joint applications filed with the Department.

C. Draft License Decision: The Department released a draft Department License Decision (Draft License) on June 13, 2016. The Draft License was made available to the public via the Department’s website. The MRC and Fiberight and interested persons were notified of the availability of the Draft License. The comment period on the Draft License closed on July 5, 2016. The Department received several comments regarding the Draft License. All of the comments were reviewed and given consideration in relation to the relevant review criteria in the Maine Hazardous Waste, Septage and Solid Waste Management Act and associated rule. The comments received included concerns regarding several components of the Application including but not limited to title, right or interest, financial ability, technical ability, process design and the solid waste management hierarchy. Included with the comments were additional requests for the Department to hold a public hearing.

(1) Title, Right or Interest: Commenters noted that the MRC does not have the authority to take on joint liability and to expend member funds. The Department notes that the Joinder Agreements executed between each charter municipality and the MRC delegates authority to the MRC to act on behalf of the municipality, consistent with the MRC bylaws. As part of the Joinder Agreement, amended and restated bylaws of the MRC are provided that outline MRC’s authority in regards to the proposed processing facility. The Department notes that the MRC has provided an option to purchase the property associated with the proposed processing facility pursuant to the applicable rule. Additionally, the Department notes that the MRC’s authority is governed by state law, the MRC bylaws and associated terms and conditions of their respective agreements. Based on this information, the Department finds that the MRC has submitted adequate evidence of title, right or interest.

(2) Financial Ability: Commenters noted that the Application does not demonstrate that the MRC and Fiberight have the financial ability to design, construct, operate, maintain and close the proposed processing facility. The Department notes that Fiberight has provided a letter of “Intent to Fund” in accordance with the applicable rule and that finalized financial documentation will be submitted once the necessary regulatory and local approvals are received. Submittal of the finalized financial documentation is a condition of the license. The Department reviewed and considered the concerns relating to financial ability and determined

MUNICIPAL REVIEW COMMITTEE, INC. AND	4	SOLID WASTE
FIBERIGHT, LLC	)	LICENSE
HAMPDEN, PENOBSCOT COUNTY, MAINE)	
SOLID WASTE PROCESSING FACILITY)	
#S-022458-WK-A-N)	
(APPROVAL WITH CONDITIONS)	)	NEW LICENSE

that the condition to the Department’s license that requires the MRC and Fiberight to demonstrate final financial capacity will provide the Department with adequate assurance that the MRC and Fiberight have the financial ability to design, construct, operate, maintain and close the proposed processing facility in a manner consistent with state environmental regulations.

- (3) Technical Ability: Commenters noted that the MRC and Fiberight do not have the technical expertise to design, construct, operate, maintain and close the proposed processing facility. The Department notes that while Fiberight will be responsible for daily operations of the proposed processing facility and Fiberight has experience operating a demonstration scale processing facility, Covanta will be the operator for the proposed processing facility. Covanta has more than 30 years of experience converting MSW into clean renewable energy, recycling metals and other commodities, and helping communities meet their goals for environmental stewardship and sustainability. The Department reviewed and considered the concerns relating to technical ability and determined that the condition to the Department’s license that requires the MRC and Fiberight to submit specific professional qualifications for personnel who will be responsible for operations, in addition to the technical ability information provided with the Application, provides the Department with adequate assurance that the MRC and Fiberight have the technical ability to design, construct, operate, maintain and close the proposed processing facility in a manner consistent with state environmental regulations.

- (4) Process Design: Commenters noted that there was inconsistent information and terminology regarding the proposed process design. Based on the comments, the Department has revised the relevant sections of the license that pertain to the proposed process. The Department has clarified the proposed use of a reactor, instead of a digester, in the renewable fuel production process, removed the reference to the installation of an evaporator which is not being proposed as part of the Application, and clarified the proposed renewable energy production process design.

- (5) Solid Waste Management Hierarchy: Commenters noted that the proposed processing facility project is not consistent with the State’s solid waste management hierarchy which establishes that it is the policy of the State to actively promote and encourage waste reduction measures and the maximization of waste diversion efforts, and which sets forth an integrated approach to the management of solid waste. The Department notes that

MUNICIPAL REVIEW COMMITTEE, INC. AND	5	SOLID WASTE
FIBERIGHT, LLC	)	LICENSE
HAMPDEN, PENOBSCOT COUNTY, MAINE)	
SOLID WASTE PROCESSING FACILITY)	
#S-022458-WK-A-N)	
(APPROVAL WITH CONDITIONS)	)	NEW LICENSE

the MRC and Fiberight will continue to support and encourage local waste reduction, reuse and recycling programs. The Department also notes that the Joinder Agreements entered into by the municipalities include a provision granting the municipality the sole option to establish, continue, expand or discontinue existing or future programs intended to encourage reduction, reuse, or recycling of MSW generated within its borders. Further, the proposed processing facility design will facilitate the removal of recyclables at the proposed processing facility that are not captured by programs implemented at the local level and will convert the remaining organics into renewable products. Based on the comments, the Department has added clarifying language in the relevant sections of the license relating to the solid waste management hierarchy including requiring Department reporting when MSW is brought for land disposal prior to the Commercial Operations Date being achieved and the submittal of a schedule outlining proposed measures that will be implemented in order to reach Commercial Operations.

- (6) Public Hearing: Commenters noted that a public hearing is now warranted based on inconsistent and conflicting technical information within the Application. These requests are in addition to the public hearing requests received at the time of Application acceptance. The Department is unable to act on these new requests since they were not received within 20 days of the Application being accepted for processing as required by 06-096 C.M.R. ch. 2. The Department notes that while a series of supplemental submittals were provided after the Application was submitted and accepted for processing, a public hearing will not further the Department's understanding or technical knowledge of the proposed processing facility project. Additionally, the Department notes that the MRC and Fiberight have met the relevant review criteria in the Maine Hazardous Waste, Septage and Solid Waste Management Act and associated rule.

3. PROJECT DESCRIPTION AND SITE DESIGN

The proposed project site is located within an approximate 90-acre parcel located east of the Coldbrook Road in Hampden, Maine. The construction of a new 4,460-foot long road to provide access to the proposed project site from the Coldbrook Road is proposed on an additional 5-acre parcel of property. Department License #L-2647-NJ-A-N and #L-26497-TG-B-N, dated July, 2016, approved the construction of the proposed access road and utility corridor. Existing MRC member communities generate an average of 410 to 550 tons of MSW per day. The proposed processing facility is being designed to process 650 tons per day of MSW. Peak MSW delivery is estimated to be up to 950 tons per day to account for seasonal fluctuations.

MUNICIPAL REVIEW COMMITTEE, INC. AND	6	SOLID WASTE
FIBERIGHT, LLC	)	LICENSE
HAMPDEN, PENOBSCOT COUNTY, MAINE)	
SOLID WASTE PROCESSING FACILITY)	
#S-022458-WK-A-N)	
(APPROVAL WITH CONDITIONS)	)	NEW LICENSE

The proposed processing facility will consist of a 144,000 square foot building that will provide for the receiving, storage and handling of MSW for processing and/or converting into recyclables, renewable fuels and residues for potential recycling and/or disposal off-site. The proposed processing building will contain a tipping floor designed to accommodate 2 days of inside storage capacity for raw MSW and 2 days of inside storage capacity for first sort material from which unsuitable waste such as textiles and large bulky items have been removed. Two-inch minus fines will also be removed at this stage for further processing. A second sort system will separate curbside-type recyclables from the first sort material that has been processed through a continuous pulper which has pulped and removed the majority of the organic material in the waste stream as a biomass pulp. The separated biomass pulp will be further processed to remove the entrained soluble organics and food waste leaving a clean biomass pulp. The clean biomass pulp will be prepared for enzymatic hydrolysis where the cellulosic fraction will be converted to sugars. The MRC and Fiberight state that the food wastes, other soluble organics and sugars produced from the clean biomass pulp will all initially be converted to bio-methane, via an anaerobic digester, which is proposed to be piped into an existing natural gas pipeline owned by Bangor Natural Gas located adjacent to the project site. In the future, the sugars may be sold directly as industrial sugars subject to prevailing market conditions.

Fiberight anticipates between 70 percent (%) and 80% by weight of all incoming MSW will be converted to renewable fuels or recycled, and the remaining 20% to 30% by weight will be process residues to be disposed off-site. In addition to residues and other unsuitable materials that will require off-site disposal, the MRC and Fiberight have planned for the disposal of MSW bypass waste expected to be generated during scheduled and unscheduled facility downtimes or for other unforeseen circumstances when the facility cannot accept and process MSW.

The Department finds that the MRC and Fiberight have adequately planned for site design; provided that, at least 30 days prior to commencing construction of the proposed access road and associated utility corridor and 60 days prior to commencing construction of the processing facility, the MRC and Fiberight submit a complete set of construction-ready plans and documents for each component of the proposed project to the Department for review and approval.

4. TITLE, RIGHT OR INTEREST

The MRC and Fiberight estimate that approximately 95 acres will be acquired, which includes a 90-acre parcel where the proposed processing facility will be constructed and a 5-acre parcel for the construction of a new 4,460-foot long access road. Pursuant to 06-096 C.M.R. ch. 2, § 11(D)(3), the MRC has provided an *Option to Purchase*, dated December 1, 2014, for the property necessary for the development of the proposed

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processing facility and access road from the properties current owners, H.O. Bouchard, Inc. and Hickory Development, LLC. The MRC Board of Directors has the authority to manage investments and authorize the disbursement of funds as deemed appropriate under the MRC’s bylaws and associated terms and conditions of their agreement(s) with each charter municipality. As outlined in the *Development Agreement*, dated February 4, 2015, between the MRC and Fiberight, the MRC will purchase and own, and/or otherwise secure long-term control of, the properties necessary for the proposed processing facility. Fiberight will retain ownership of the processing facility and will lease the property owned by the MRC as outlined in the *Development Agreement*. The expiration date for the *Option to Purchase* is March 31, 2017.

The Department finds that the MRC and Fiberight have demonstrated adequate evidence of title, right or interest in the properties for the proposed project site; provided that, the MRC and Fiberight submit a copy of the deed(s) or executed long-term lease agreement(s) for the properties purchased and/or leased for the development of the proposed project within 30 days after the closure of sale and/or execution of the long-term lease agreement(s).

5. NOTICE OF INTENT

The MRC and Fiberight have provided documentation of the publication of a “Notice of Intent to File” and have documented notification of abutters and other interested parties as required in 06-096 C.M.R. ch. 2. The Notice of Intent to File was made during June 2015. The application was accepted as complete for processing on July 15, 2015.

The Department finds that the MRC and Fiberight have complied with all of the public notice requirements of 06-096 C.M.R. ch. 2.

6. FINANCIAL ABILITY

The MRC and Fiberight have made shared financial commitments to ensure necessary funding is available for the design, construction, operations, maintenance and closure of the proposed project. The *Development Agreement*, mentioned in Findings of Fact (“FOF”) #4 above, outlines the specific financial obligations for each party.

A. MRC: In general, the MRC will be responsible for securing fee ownership or long-term control of the project site appropriate for the development of the proposed project. Additionally, the MRC shall lease or sublease the project site to Fiberight under a long-term agreement having terms and conditions that support the development, financing, construction and operation of the processing facility, with appropriate oversight by the MRC.

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Current cost estimates for portions of the development project for which the MRC has conditionally committed funding to have been provided including land acquisition, road and stormwater facilities, water and sewer utilities, natural gas utilities, and electric and telecom utilities. The total project cost estimate which the MRC has committed to funding is \$4,230,000. The MRC will self-finance its share of the funding for the proposed project. The source of funds will be via a *Tip Fee Stabilization Fund* (“Fund”), which maintained a balance as of March 31, 2015 of \$22,220,628. The MRC submitted a copy of a bank statement showing the Fund balance and a copy of its latest available audited financial statements. The MRC has committed to set aside up to \$5,000,000 from the Fund to finance the land acquisition and infrastructure activities. No bonding or borrowing capacity is needed for the MRC to meet its financial commitment to the proposed project.

- B. Fiberight: Current cost estimates for portions of the development project for which Fiberight will be responsible for include site development, foundations, concrete and building construction, machinery and equipment, steel, mechanical and electrical installation, and engineering, permits and project management. Total estimated capital costs for which Fiberight is responsible for is \$66,976,786. Fiberight will also be responsible for the following estimated expenditures: annual operational costs, annual maintenance costs, and facility closure costs for a total cost of \$12,700,000.

Pursuant to 06-096 C.M.R. ch. 400, § 4(B)(2)(b)(i)(b), Fiberight has provided a letter of “Intent to Fund”, dated December 18, 2015, from Covanta Energy, LLC (“Covanta”) stating that Covanta is engaged with Fiberight to support the development, financing, construction and operation of the proposed processing facility. Covanta conducted a review of financial projections relating to the project and executed a term sheet for a long-term strategic partnership with Fiberight. Covanta has reviewed the estimated budget for the proposed project, totaling approximately \$67 million, and confirmed their interest in supporting Fiberight with project finance in the form of an equity investment in the proposed processing facility.

Covanta’s letter is not intended to be a binding commitment to provide financing. A binding financial commitment is subject to successful completion of due diligence activities; including, but not limited to, the proposed project receiving relevant Federal, State and local permits, and Fiberight entering into acceptable waste supply agreements with the MRC and its charter municipalities. Covanta’s role in the proposed processing facility will be as an investor and operator. Covanta has supplied adequate evidence of its ability to fund the construction and operation of the proposed processing facility; however, the ultimate level of

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investment is still under consideration by Covanta. The intent is for Fiberight and Covanta to be joint investors in the proposed project.

- C. Other: Letters of “Intent to Fund” were also provided by DTE Energy (dated June 11, 2015) and Argonaut Private Equity (dated June 17, 2015). In the event that either DTE Energy or Argonaut Private Equity is utilized for funding, their involvement with the proposed project will be in the form of project financing only, acting as a financial institution.

Once permits are issued, and prior to project construction, final evidence of the specified and sufficient amount of funds for each party will be provided to the Department in accordance with 06-096 C.M.R. ch. 400, § 4(B)(2)(b)(i)(a).

The Department finds that the MRC and Fiberight have submitted adequate evidence of financial capacity to design, construct, operate, maintain and close the proposed processing facility in a manner consistent with state environmental regulations; provided that, the MRC and Fiberight submit, within 30 days of receipt and prior to beginning construction of the proposed processing facility, exclusive of the access road that is funded solely by the MRC, to the Department for review and approval the finalized financial documents for the construction and operation of the proposed processing facility.

7. TECHNICAL ABILITY

The MRC and Fiberight have retained several consultants to support the design, construction, operation, maintenance and closure of the proposed processing facility.

- A. MRC: The MRC manages the affairs and concerns of their current 187 municipal members. The member-led MRC has successfully managed the current 30-year contract with the Penobscot Energy Recovery Corporation (“PERC”) waste-to-energy facility, located in Orrington, Maine, since 1991. The MRC, on behalf of the Equity Charter Municipalities, purchased and manages a 23% ownership interest in the PERC facility. As part of this function, the MRC conducts the following: monitors the PERC facility’s performance, reviews and votes on the facility’s annual operating budget and decisions to invest in capital and major maintenance projects, and oversees actions taken and investments made to the PERC facility to ensure that potential environmental impacts are avoided and mitigated appropriately.
- B. Fiberight: Fiberight will be responsible for daily operations of the proposed processing facility. Fiberight has demonstrated the technical ability to operate a similar, smaller scale MSW processing demonstration facility located in

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Lawrenceville, Virginia. The Fiberight team associated with the proposed processing facility is the same team responsible for the design and operation of Fiberight’s demonstration facility in Virginia. Fiberight has submitted the résumés of those individuals responsible for the demonstration facility’s design, construction and operation.

- C. CES, Inc: CES, Inc. (CES) is an environmental consulting firm, with its headquarters located in Brewer, Maine, with experience in preparing applications for submittal to the Department. CES provided personnel to assist with permit application preparation, site investigation and site design for the proposed project. CES has also been retained by the MRC and Fiberight to provide on-going environmental compliance assistance when needed.

- D. S.W. Cole Engineering, Inc: S.W. Cole Engineering, Inc. (“SW Cole”) is an engineering firm with offices in Maine, New Hampshire and Vermont that provides construction materials testing and geotechnical services. SW Cole conducted sub-surface explorations to address soil suitability of the proposed project site and provided geotechnical engineering services pertaining to the construction of the foundation for the proposed processing facility building and associated structures.

- E. Amec Foster Wheeler: Amec Foster Wheeler (“AMECFW”) is a British multinational consulting, engineering and product management company with its global headquarters in London, England and branch offices worldwide and in the United States, including Portland, Maine. AMECFW has been retained to provide construction management services including contract scoping and preparation of contract packages, construction scheduling, project cost control, risk identification and management, quality assurance, contractor and construction site monitoring and on-site safety monitoring.

- F. CommonWealth Resource Management Corporation: Commonwealth Resource Management Corporation (CRMC) is a management and environmental consulting firm focusing on issues and opportunities related to resource conservation, recovery and utilization. CRMC has been retained for general assistance relating to the design, construction, operation and maintenance of the proposed processing facility.

- G. University of Maine: The University of Maine (UMaine) is a public research university with a focus on undergraduate and graduate research throughout Maine and around the world. UMaine Chemical Engineering professors have been retained to perform a peer review of the technological processes associated with the proposed processing facility.

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H. Covanta: Covanta has their corporate headquarters in Morristown, New Jersey and places of business in West Enfield and Jonesboro, Maine. Covanta has more than 30 years of experience converting MSW into clean renewable energy, recycling metals and other commodities, and helping communities meet their goals for environmental stewardship and sustainability. Covanta will support the development, financing, construction, operation, and maintenance of the proposed processing facility. Covanta’s role in the proposed processing facility will be investor and operator.

The Department finds that the MRC and Fiberight and their retained consultants have provided adequate evidence of technical ability to design, construct, operate, maintain and close the proposed processing facility in a manner consistent with state environmental regulations; provided that, the MRC and Fiberight submit to the Department for review and approval specific professional qualifications for personnel who will be responsible for operations at least 30 days prior to commencing pre-commissioning operations of the proposed processing facility.

8. DISCLOSURE OF CRIMINAL OR CIVIL RECORD

The MRC, Fiberight and Covanta have filed complete civil and criminal disclosure statements in accordance with 06-096 C.M.R. ch. 400, § 12(A).

A. MRC: The MRC is a non-profit corporation formed in 1991 pursuant to State of Maine law whose managerial and executive authority rests with the MRC officers and directors. No officer or director holds any equity or debt in the business entity. The MRC will not have managerial or executive authority over the proposed processing facility. The MRC’s officers and directors do not hold more than a 5% equity interest in any company that collects, transports, treats, stores, or disposes of solid or hazardous wastes and do not have any criminal convictions (except for one director who had a misdemeanor criminal conviction in 1991) or civil violations of environmental laws or rules administered by the State, other states, the United States, or another country in the last 5 years. Additionally, the MRC officers and directors have not entered into any administrative agreements or consent decrees or had administrative orders directed at them for violations of environmental laws administered by the Department, the State, other states, the United States, or another country in the last 5 years.

B. Fiberight: Fiberight is a Delaware limited liability company with a main office in Baltimore, Maryland. Managerial and executive authority rests with the Fiberight officers and directors. No officer or director holds any equity or debt in the business entity. Fiberight’s officers and directors do not hold more than a 5% equity interest in any company that collects, transports, treats, stores, or disposes

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of solid or hazardous wastes and do not have any criminal convictions or civil violations of environmental laws or rules administered by the State, other states, the United States, or another country in the last 5 years.

In 2014, Fiberight’s Chief Executive Officer entered into a Complaint and Consent Agreement/Final Order (Agreement) with the United States Environmental Protection Agency for alleged violations to Sections 301, 311 and 402 of the *Clean Water Act*, 33 U.S. Code §§ 1311, 1321 and 1342, and regulations promulgated thereunder. Under the terms of the Agreement, Fiberight paid a monetary penalty, updated their facility Storm Water Pollution Prevention Plan (SWPPP), conducted employee training regarding the SWPPP and utilized qualified personnel to conduct inspections, developed and implemented a Spill Prevention Control & Countermeasure (SPCC) Plan, conducted employee training regarding the SPCC Plan and disconnected a pipe that had once been the source of an uncontrolled discharge. No additional Fiberight officers and directors have entered into any administrative agreements or consent decrees or had administrative orders directed at them for violations of environmental laws administered by the Department, the State, other states, the United States, or another country in the last 5 years.

- C. Covanta: The MRC and Fiberight have submitted the disclosure information for Covanta’s senior officers. Covanta’s senior officers do not hold more than a 5% equity interest in any company that collects, transports, treats, stores, or disposes of solid or hazardous wastes and do not have any criminal convictions or civil violations of environmental laws or rules administered by the State, other states, the United States, or another country in the last 5 years. Additionally, senior officers have not entered into any administrative agreements or consent decrees or had administrative orders directed at them for violations of environmental laws administered by the Department, the State, other states, the United States, or another country in the last 5 years.

The Department finds that the MRC, Fiberight and Covanta have filed complete disclosure statements in accordance with 06-096 C.M.R. ch. 400, § 12(A). Based on the disclosure statements submitted and the evaluation criteria contained in 06-096 C.M.R. ch. 400, § 12(B), the Department finds no basis for denying the license.

9. TRAFFIC MOVEMENT

Traffic for the proposed processing facility will enter and exit at a single point of access located at the northeast corner of the project site. The processing facility entrance will be located at the end of a proposed 4,460-foot long access road which will enter onto the Coldbrook Road directly across from an existing truck facility access road. The proposed

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access road will be paved, approximately 30 feet in width (consisting of 2, 12-foot travel lanes with 3-foot shoulders), and end at a cul-de-sac at the proposed processing facility entrance. An Entrance Permit Application for the access road entrance onto the Coldbrook Road was submitted to, and a permit issued by, the Maine Department of Transportation (“MDOT”) (Permit # 15947 – Entrance ID: 1, dated May 22, 2015). Sight distances for the proposed access road exceed the requirements of the MDOT Entrance Permit.

The main traffic associated with the proposed processing facility will be from incoming MSW deliveries and employees. Additional traffic components will include general deliveries, outgoing process residues and recyclables generated by the proposed processing facility, material deliveries related to the proposed processing facility and outgoing product deliveries from the proposed processing facility. Incoming MSW deliveries will enter and exit the proposed processing facility in trucks ranging from packer trucks to trailer trucks. The highest expected total of MSW deliveries to the proposed processing facility on any given day is 89, comprised of 53 packer trucks, 26 roll-off trucks and 10 trailers. A delivery will equate to 2 vehicle trips (1 entering and 1 exiting the facility). Employee, visitor and delivery traffic is expected to generate 168 total vehicle trips per day. Traffic from the shipment of outgoing process residues and recyclables and incoming material deliveries will vary.

A MDOT Traffic Movement Permit is not required because the proposed project’s estimated overall traffic volume is less than 100 passenger car equivalents during the peak hour. The MRC and Fiberight estimate a peak traffic volume of 356 vehicle trips per day, spread throughout the entire day. The interior processing facility road network consists of employee and visitor parking lots and site roads varying from 2 to 3 lanes and various lengths. All interior roads will be paved. The speed limit of the interior roads will be 15 miles per hour. The MRC and Fiberight have provided information regarding haul routes, road characteristics and information regarding traffic accidents in the vicinity of the proposed project site in the last 3 years. No high crash locations were identified.

The Department finds that the MRC and Fiberight have made adequate provisions for safe and uncongested traffic movement of all types into, out of, and within the proposed project area.

10. FITTING HARMONIOUSLY INTO THE NATURAL ENVIRONMENT

A. General: The MRC and Fiberight have designed the proposed processing facility to fit harmoniously into the natural environment. CES has provided information related to any protected significant wildlife habitat, unusual natural areas, rare, threatened or endangered plant species, and protected natural resources. CES, on behalf of the MRC and Fiberight contacted the Maine Department of Inland

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Fisheries and Wildlife (“MDIFW”) and the Maine Natural Areas Program to identify any of the above features.

- B. Setbacks and Buffers: The MRC and Fiberight have stated that the areas to the north, east and south of the proposed processing facility will be maintained in their natural wooded condition. The proposed building site will be 4 to 5 feet lower than the surrounding grade to the west. The waste handling area at the proposed processing facility meets all the setbacks required by the Rules.

- C. Wildlife and Fisheries: In March 2015, CES sent a letter to MDIFW requesting information for known locations of Endangered, Threatened, and Special Concern Species, designated Essential and Significant Wildlife Habitats, and fisheries habitat concerns within the vicinity of the proposed project site. The MDIFW responded to CES in letters dated March 16, 2015 and March 18, 2015.
 - (1) Bats: With regard to information for known locations of Endangered, Threatened, and Special Concern Species, MDIFW stated that 7 out of 8 species of bats in Maine are currently listed as Species of Special Concern; however, 3 species of bats are currently being considered through the legislative process for protection under Maine’s list of Threatened and Endangered Species. At the time of Application submittal, the Northern Long-eared Bat was listed as Endangered under the Federal Endangered Species Act (listed April 2, 2015). Subsequent to the Application submittal, the Little Brown Bat and Northern Long-eared Bat were listed as Endangered in Maine and the Eastern Small-footed Bat was listed as Threatened in Maine.

In consultation with the U.S. Fish and Wildlife Service (“USFWS”), an acoustical bat survey was developed in order to assess bat activity and to determine the presence, if any, of Northern Long-eared Bats within the proposed processing facility site. The acoustical bat survey was conducted during the summer of 2015. The acoustical bat survey did not identify any federally protected bat species within the proposed processing facility site. The MRC and Fiberight have agreed to follow conservation guidelines for tree cutting, as outlined by USFWS in the interim Federal 4(d) Rule, effective May 4, 2015, to minimize potential impacts to listed bat species. An acoustical bat survey was not completed on the utility corridor; however, an acoustical survey of the utility corridor is planned for July 2016. The submittal to the Department of a forest management plan that contains provisions which will maintain the wildlife habitat functions and values is a condition of Department License #L-26497-NJ-A-N and #L-26497-TG-B-N. Construction activities will follow

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recommended management guidelines provided by the USFWS to minimize potential impacts to bat species.

- (2) Vernal Pools: A comprehensive inventory of vernal pools was completed during spring 2015 and identified 44 vernal pools within the proposed processing facility site. Nine pools met the Department’s definition of significant vernal pool. Construction of the proposed access road will occur within 250 feet of one significant vernal pool. This significant vernal pool is designated as Pool #2632 according to the Department’s Geographic Information System and VP 1-10 within the Application. Alteration of this vernal pool habitat was authorized under the Natural Resources Protection Act Permit by Rule Notification Form (PBR #59983) pursuant to *Natural Resources Protection Act Permit by Rule* standards, 06-096 C.M.R. ch. 305 (last amended June 8, 2012).

- (3) Fisheries: With regards to fisheries habitat, the MDIFW made the following recommendations: a 100-foot undisturbed vegetated buffer be maintained along any mapped or unmapped streams; stream crossings should be avoided, but if necessary, the crossing should be designed to provide adequate fish passage; and Construction Best Management Practices (“BMPs”) should be closely followed and that any necessary instream work or work within 100 feet of streams occur between July 15 and October 1. Consideration of MDIFW’s recommendations was included in Department License #L-26497-NJ-A-N and #L-26497-TG-B-N.

- (4) Deer Wintering Area: MDIFW stated that there is a large mapped Deer Wintering Area (“DWA”) within the project search area. MDIFW staff walked the proposed processing facility site with CES staff and commented that a portion of the DWA has been selectively harvested within the last decade and a large amount of softwood cover that characterizes a DWA was removed. MDIFW staff comments that while the specific location to be developed lacks suitable winter shelter habitat, areas located to the east of the proposed processing facility building site do provide appropriate winter shelter for deer. MDIFW recommends that the remaining undeveloped portions of the proposed processing facility site be protected and managed for winter shelter. MDIFW staff comments that a timber management plan that details the management actions necessary to maintain deer winter shelter areas should be drafted and become part of this longer term protection effort.

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D. Unusual Natural Areas: The Natural Areas Program within the MDIFW did not find evidence of any rare or unique botanical features on, or adjacent to, the proposed project site. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities.

E. Protected Natural Resources: Natural resource work has been completed at the proposed project site. The MRC and Fiberight are proposing to impact a total of 105,000 square feet of forested wetland to construct the proposed processing facility, access road, and the utility corridor. The development of the proposed access road and processing facility building will require alterations to freshwater wetlands, significant wildlife habitat and other protected natural resources. Impacts to protected natural resources will be addressed by obtaining a permit pursuant to *Natural Resources Protection Act*, 38 M.R.S. § 480-A *et seq.*, as required. The MRC and Fiberight have submitted Natural Resources Protection Act permit applications to both the Department and U.S. Army Corps of Engineers.

In July 2016, the Department issued Department License #L-26497-NJ-A-N and #L-26497-TG-B-N approving the construction of an access road, utility corridor and alterations to freshwater wetlands, significant wildlife habitat and other protected natural resources on the proposed project site.

The Department finds that the proposed project will fit harmoniously into the surrounding environment; provided that, the MRC and Fiberight: (1) submit the results of the acoustical bat survey to be completed within the utility corridor; and (2) develop a timber management plan that details the management actions necessary to maintain deer winter shelter areas. The Department further finds that at least 14 days prior to commencing construction of the proposed processing facility, the MRC and Fiberight must submit the acoustical bat survey to be completed within the utility corridor and a timber management plan to maintain deer winter shelter areas.

11. AIR QUALITY

The proposed project site is buffered by existing forested areas and is approximately 3,400 feet away from the nearest existing residential building. The proposed processing facility is designed with multiple systems and procedures to minimize the generation of, and provide control of, objectionable and nuisance odors at any occupied building. All unloading of MSW will occur inside the proposed processing facility building. In order to minimize the number of waste delivery trucks in the parking lot at one time, the tipping floor is designed to accommodate 1 transfer trailer and 3 packer trucks simultaneously. The primary operational control for nuisance odors is minimizing the

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quantity, and the duration, of time that MSW sits on the tipping floor. The tipping floor is designed with storage capacity for 2 days of MSW receipts and 2 days of primary processed material. The MRC and Fiberight will utilize the principle of “First-in-First-Out” operation to the maximum extent possible to minimize the residence time of waste on the tipping floor. The tipping floor and processing portion of the building will be maintained under constant negative pressure by using a multiple hood/intake register air handling system. The air handling system will draw air from inside the building and treat it in either of 2 scrubber systems. One of the scrubbers will be operated at all times when MSW is present on the tipping floor. Both scrubbers will be operated when the high-speed fabric overhead doors used for truck entry or exit are open.

A Start-Up, Shutdown and Malfunction Plan has been developed that includes provisions for odor control during times when processing operations must be limited or suspended to perform equipment maintenance. The MRC and Fiberight have also established an Odor Complaint Response Plan that outlines procedures for odor complaint reporting, should they occur, and subsequent response actions including the use of an odor neutralization agent. As part of the operations of the proposed processing facility, regular odor inspections will be performed. Inspections will include, at a minimum, visual observation of the operations for obvious signs of damage or abnormal conditions within the proposed processing building that will affect collection efficiency of the odor control system and a visual inspection and odor survey around the exterior of the proposed processing facility.

The MRC and Fiberight have stated that during the first month of, and for a total of 6 months during, the first year of operation, a daily inspection and odor survey will be conducted around the proposed processing facility. The daily inspection period will include the summer months when waste odors are expected to be strongest. If operations commence in the winter months and no odor issues are identified during the first month, inspections will be reduced to weekly until the onset of warmer weather. If after 6 months, including summer months, no odor issues are identified then inspections will be reduced to weekly. Inspection results will be submitted to the Department weekly unless an odor incident is noted in which case the Department will be notified within the day. A summary of the odor survey reports will be submitted to the Department with the facility’s annual report.

The MRC and Fiberight have submitted an application to the Department for a Minor Source Air License to address potential fugitive emissions from the proposed 2 biomass boilers, other fuel burning equipment and process equipment. The other fuel burning equipment includes a thermal oxidizer and flare. The details of this license can be found in Department License #A-1111-71-A-N, dated July, 2016.

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Fugitive dust is not expected to be an issue. All travel ways and parking areas will be paved and no bulk material handling operations will occur outside the proposed processing building. Should fugitive dust emissions occur beyond the property boundary, the processing facility operator will assess the source of the dust and clean the travel ways and, if necessary, spray water to control dust.

The MRC and Fiberight propose to use 2 cooling towers to promote evaporative cooling of waste heat. The MRC and Fiberight have proposed the installation of drift eliminators to minimize any emissions of particulate that may occur. This is not expected to be a sufficient quantity to cause localized fog banks or icing beyond the property boundaries and should not unreasonably alter climate in the area of the processing facility.

The Department finds that there will be no unreasonable adverse effects on air quality and/or climate due to the proposed project.

12. SOIL SUITABILITY AND EROSION CONTROL

A subsurface investigation was completed by SW Cole to evaluate whether soil bearing capacity is sufficient to support the proposed processing facility and associated outdoor storage components. SW Cole concluded that based on the subsurface findings, the construction of the processing building appears feasible from a geotechnical standpoint. SW Cole provided geotechnical recommendations pertaining to the building’s footings and on-grade floor slab and perimeter footings and the need for underdrains near footing grade and adjacent to paved areas. The recommendations have been incorporated into the building design. SW Cole also recommended that a contingency be made for the possible removal of bedrock via drilling or blasting.

The MRC and Fiberight have submitted an Erosion and Sedimentation Control Plan including an inspection and maintenance plan. Any proposed work will be carried out in conformance with the approved erosion and sedimentation control plan, the construction contract documents, and the Maine Erosion and Sediment Control Field Guide for Contractors, March 2015 or its equivalent.

The Department finds that the proposed processing facility will be constructed on soils suitable for the proposed use and will not cause unreasonable sedimentation or erosion of soil. The Department also finds that the MRC and Fiberight have adequately addressed erosion and sediment control for the proposed project, and have demonstrated that the proposed project will be carried out in conformance with the approved erosion and sediment control plan, the construction contract documents, and the Maine Erosion and Sediment Control Field Guide for Contractors, March 2015 or its equivalent.

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13. SURFACE WATER QUALITY AND FLOODING

The proposed project site is not located within a 100-year flood plain and is not located within a direct watershed of a waterbody most at risk from new development. A 25-year, 24-hour storm event was modeled to determine the necessary detention and outlet sizing requirements for the proposed project site. The proposed building site will be located on an undeveloped and mainly wooded parcel of land approximately 90 acres in size in the Town of Hampden. Shaw Brook is classified as an Urban Impaired Stream and is located approximately 3,000 feet to the west of the parcel. Runoff from the site generally drains to a large forested wetland area to the south of the parcel before eventually draining to the Penobscot River. Runoff does not drain to Shaw Brook.

The proposed project will be built over a portion of previously undeveloped land and will add approximately 9.7 acres of developed area to the site. The project area will be treated with a combination of 3 vegetated under-drained soil filters and a roofline drip edge filter. All of these treatment measures discharge toward the south and west ends of the project site before re-joining the pre-development flow paths. The results of the post development analysis for the project site indicate that there is a reduction in runoff from the summation points, and that all of the stormwater treatment measures are sized adequately to handle stormwater runoff from 2, 10 and 25-year storm events. There are no anticipated adverse impacts to the downgradient areas, and as a result the development will have no unreasonable effect on run-on, run-off, and/or infiltration relationships on-site or on adjacent properties.

The Department finds that the proposed processing facility will not have an unreasonable adverse effect on surface water quality and will not unreasonably cause or increase flooding on the proposed facility site or on adjacent properties nor create an unreasonable flood hazard to any structure.

14. EXISTING USES AND SCENIC CHARACTER

The proposed building site includes an approximate 90-acre wooded parcel of land established as an industrial zone by the Town of Hampden. The proposed processing facility will be located approximately 0.25 miles from I-95 to the north, 0.8 miles from the Coldbrook Road to the west, 0.7 miles from the Ammo Industrial Park to the east and 1 mile from Route 202 to the south. The project site will be 4 to 5 feet lower than the surrounding grade to the west of the facility. The remainder of the project site is surrounded by a natural wooded buffer to the north, east and south. This buffer will be retained and will provide a visual screen to the north, east and south. There are no airport runways located within 10,000 feet of the existing site, no historic properties, and the existing site is located greater than 2,000 feet from the nearest established public viewing area. A portion of a neighboring property from the southwest to southeast is currently

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zoned as rural by the Town of Hampden. There are 2 residential subdivisions located approximately 3,400 feet to the south of, but not abutting, the proposed site.

The noise generated from the routine operation of the proposed processing facility must be less than or equal to 70 A-weighted decibel (dBA) for daytime and 60 dBA for nighttime hours at the facility property boundary. There are no protected locations within or in the vicinity of the project site’s property boundary. As it relates to this Application, the applicable noises in the thresholds are limited to routine operations of the proposed processing facility. As a result, all applicable noise generating equipment will be located inside the proposed processing building and at no time will processing activities take place outside.

The Department finds that the proposed project will not have an unreasonable adverse effect on existing uses or scenic character. The Department also finds that the proposed project will not result in increased noise levels beyond the proposed project site’s property boundary.

15. ADEQUATE PROVISIONS FOR UTILITIES

- A. Water: The proposed processing facility will be served by the Town of Hampden Water District (“Hampden WD”), which is a municipal water supply and supplies potable water to the surrounding community. During steady state operation, the proposed processing facility will require an average water demand of 360,000 gallons per day (“gpd”) with a peak flowrate of 300 gallons per minute (“gpm”). During maintenance periods, which could occur 3 to 4 times per year, the processing facility will require a maximum water demand of 132,000 gpd with a peak flowrate of 275 gpm, to fill various components in the processing system. The initial fill of the processing system will require approximately 3,500,000 gallons of water, completed over a 30-day period. The Hampden WD provided a letter, dated May 13, 2015, which states that it has the capacity and capability to meet the proposed flow requirements.

- B. Wastewater: The MRC and Fiberight estimate that the processing facility will discharge an average daily flow of 150,000 gallons of domestic and process wastewater into the Town of Hampden’s (Hampden) municipal sanitary sewer collection system, which is sent for treatment to the City of Bangor’s Wastewater Treatment Plant (“Bangor WWTP”). The Bangor WWTP provided an updated letter, dated February 17, 2016, related to the estimated 150,000 gpd of wastewater to be generated by the proposed processing facility. Bangor WWTP states that it has capacity, at this time, to accept this additional flow during non-combined sewer overflow conditions. Further, the Bangor WWTP states that

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“alternative arrangements such as on-site storage or trucking to alternative sites” needs to be made during combined sewer overflow conditions.

In a March 30, 2016 Memo, CES assumed the need to provide on-site storage of 300,000 gallons or two times the estimated average daily flow. The MRC and Fiberight have proposed the installation of a 150,000 gallon aboveground tank and 100,000 gallon belowground tank and the utilization of 50,000 gallon buffer storage in an already designed process water storage tank. CES notes that the tank construction materials are still being evaluated and will be determined during final design.

Bangor WWTP also requires the user to provide the treatment plant with an Industrial User Permit Application and a Pretreatment Survey and Disclosure Form prior to discharging any effluent to their treatment system. Should it be determined that, for any reason whatsoever, adverse effects are noted or anticipated at the Bangor WWTP, the user shall be required to pre-treat wastewater discharge to acceptable levels. If the Pre-Treatment Survey shows that the proposed processing facility requires a pre-treatment system for its wastewater, the Bangor WWTP must approve the pre-treatment system prior to installation.

- C. Solid Waste: The MRC has entered into a Solid Waste Disposal Agreement, dated August 15, 2015, with the Waste Management Disposal Services of Maine Crossroads Landfill in Norridgewock, Maine, to accept “MSW Bridge Capacity” waste (defined as MSW, brought to the facility between April 1, 2018 and the start of commercial operations, that cannot be fully processed), solid waste process residue, and MSW bypass waste for disposal. The MRC and Fiberight estimate a range between 30,000 to 40,000 tons per year of process residue waste and biomass boiler ash will require disposal. In addition, for planning purposes the MRC and Fiberight have made provisions for the disposal of an estimated 37,500 to 50,000 tons per year of MSW bypass waste to address any bypass events that may be necessary. The Master Waste Supply Agreement (MWSA), effective date January 1, 2016, between the MRC and Fiberight requires Fiberight to avoid or minimize bypass events, and only allows bypass events due to Force Majeure, limits on capacity resulting from an outage, a full tip floor, the need to avoid nuisance impacts, permit limits, or other factors beyond its reasonable control. The MWSA specifies procedures for the handling of MSW Bridge Capacity waste. Specifically, the MWSA requires Fiberight to use commercially reasonable efforts to (1) advance the occurrence of the Commercial Operation Date in order to be able to accept and process acceptable waste as soon as possible; (2) allow the facility to be used to accept and process acceptable waste to the extent practical, with the specific sources of acceptable waste being

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accepted to be determined in consultation with the MRC; and (3) allow the facility to be used to receive acceptable waste, and transfer amounts that are accepted but cannot be processed to the back-up facility, with the specific sources of acceptable waste being accepted to be determined in consultation with the MRC. The Department notes that the MRC and Fiberight need to minimize the amount of time, if any is needed, that MSW Bridge Capacity diversion is utilized, and that monthly reporting to the Department of MSW Bridge Capacity tonnage utilized and an updated schedule outlining the measures needed to reach Commercial Operation is necessary until such time as Commercial Operation is achieved.

The Department finds that the MRC and Fiberight have provided for adequate utilities and will have no unreasonable adverse effect on existing or proposed utilities in the municipality or area served by utilities; provided that: (1) the MRC and Fiberight submit copies of the Bangor WWTP Industrial User Permit and letter approving the operation of a wastewater pre-treatment system, if necessary, to the Department within 30 days of their receipt; (2) the MRC and Fiberight submit, for review and approval, the final design for the on-site wastewater storage tanks at least 60 days prior to construction of the proposed processing facility; and (3) the MRC and Fiberight submit monthly reports to the Department listing the tonnage of MSW Bridge Capacity utilized, if any is needed, and an updated schedule outlining the measures needed to reach Commercial Operation until such time as Commercial Operation is achieved.

16. GROUNDWATER QUALITY

The proposed project site does not overlie a significant sand and gravel aquifer. The closest mapped aquifer is approximately 4,000 feet to the northwest of the proposed project site. Unprocessed and processed MSW will be stored inside the proposed processing building. Residue materials, bypass waste and biomass boiler ash will be stored in trailers and transported off-site to a licensed, secure landfill for disposal. Recyclable materials will be stored on-site in either 100 cubic yard transport trailers or 40 cubic yard dump trailers. No unprocessed or processed materials will be stored outside on the ground.

The Department finds that the proposed processing facility will not pose an unreasonable threat to the quality of a significant sand and gravel aquifer and will not result in unreasonable adverse effects on groundwater quality.

17. PROCESS DESIGN

A. General: The proposed processing facility consists of 4 different processing stages which will process the MSW received into several different categories.

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The 4 different processing stages are: materials recovery, renewable fuel production, renewable energy production, and industrial co-products. A series of process benchmarks has been established that will be used to evaluate the proposed process during various stages of project implementation as described below.

- B. Materials Recovery Facility (MRF): The first stage in the process (primary MRF) is to remove large bulky items prior to the MSW being loaded into the primary trommel. Unwanted large bulky items will be removed on the tipping floor and on a pre-sort line and loaded on a trailer and transferred for disposal at a licensed landfill facility. The MSW is then fed to the primary trommel which opens and empties the bags of trash and size separates the material into over 20 inch and 20 inch and under. The 20 inch and under material is then further size separated by a fines screen to 2 inches or less in size which fraction continues through to the fines processing area for further processing. The over 2 inch to 20 inch material is stockpiled and subsequently conveyed to a drum pulper that breaks the organic material down to form a biomass, which facilitates separation of the recyclable materials from organic wastes, and prepares the biomass for further cleaning.

Materials exiting the drum pulper pass across a screen to separate recyclables, such as metals and plastics from the biomass pulp. These recyclable materials are then conveyed to the MRF to be further processed. The remaining biomass pulp is conveyed to a two-stage washing system to remove fine contaminants (mostly plastics) and soluble organic material. The first-stage wash removes soluble organic material and pumps high chemical oxygen demand wastewater to a pre-acidification tank prior to entering the high-rate anaerobic digester for biogas production. The second-stage wash dilutes the remaining material, where filters are used to separate out the fine cellulose from the remaining contaminants. The washed cellulose is then pumped into a stock tank. From the stock tank, the cellulose pulp is pumped as slurry into a screw press where it is de-watered to approximately a 50% solids press cake which is then pre-treated prior to being introduced to the hydrolysis system.

- C. Renewable Fuel Production: The enzymatic hydrolysis stage starts when the dewatered pulp is conveyed to the pretreatment system whereby water and acid is added into a pretreatment mixer so the appropriate solids concentration and pH is obtained. Slurry from the pretreatment mixer is then pumped to the pretreatment reactor. Fiber exiting the pretreatment reactor is pumped to a medium consistency refiner and then to a screw press to be dewatered, and filtrate is returned to the mix tank. Pretreated fiber press cake is conveyed to the hydrolysis system. The pretreatment reactor, pumps, filtrate tank and screw press are connected to a Clean-in-Place (“CIP”) system for regular cleaning and

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sterilization. The hydrolysis process is carried out within a high viscosity reactor paired with a set of mixing tanks. The pretreated fibers enter the mixing tanks along with water and enzymes, and wetted fibers circulate through the hydrolysis tank where cellulose within the fiber is converted to sugars on a batch basis.

Temperature and pH are controlled to achieve an optimum mixture which is left in the reactor where the low-temperature biological process is completed. Each reactor, pump, heat exchanger and mixing vessel is connected to a CIP system for regular cleaning and sterilization. A filter press is utilized to separate the undigested post hydrolysis solids (“PHS”) from the liquid sugar solution. The sugar solution will be fed directly to the anaerobic digester for conversion into biogas.

- D. Renewable Energy Production: The renewable energy production stage begins when the high organically loaded liquid is cooled and sent to an anaerobic digestion system. This system uses microorganisms to digest suspended and dissolved solids contained in the water to reduce the chemical oxygen demand of the water. Clean water and a methane-rich biogas are the byproducts of the stage. The clean water is reused in the washing process. The biogas will be used as supplementary fuel for internal energy production via a boiler and/or injected into a natural gas pipeline. Bangor Natural Gas has provided a February 10, 2016 letter stating that a section of pipe between Bangor and Hampden needs to be upgraded and that upgrades including testing will be completed prior to facility start-up.

Process water recovered from the water treatment system is used to dilute solids in the pulp and wash systems to maintain desired moisture content. A portion of the recovered water is sent to the CIP storage tank. The PHS exiting the hydrolysis filter presses, which is essentially spent fiber with a high lignin content, is processed in a specially designed combustion unit. The heat (steam) from the combustion process is recovered and sent to a steam turbine. The exhaust heat from the turbine is then used to provide process heat. The amount of electrical and heat energy generated by the biomass combustion is sufficient to provide the bulk of the energy demand for the proposed processing facility. The proposal to produce fuel grade ethanol is no longer part of the proposed processing facility project.

Plant water management is conducted via a recycling and reuse system. Purge water from the washing system and from the cook filtrate tank are blended together. Any residual fine suspended material is removed using a dissolved air flotation (“DAF”) system with the highly organic liquid created sent to the anaerobic digester and the solids exiting the DAF removed using a belt press.

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The solids extracted with the belt press, in the form of cake, are routed via conveyor to be disposed of offsite.

- E. Industrial Co-products: The resultant products generated at the proposed processing facility will include recyclables which will be sold on the open commodities market; PHS which will be used to fuel the on-site biomass boilers; and bio-methane which will be piped to the adjacent Bangor Natural Gas Loring Pipeline. The resultant residue waste products generated at the processing facility will include materials typically 2 inches or less in size (glass and grit), large bulky items, dissolved air filtration system residues and combined boiler ash.
- F. Process Benchmarks: The MRC and Fiberight have proposed operational benchmarks in a submittal dated June 2, 2016 that include evaluating the proposed process during pre-commissioning, commissioning, start-up and ramp-up. The completion of each benchmark stage will be documented with process improvements proposed as necessary.
- (1) The pre-commissioning phase will include verification that systems have been installed in accordance with the applicable specifications, calibration of electrical and instrument controls, equipment alignment and energizing the electrical systems.
 - (2) The commissioning phase will include verification that each system can run independently and for increasing time periods.
 - (3) The start-up phase includes start-up of all plant systems to ensure that the systems perform in an integrated fashion. During this phase, initial volumes of MSW will be processed. Once successfully processed, MSW volumes will be increased in a stepwise fashion.
 - (4) The ramp-up stage includes increasing the volumes of MSW to full-scale loading. This phase is projected to occur for approximately 4 months.

The Department finds that the MRC and Fiberight have submitted adequate information regarding the proposed processing facility and process design; provided that, confirmation of natural gas pipe upgrades and testing and a finalized agreement with Bangor Natural Gas is provided to the Department at least 30 days prior to conveying bio-methane into the pipe.

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18. OPERATIONS MANUAL

The MRC and Fiberight have submitted a draft operations manual for the proposed processing facility. Department staff issued final comments on April 28, 2016 regarding the draft operations manual. CES proposes to finalize the operations manual and provide it as a stand-alone document to the MRC and Fiberight after Department review and approval of the document has been completed.

The Department finds that the MRC and Fiberight have submitted an operations manual that addresses the operating requirements of 06-096 C.M.R. ch. 409, § 4; provided that, an updated operations manual is prepared and submitted for Department review and approval at least 60 days prior to full-scale operations which incorporates Department comments from an April 28, 2016 memorandum and process or equipment changes resulting from pre-commissioning, commissioning, start-up and ramp-up activities.

19. WASTE CHARACTERIZATION

Waste residues that will require initial and on-going characterization prior to final disposal include biomass boiler ash and miscellaneous process residues resulting from the DAF water treatment system. With respect to the ash characterization, the Department has requested that the MRC and Fiberight evaluate 4 roll-off containers of ash as part of the initial characterization. The MRC and Fiberight will collect composite ash samples for each of the 4 roll-off containers as part of the characterization process. Samples will be collected from the fly ash and bottom ash conveyors at specific intervals while each roll-off is being filled. The MRC and Fiberight expect the turnaround time for the analytical tests will be approximately 7 days. The MRC and Fiberight estimate that it may need to store up to 9, 30-yard roll-off containers during the initial ash characterization phase. Full roll-off containers will be stored within the proposed processing building as space allows. If the number of roll-offs exceeds the proposed processing building's capacity for inside storage, the excess roll-offs will be stored outside on the paved parking lot while waiting for receipt of laboratory analytical results. Roll-off containers that are stored outside while awaiting laboratory analytical results will be tarped to prevent infiltration of rainwater. After the initial characterization period, the MRC and Fiberight anticipate being able to store the ash roll-offs indoors.

With respect to the DAF process residues, during normal operating conditions the MRC and Fiberight expect to generate process residues at a rate of approximately 1 to 2 roll-offs daily. During initial characterization, these residues will be stored in 30-yard roll-off containers inside the proposed processing building as space allows. If the generation rate of the process residues exceeds the ability of the MRC and Fiberight to store the containerized waste indoors, the excess roll-offs will be tarped and stored outside on the paved parking surface until the MRC and Fiberight receive analytical results from the

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laboratory. After the initial characterization period, the MRC and Fiberight anticipate being able to store the waste roll-offs indoors.

The Department finds that the MRC and Fiberight have adequately addressed the waste characterization requirements of 06-096 C.M.R. ch. 405, § 6(C) in Section E of its draft operations manual submitted with the Application.

20. SOLID WASTE MANAGEMENT HIERARCHY

- A. General: *Solid Waste Management Hierarchy*, 38 M.R.S. § 2101 establishes that it is the policy of the State to “plan for and implement an integrated approach to solid waste management” through an order of priority that places waste reduction, reuse, recycling, composting, and processing before land disposal as a “guiding principle in making decisions relating to solid waste management”. Further, 06-096 C.M.R. ch. 409, § 2(C) requires the recycling or processing of all waste accepted at the facility to the maximum extent practicable, but in no case at a rate less than 50%.
- B. Reduction: The MRC and Fiberight have supported and will continue to support the existence and incorporation of programs to encourage waste reduction at the source. MRC and Fiberight have demonstrated support for further waste reduction, reuse and recycling through the establishment of an express right, in the municipal contracts for MSW delivery to Fiberight, for municipalities to have the option to expand existing or future programs intending to encourage further reduction, reuse and recycling of MSW generated within its borders. Waste reduction programs are implemented at the local level by municipalities in order to reduce the quantity of waste being generated that requires municipal collection, transfer, transportation and disposal costs. The MRC and Fiberight are committed to ensure that any further arrangements supporting the development of the proposed processing facility will avoid business arrangements, such as minimum tonnage delivery guarantees set at levels that are too high or with insufficient flexibility, that might undermine or conflict with municipal efforts to reduce the amount of waste generated within their borders.
- C. Reuse: MRC communities currently sponsor programs to encourage waste reuse that are implemented at the local level by municipalities with an emphasis on education, outreach, swap shops, and technical assistance to residents and the incorporation of local waste reuse programs. The MRC and Fiberight are committed to ensuring these existing programs remain in place.
- D. Recycling: MRC municipalities currently sponsor a wide variety of local programs to collect, process, and market recyclables through the operation of

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curbside collection programs, and drop-off programs, often in connection with the operation of transfer stations and other facilities. The measures described above to support waste reduction and reuse programs will also serve to support the incorporation of local recycling. Recyclables that are not captured at the local level will subsequently be captured at the proposed processing facility. The proposed processing facility will serve to remove recyclables currently not being removed from the waste stream and will convert remaining organics into renewable products. To that end, the MRC's and Fiberight's planned system is expected to divert additional materials from the waste stream and will overall reduce the volume of MSW residues requiring land disposal. This is the first of two step increases in materials management offered by the Fiberight system compared to the existing system that strengthens conformity to the waste management hierarchy. Capturing recyclables on a regional level at a central processing facility increases the quantity of recyclable materials collected, processed and marketed and provides a new level of recycling service beyond that of existing local level programs.

- E. Composting/Organics Management: Composting and other methods of processing biodegradable materials are currently being accomplished on the local level through backyard, local and/or regional composting or anaerobic digestion programs. Despite the success of a significant number of local organics composting and diversion programs, the quantities of organics remaining in the waste stream remains a significant fraction of the waste stream. This large fraction of the incoming MSW waste stream will be converted into renewable fuel products and/or biogas. This additional recycling of organics represents a second step increase in improved conformity with the waste management hierarchy compared to the existing system. Due to the proposed processing facility's expected capability to convert biodegradable waste into high value fuel products, the MRC and Fiberight are expecting some local programs may voluntarily select to transition their organics management activities to the proposed processing facility. The MWSA, described in FOF #15 above, contains provisions prohibiting, without the prior consent of Fiberight, joining member communities from initiating new or significantly and materially expanding existing programs to divert organic components from the MSW generated within its borders that otherwise would have been delivered to the proposed processing facility. The Department notes that Fiberight should annually report any such requests from joining member communities and the disposition of such requests, inclusive of the reasons for each determination. The Department further notes that Fiberight should not unreasonably withhold approval of these requests and should make reasonable efforts to replace, if needed, the quantity of removed organics with other acceptable waste.

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- F. Waste Processing: The MRC and Fiberight have calculated that between 70% and 80% by weight of all incoming MSW will be recycled and processed at the proposed processing facility. As part of each year’s annual report, the MRC and Fiberight will need to demonstrate that all wastes accepted at the proposed processing facility have been recycled or processed into fuel for combustion to the maximum extent practicable, but in no case at a rate of less than 50%.
- G. Land Disposal: The MRC and Fiberight noted that the availability of secure landfill disposal capacity is an integral part of the development of an integrated system for solid waste management in accordance with the hierarchy of management methods described above. The MRC and Fiberight estimate that between 20% and 30% by weight of all incoming waste will result in process residue that will require landfilling. The process residue includes bulky waste, textiles, DAF system residues and combined boiler ash. In addition, landfill disposal capacity will also be necessary for scheduled and unexpected shutdowns of the processing facility. As described in FOF #15 above, the MRC and Fiberight have entered into a Solid Waste Disposal Agreement with the Waste Management Disposal Services of Maine Crossroads Landfill in Norridgewock, Maine, to accept MSW Bridge Capacity waste, solid waste process residue, and MSW bypass waste for disposal.

The Department finds that the MRC and Fiberight have adequately addressed solid waste management consistent with the State’s Solid Waste Management Hierarchy pursuant to 38 M.R.S. § 2101; provided that, the MRC and Fiberight: (1) annually report any requests from joining member communities to initiate new, or significantly and materially expand existing, organic diversion programs and the disposition of such requests, inclusive of the reasons for each determination; (2) do not unreasonably withhold approval to initiate new, or significantly and materially expand existing, organic diversion programs and make reasonable efforts to replace, if needed, the quantity of removed organics with other acceptable waste; and (3) submit monthly reports to the Department listing the tonnage of MSW Bridge Capacity utilized, if any is needed, and an updated schedule outlining the measures needed to reach Commercial Operation until such time as Commercial Operation is achieved.

BASED on the above Findings of Fact, and subject to the Conditions listed below, the Department makes the following CONCLUSIONS:

1. The MRC and Fiberight have planned for site design; provided that, the MRC and Fiberight submit, for Department review and approval, a complete set of construction-ready plans and documents for the proposed access road and associated utility corridor at least 30 days prior to commencing construction and a complete set of construction-ready

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plans and documents for the proposed processing facility at least 60 days prior to commencing construction.

2. The MRC and Fiberight have provided adequate evidence of title, right or interest in the properties for the proposed project site; provided that, the MRC and Fiberight submit a copy of the deed(s) or executed long-term lease agreement(s) for the properties purchased and/or leased for the development of the proposed project within 30 days after the closure of sale and/or execution of the executed long-term lease agreement(s).
3. The MRC and Fiberight have complied with all of the public notice requirements of 06-096 C.M.R. ch. 2.
4. The MRC and Fiberight have provided adequate evidence of financial capacity to design, construct, operate, maintain and close the proposed processing facility in a manner consistent with state environmental regulations; provided that, the MRC and Fiberight submit for review and approval, within 30 days of receipt and prior to beginning construction of the processing facility, exclusive of the access road that is funded solely by the MRC, finalized financial documents to fund design, construction, operation, maintenance and closure of the proposed processing facility.
5. The MRC and Fiberight, and their retained consultants, have provided adequate evidence of technical ability to design, construct, operate, maintain and close the proposed processing facility in a manner consistent with state environmental regulations; provided that, the MRC and Fiberight submit to the Department for review and approval adequate evidence of the technical abilities for any additional personnel who will be responsible for operations at least 30 days prior to commencing pre-commissioning operations of the proposed processing facility.
6. The MRC and Fiberight have made adequate provisions for safe and uncongested traffic movement of all types into, out of, and within the proposed project area.
7. The MRC and Fiberight have made adequate provisions for fitting the development harmoniously into the existing natural environment; provided that, the MRC and Fiberight: (1) submit the results of the acoustical bat survey to be completed within the utility corridor; and (2) develop a timber management plan that details the management actions necessary to maintain deer winter shelter areas. The acoustical bat survey and timber management plan will be submitted at least 14 days prior to commencing construction of the proposed processing facility
8. There will be no unreasonable adverse effects on air quality and/or climate due to the proposed project.

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9. The proposed processing facility will be constructed on soils suitable for the proposed use and will not cause unreasonable sedimentation or erosion of soil. The MRC and Fiberight have adequately addressed erosion and sediment control for the proposed project, and have demonstrated that the proposed project will be carried out in conformance with the approved erosion and sediment control plan, the construction contract documents, and the Maine Erosion and Sediment Control Field Guide for Contractors, March 2015 or its equivalent.
10. The proposed processing facility will not have an unreasonable adverse effect on surface water quality and will not unreasonably cause or increase flooding on the proposed facility site or on adjacent properties nor create an unreasonable flood hazard to any structure.
11. The proposed processing facility will not have an unreasonable adverse effect on existing uses or scenic character and will not result in increased noise.
12. The MRC and Fiberight have provided for adequate utilities and will have no unreasonable adverse effect on existing or proposed utilities in the municipality or area served by utilities; provided that: (1) the MRC and Fiberight submit copies of the Bangor WWTP Industrial User Permit and letter approving the operation of a wastewater pre-treatment system, if necessary, to the Department within 30 days of receipt and (2) the MRC and Fiberight submit, for review and approval, the final design for the on-site wastewater storage tanks at least 60 days prior to construction of the proposed processing facility.
13. The proposed processing facility will not pose an unreasonable threat to the quality of a significant sand and gravel aquifer and will not result in unreasonable adverse effects on groundwater.
14. The MRC and Fiberight have submitted adequate information regarding the proposed processing facility and process design; provided that, confirmation of natural gas pipe upgrades and testing and the finalized agreement with Bangor Natural Gas is provided to the Department at least 30 days prior to conveying bio-methane into the pipe.
15. The MRC and Fiberight have submitted an operations manual that addresses the operating requirements of 06-096 C.M.R. ch. 409, § 4; provided that, an updated operations manual is prepared and submitted at least 60 days prior to full-scale operations to incorporate Department comments from an April 28, 2016 memorandum and process or equipment changes resulting from pre-commissioning, commissioning, start-up and ramp-up activities.

MUNICIPAL REVIEW COMMITTEE, INC. AND	32	SOLID WASTE
FIBERIGHT, LLC	)	LICENSE
HAMPDEN, PENOBSCOT COUNTY, MAINE)	
SOLID WASTE PROCESSING FACILITY)	
#S-022458-WK-A-N)	
(APPROVAL WITH CONDITIONS)	)	NEW LICENSE

16. The MRC and Fiberight have adequately addressed the waste characterization requirements of 06-096 C.M.R. ch. 405, § 6(C) in their operations manual.
17. The MRC and Fiberight have adequately addressed solid waste management consistent with the State’s Solid Waste Management Hierarchy pursuant to 38 M.R.S. § 2101; provided that, the MRC and Fiberight: (1) annually report any requests from joining member communities to initiate new, or significantly and materially expand existing, organic diversion programs and the disposition of such requests, inclusive of the reasons for each determination; (2) do not unreasonably withhold approval to initiate new, or significantly and materially expand existing, organic diversion programs and make reasonable efforts to replace, if needed, the quantity of removed organics with other acceptable waste; and (3) submit monthly reports to the Department listing the tonnage of MSW Bridge Capacity utilized, if any is needed, and an updated schedule outlining the measures needed to reach Commercial Operation until such time as Commercial Operation is achieved.

THEREFORE, the Department APPROVES the noted application of the Municipal Review Committee and Fiberight, LLC SUBJECT TO THE FOLLOWING CONDITIONS and all applicable standards and regulations:

1. The applicable Standard Conditions of Approval, a copy attached as Appendix A.
2. The invalidity or unenforceability of any provision, or part thereof, of this license shall not affect the remainder of the provision or any other provisions. This license shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.
3. At least 30 days prior to commencing construction of the access road and associated utility corridor and at least 60 days prior to commencing construction of the proposed processing facility, the MRC and Fiberight shall submit a complete set of construction-ready plans and documents for each component of the proposed project to the Department for review and approval.
4. Within 30 days after the closure of sale and/or the execution of the long-term lease agreement(s) has occurred, the MRC and Fiberight shall submit a copy of the deed(s) or executed long-term lease agreement(s) for the properties purchased and/or leased for the development of the proposed project.
5. Within 30 days of receipt and prior to beginning construction of the proposed processing facility, the MRC and Fiberight shall submit to the Department for review and approval the finalized financial documents to fund design, construction, operation, maintenance and closure of the proposed processing facility.

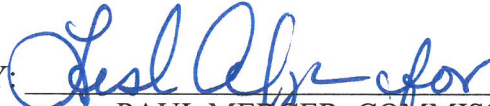
MUNICIPAL REVIEW COMMITTEE, INC. AND	33	SOLID WASTE
FIBERIGHT, LLC	)	LICENSE
HAMPDEN, PENOBSCOT COUNTY, MAINE)	
SOLID WASTE PROCESSING FACILITY)	
#S-022458-WK-A-N)	
(APPROVAL WITH CONDITIONS)	)	NEW LICENSE

6. At least 30 days prior to commencing pre-commissioning operations of the proposed processing facility, the MRC and Fiberight shall submit to the Department for review and approval adequate evidence of the technical abilities for personnel who will be responsible for operations of the proposed processing facility.
7. At least 30 days prior to conveying bio-methane into the natural gas pipe, the MRC and Fiberight shall submit to the Department confirmation of pipe upgrades and testing and the finalized agreement with Bangor Natural Gas.
8. At least 14 days prior to commencing construction of the proposed processing facility, the MRC and Fiberight shall submit the acoustical bat survey of the utility corridor and a timber management plan to maintain deer winter shelter areas.
9. Within 30 days of receipt, the MRC and Fiberight shall submit the Bangor WWTP Industrial User Permit and letter approving the operation of a wastewater pre-treatment system, if necessary, and within 60 days prior to construction of the proposed processing facility, the MRC and Fiberight shall submit, for Department review and approval, the final design for the on-site wastewater storage tanks.
10. At least 60 days prior to commencing full-scale operations, an updated operations manual which incorporates Department comments from an April 28, 2016 memorandum and process or equipment changes resulting from pre-commissioning, commissioning, start-up and ramp-up activities shall be submitted to the Department for review and approval.
11. As part of the Annual Report, the MRC and Fiberight shall report any requests from joining member communities to initiate new, or significantly and materially expand existing, organic diversion programs and the disposition of such requests, inclusive of the reasons for each determination. The MRC and Fiberight shall not unreasonably withhold approval to initiate new, or significantly and materially expand existing, organic diversion programs and make reasonable efforts to replace, if needed, the quantity of removed organics with other acceptable waste.
12. The MRC and Fiberight shall submit monthly reports to the Department listing the tonnage of MSW Bridge Capacity utilized, if any is needed, and an updated schedule outlining the measures needed to reach Commercial Operation until such time as Commercial Operation is achieved.

MUNICIPAL REVIEW COMMITTEE, INC. AND 34 SOLID WASTE
FIBERIGHT, LLC) LICENSE
HAMPDEN, PENOBSCOT COUNTY, MAINE)
SOLID WASTE PROCESSING FACILITY)
#S-022458-WK-A-N)
(APPROVAL WITH CONDITIONS)) NEW LICENSE

DONE AND DATED AT AUGUSTA, MAINE, THIS 14th DAY OF July, 2016.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: 
PAUL MERCER, COMMISSIONER

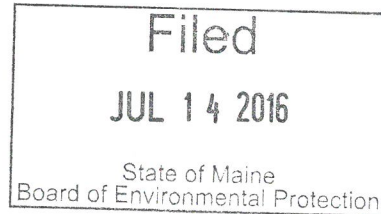
PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

Date of initial receipt of application: June 24, 2015

Date of application acceptance: July 15, 2015

Date filed with Board of Environmental Protection:

XLP79433/





STANDARD CONDITIONS TO ALL SOLID WASTE FACILITY LICENSES

STRICT CONFORMANCE WITH THE STANDARD AND SPECIAL CONDITIONS OF THIS APPROVAL IS NECESSARY FOR THE PROJECT TO MEET THE STATUTORY CRITERIA FOR APPROVAL. VIOLATIONS OF THE CONDITIONS UNDER WHICH A LICENSE IS ISSUED SHALL CONSTITUTE A VIOLATION OF THAT LICENSE AGAINST WHICH ENFORCEMENT ACTION MAY BE TAKEN, INCLUDING REVOCATION.

- 1. Approval of Variations from Plans.** The granting of this approval is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted and affirmed by the licensee. Any consequential variation from these plans, proposals, and supporting documents is subject to review and approval prior to implementation.
- 2. Compliance with All Applicable Laws.** The licensee shall secure and comply with all applicable federal, state, and local licenses, permits, authorizations, conditions, agreements, and orders prior to or during construction and operation, as appropriate.
- 3. Compliance with All Terms and Conditions of Approval.** The licensee shall submit all reports and information requested by the Department demonstrating that the licensee has complied or will comply with all terms and conditions of this approval. All preconstruction terms and conditions must be met before construction begins.
- 4. Transfer of License.** The licensee may not transfer the solid waste facility license or any portion thereof without approval of the Department.
- 5. Initiation of Construction or Development Within Two Years.** If the construction or operation of the solid waste facility is not begun within two years of issuance or within 2 years after any administrative and judicial appeals have been resolved, the license lapses and the licensee must reapply to the Department for a new license unless otherwise approved by the Department.
- 6. Approval Included in Contract Bids.** A copy of the approval must be included in or attached to all contract bid specifications for the solid waste facility.
- 7. Approval Shown to Contractors.** Contractors must be shown the license by the licensee before commencing work on the solid waste facility.
- 8. Background of key individuals.** A licensee may not knowingly hire as an officer, director or key solid waste facility employee, or knowingly acquire an equity interest or



Appendix A

STANDARD CONDITIONS TO ALL SOLID WASTE FACILITY LICENSES

debt interest in, any person convicted of a felony or found to have violated a State or federal environmental law or rule without first obtaining the approval of the Department.

9. **Fees.** The licensee must comply with annual license and annual reporting fee requirements of the Department's rules.
10. **Recycling and Source Reduction Determination for Solid Waste Disposal Facilities.** This condition does not apply to the expansion of a commercial solid waste disposal facility that accepts only special waste for landfilling.

The solid waste disposal facility shall only accept solid waste that is subject to recycling and source reduction programs, voluntary or otherwise, at least as effective as those imposed by 38 M.R.S. ch. 13.

11. **Deed Requirements for Solid Waste Disposal Facilities.** Whenever any lot of land on which an active, inactive, or closed solid waste disposal facility is located is being transferred by deed, the following must be expressly stated in the deed:
 - A. The type of facility located on the lot and the dates of its establishment and closure.
 - B. A description of the location and the composition, extent, and depth of the waste deposited.
 - C. The disposal location coordinates of asbestos wastes must be identified.



DEP INFORMATION SHEET

Appealing a Department Licensing Decision

Dated: March 2012

Contact: (207) 287-2811

SUMMARY

There are two methods available to an aggrieved person seeking to appeal a licensing decision made by the Department of Environmental Protection's ("DEP") Commissioner: (1) in an administrative process before the Board of Environmental Protection ("Board"); or (2) in a judicial process before Maine's Superior Court. An aggrieved person seeking review of a licensing decision over which the Board had original jurisdiction may seek judicial review in Maine's Superior Court.

A judicial appeal of final action by the Commissioner or the Board regarding an application for an expedited wind energy development (35-A M.R.S.A. § 3451(4)) or a general permit for an offshore wind energy demonstration project (38 M.R.S.A. § 480-HH(1)) or a general permit for a tidal energy demonstration project (38 M.R.S.A. § 636-A) must be taken to the Supreme Judicial Court sitting as the Law Court.

This INFORMATION SHEET, in conjunction with a review of the statutory and regulatory provisions referred to herein, can help a person to understand his or her rights and obligations in filing an administrative or judicial appeal.

I. ADMINISTRATIVE APPEALS TO THE BOARD

LEGAL REFERENCES

The laws concerning the DEP's *Organization and Powers*, 38 M.R.S.A. §§ 341-D(4) & 346, the *Maine Administrative Procedure Act*, 5 M.R.S.A. § 11001, and the DEP's *Rules Concerning the Processing of Applications and Other Administrative Matters* ("Chapter 2"), 06-096 CMR 2 (April 1, 2003).

HOW LONG YOU HAVE TO SUBMIT AN APPEAL TO THE BOARD

The Board must receive a written appeal within 30 days of the date on which the Commissioner's decision was filed with the Board. Appeals filed after 30 calendar days of the date on which the Commissioner's decision was filed with the Board will be rejected.

HOW TO SUBMIT AN APPEAL TO THE BOARD

Signed original appeal documents must be sent to: Chair, Board of Environmental Protection, c/o Department of Environmental Protection, 17 State House Station, Augusta, ME 04333-0017; faxes are acceptable for purposes of meeting the deadline when followed by the Board's receipt of mailed original documents within five (5) working days. Receipt on a particular day must be by 5:00 PM at DEP's offices in Augusta; materials received after 5:00 PM are not considered received until the following day. The person appealing a licensing decision must also send the DEP's Commissioner a copy of the appeal documents and if the person appealing is not the applicant in the license proceeding at issue the applicant must also be sent a copy of the appeal documents. All of the information listed in the next section must be submitted at the time the appeal is filed. Only the extraordinary circumstances described at the end of that section will justify evidence not in the DEP's record at the time of decision being added to the record for consideration by the Board as part of an appeal.

WHAT YOUR APPEAL PAPERWORK MUST CONTAIN

Appeal materials must contain the following information at the time submitted:

1. *Aggrieved Status.* The appeal must explain how the person filing the appeal has standing to maintain an appeal. This requires an explanation of how the person filing the appeal may suffer a particularized injury as a result of the Commissioner's decision.
2. *The findings, conclusions or conditions objected to or believed to be in error.* Specific references and facts regarding the appellant's issues with the decision must be provided in the notice of appeal.
3. *The basis of the objections or challenge.* If possible, specific regulations, statutes or other facts should be referenced. This may include citing omissions of relevant requirements, and errors believed to have been made in interpretations, conclusions, and relevant requirements.
4. *The remedy sought.* This can range from reversal of the Commissioner's decision on the license or permit to changes in specific permit conditions.
5. *All the matters to be contested.* The Board will limit its consideration to those arguments specifically raised in the written notice of appeal.
6. *Request for hearing.* The Board will hear presentations on appeals at its regularly scheduled meetings, unless a public hearing on the appeal is requested and granted. A request for public hearing on an appeal must be filed as part of the notice of appeal.
7. *New or additional evidence to be offered.* The Board may allow new or additional evidence, referred to as supplemental evidence, to be considered by the Board in an appeal only when the evidence is relevant and material and that the person seeking to add information to the record can show due diligence in bringing the evidence to the DEP's attention at the earliest possible time in the licensing process or that the evidence itself is newly discovered and could not have been presented earlier in the process. Specific requirements for additional evidence are found in Chapter 2.

OTHER CONSIDERATIONS IN APPEALING A DECISION TO THE BOARD

1. *Be familiar with all relevant material in the DEP record.* A license application file is public information, subject to any applicable statutory exceptions, made easily accessible by DEP. Upon request, the DEP will make the material available during normal working hours, provide space to review the file, and provide opportunity for photocopying materials. There is a charge for copies or copying services.
2. *Be familiar with the regulations and laws under which the application was processed, and the procedural rules governing your appeal.* DEP staff will provide this information on request and answer questions regarding applicable requirements.
3. *The filing of an appeal does not operate as a stay to any decision.* If a license has been granted and it has been appealed the license normally remains in effect pending the processing of the appeal. A license holder may proceed with a project pending the outcome of an appeal but the license holder runs the risk of the decision being reversed or modified as a result of the appeal.

WHAT TO EXPECT ONCE YOU FILE A TIMELY APPEAL WITH THE BOARD

The Board will formally acknowledge receipt of an appeal, including the name of the DEP project manager assigned to the specific appeal. The notice of appeal, any materials accepted by the Board Chair as supplementary evidence, and any materials submitted in response to the appeal will be sent to Board members with a recommendation from DEP staff. Persons filing appeals and interested persons are notified in advance of the date set for Board consideration of an appeal or request for public hearing. With or without holding a public hearing, the Board may affirm, amend, or reverse a Commissioner decision or remand the matter to the Commissioner for further proceedings. The Board will notify the appellant, a license holder, and interested persons of its decision.

II. JUDICIAL APPEALS

Maine law generally allows aggrieved persons to appeal final Commissioner or Board licensing decisions to Maine's Superior Court, see 38 M.R.S.A. § 346(1); 06-096 CMR 2; 5 M.R.S.A. § 11001; & M.R. Civ. P 80C. A party's appeal must be filed with the Superior Court within 30 days of receipt of notice of the Board's or the Commissioner's decision. For any other person, an appeal must be filed within 40 days of the date the decision was rendered. Failure to file a timely appeal will result in the Board's or the Commissioner's decision becoming final.

An appeal to court of a license decision regarding an expedited wind energy development, a general permit for an offshore wind energy demonstration project, or a general permit for a tidal energy demonstration project may only be taken directly to the Maine Supreme Judicial Court. See 38 M.R.S.A. § 346(4).

Maine's Administrative Procedure Act, DEP statutes governing a particular matter, and the Maine Rules of Civil Procedure must be consulted for the substantive and procedural details applicable to judicial appeals.

ADDITIONAL INFORMATION

If you have questions or need additional information on the appeal process, for administrative appeals contact the Board's Executive Analyst at (207) 287-2452 or for judicial appeals contact the court clerk's office in which your appeal will be filed.

Note: The DEP provides this INFORMATION SHEET for general guidance only; it is not intended for use as a legal reference. Maine law governs an appellant's rights.

APPENDIX J

CITY OF OLD TOWN HOST COMMUNITY AGREEMENT

**HOST COMMUNITY COMPENSATION AND
FACILITY OVERSIGHT AGREEMENT**

This Agreement ("Agreement") made as of the 8th day of December, 2005, by and among the STATE OF MAINE, acting by and through its Executive Department, State Planning Office (the "State"), the City of Old Town, Maine, a municipal corporation organized and existing under the laws of the State of Maine, having its principal offices at 150 Brunswick Street, Old Town, Maine 04468 (the "City") and Casella Waste Systems, Inc., a Delaware corporation having a place of business at 25 Greens Hill Road, Rutland, Vermont 05702 ("Casella").

WITNESSETH:

WHEREAS, the STATE OF MAINE, acting by and through its Executive Department, State Planning Office, pursuant to Resolve 2003, ch. 93 (the "Resolve"), agreed to purchase from Fort James Operating Company ("FJ"), and FJ agreed to sell to the State, FJ's solid waste landfill (the "Landfill") located in Old Town, Maine; and

WHEREAS, an operator of the landfill was sought through a competitive bid process conducted by the State Planning Office; and

WHEREAS, Casella was selected as the operator of the Landfill; and

WHEREAS, by deed dated 3 February 2004, recorded in the Penobscot County Registry of Deeds in Book 9188, Page 153, FJ conveyed the Landfill to the State; and

WHEREAS, the State, acting pursuant to the Resolve has entered into an Operating Services Agreement, dated 5 February 2004 with Casella; and

WHEREAS, the parties hereby acknowledge that landfills and their operations may have ongoing impacts on host communities, and the State and Casella agree to provide benefits to the City pursuant to 38 M.R.S.A. § 2170 et. seq. and as further provided in this Agreement; and

WHEREAS, except as provided in the Resolve, 38 M.R.S.A. §§ 2170 to 2177 requires the State to provide certain benefits to the City as the municipality in which the Landfill is located; and

NOW, THEREFORE, in consideration of the foregoing, the mutual promises and agreements herein contained, and for other and good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the State, the City and Casella agree as follows:

SECTION 1 DEFINITIONS

"Acceptable Waste" shall mean such material as may from time to time be legally accepted at the Landfill in accordance with applicable MDEP permits and other applicable laws and regulations excluding, however, all Excluded Waste.

"Biomass Ash" shall mean the ash resulting from the operation of the Biomass Generating Facility to the extent the same is disposable at the Landfill under the Existing Permit and meets the definition of "special waste" as defined under Maine Environmental Law.

"Biomass Generating Facility" shall mean the electric generating facility fueled principally with biomass fuel, to be installed at the Old Town Mill.

"City" shall mean the City of Old Town, Maine, a municipal corporation organized and existing under the laws of the State of Maine, also referred to herein as the Host Community.

"Commencement Date" shall be the effective date of this Agreement, which shall be deemed to be the date on which all parties have signed the Agreement.

"Disposal" or "Dispose" shall mean and include the disposal or deposit of Acceptable Waste at or in the Landfill in accordance with applicable DEP permits and other applicable federal, State or local laws, regulations and ordinances, excluding, however, all Excluded Waste.

"Environmental Law" shall mean any federal, state or local law, statute, rule, order, directive, judgment, Governmental Approval or regulation or the common law relating to the environment (including the ambient air, surface water, groundwater, land surface or subsurface strata), or exposure of persons or property to Materials of Environmental Concern, including any statute, regulation, administrative decision or order pertaining to: (a) the presence of or the treatment, storage, disposal, generation, transportation, handling, distribution, manufacture, processing, use, or recycling of Materials of Environmental Concern or documentation related to the foregoing; (b) air, water and noise pollution; (c) groundwater and soil contamination; (d) the release, threatened release, or accidental release into the environment, or other areas of Materials of Environmental Concern, including emissions, discharges, injections, spills, escapes or dumping of Materials of Environmental Concern; (e) transfer of interests in or control of real property; (f) land use, subdivision and zoning; (g) community or worker right-to-know disclosures with respect to Materials of Environmental Concern; (h) the protection of wild life, aquatic and marine life and wetlands, and endangered and threatened species; and (i) storage tanks, vessels, containers, abandoned or discarded barrels and other open or closed receptacles. As used above, the term "release" shall have the meaning set forth in CERCLA, and to the extent it is more extensive or comprehensive, as defined in Maine Environmental Law. Without limiting the

foregoing, the term "Environmental Law" shall include the Maine Forest Practices Act, 12 M.R.S.A. §§8867-A et. seq.

"Existing Permit" shall mean Maine Department of Environmental Protection Permit #S- 20700-7A-A-N, issued July 28, 1993, as amended or revised.

"Excluded Waste" shall mean (a) any Acceptable Waste or any other waste of any nature generated outside of the State of Maine, (b) any waste as of the date of this Agreement under contract for delivery to another disposal facility or processing facility unless agreed to in writing by such facility's waste generator or responsible party, and (c) any other waste or material excluded from disposal in the Landfill by applicable laws or regulations, or excluded by any of the terms and conditions of any permits, licenses, authorizations or approvals obtained with respect to the construction or operation of the Landfill, provided that Excluded Waste shall not include any waste that would otherwise constitute Excluded Waste hereunder if such category of waste is accepted at another disposal facility in the State of Maine owned or operated by the State, subject in all instances to the prior receipt of any and all required licenses or permits for such category of waste. Notwithstanding the foregoing, the parties acknowledge and agree that, subject to applicable laws and regulations and such certifications as the State may reasonably require, Casella may bring construction and demolition waste generated outside the State of Maine for processing within the State of Maine solely for the purposes of allowing Casella to generate biomass fuel required in connection with the provision of biomass fuel to FJ or its successor or assigns under the C&D Fuel Agreement between FJ and Casella dated February 5, 2004. Casella agrees to use its best efforts to ensure that any such construction and demolition waste generated outside the State of Maine and processed in the State of Maine is free of putrescible waste. This term shall also include such other wastes and materials as Casella determines, in the reasonable exercise of its commercial judgment, pose a risk or danger to the operation or safety of the Landfill or to the human or natural environment or are otherwise reasonably unacceptable to Casella provided, however, that in no event may FJ Waste be excluded or otherwise deemed Excluded Waste unless such exclusion is required by applicable law, regulation, permit, license, authorization or approval.

"Expansion Permit" shall mean any and all federal, state, local and other governmental permits, permit modifications, operation plan modifications, other modifications, statutory amendments and legislation, licenses, approvals, authorizations or amendments necessary for the expansion of the Landfill beyond the licensed footprint as of the date hereof.

"FJ" shall mean Fort James Operating Company, a Delaware Corporation with a place of business in Old Town, Maine or its successors or assigns.

"FJ Waste" shall mean collectively all Mill Waste and all Biomass Ash.

“Force Majeure” shall mean any act, event or condition affecting the Landfill or to the extent that it materially and adversely affects the ability of either party to perform or comply with any obligation, duty or agreement required of the party under this Agreement, provided such act, event or condition is beyond the reasonable control of the party or its agents relying thereon and is not the result of the willful or negligent act or omission of the party relying thereon. Force Majeure includes, without limitation but by way of illustrating the actions, events and conditions constituting a Force Majeure hereunder: (a) an act of God, epidemic, lightning, earthquake, fire, explosion, storm, flood or similar occurrence; (b) an act of the public enemy, war, blockage, insurrection, riot, general arrest or restraint of government and people, civil disturbance or disobedience, sabotage or similar occurrence; or (c) a strike, work slowdown, or similar industrial or labor action.

“Governmental Approval” means any and all approvals, licenses, permits, authorizations (or the transfer thereof) required by any Governmental Authority for the design, construction, improvement, alteration, ownership or operation of the Landfill and all related projects, improvements or land use or the transfer thereof.

“Host Community Fee” shall mean the fees to be paid monthly by Casella (and/or the State) for Acceptable Waste disposed of at or in the Landfill as stated in Section 3 herein.

“Host Community” shall mean the City of Old Town and may also be referred to as the “Host Municipality” or the “City”.

“Landfill” shall mean the solid waste landfill located in Old Town, Maine, that the State has acquired from FJ pursuant to the Resolve and all of the assets and properties acquired by the State from FJ in connection with said landfill, including any expansion of the solid waste landfill located at the Premises, whether such expansion is effected under the Existing Permit or under a new, amended or additional Governmental Approval, and any associated land, buildings, appurtenances, equipment and fixtures, the full benefit of all utility arrangements, licenses, approvals and permits to the extent transferable, including rights of assignment to the extent any such licenses and permits are assignable (but subject to any third party consents when required).

“License Amendment” shall mean any and all federal, state, local and other governmental permits, permit modifications, operation plan modifications, other modifications, statutory amendments and legislation, licenses, approvals, authorizations or amendments necessary for the development of the Landfill within the currently permitted footprint for an additional seven (7) million cubic yards.

“Lincoln” shall mean Lincoln Paper & Tissue Co., LLC

“Lincoln’s Biomass Ash” shall mean the ash resulting from the operation of the Lincoln biomass boiler located at Lincoln’s Mill in Lincoln, Maine.

"Materials of Environmental Concern" shall mean any: pollutants, contaminants or hazardous substances (as such terms are defined under CERCLA, the Maine Protection and Improvement of Waters Act, 38 M.R.S.A. § 361-A, or the Maine Uncontrolled Hazardous Substances Sites Law, 38 M.R.S.A. § 1362.1), pesticides (as such term is defined under the Federal Insecticide, Fungicide and Rodenticide Act, 7 U.S.C. §§ 136 et seq.), solid wastes and hazardous wastes (as such terms are defined under the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901 et seq., and Maine's Hazardous Waste, Septage and Solid Waste Management Act, 38 M.R.S.A. §§ 1301 et seq.), chemicals, other hazardous, radioactive or toxic materials, oil, petroleum and petroleum products (and fractions thereof), asbestos and asbestos-containing materials, polychlorinated biphenyls (PCBs) or PCB-containing materials, or any other material (or article containing such material) listed or subject to regulation under any law, statute, rule, regulation, order, Governmental Approval, or directive due to its potential, directly or indirectly, to harm the environment or the health of humans or other living beings.

"MDEP" shall mean the Maine Department of Environmental Protection, and any successor agency or department of the State of Maine.

"Mill Waste" shall mean waste from the Old Town Mill of a composition consistent with the waste FJ (or its successors or assigns) is permitted to dispose of at the Landfill under the Existing Permit, provided it meets the definition of "special waste" as currently defined by Maine Environmental Law.

"Operating Services Agreement or OSA" shall mean the Agreement between the State and Casella effective on 5 February 2004 and pursuant to which Casella is authorized to operate the Landfill.

"Premises" shall mean the real estate, together with all buildings and improvements thereon, situated in Alton and Old Town, Maine and more particularly described in Exhibit A of the Operating Services Agreement, including the Landfill.

"Reconciliation Notice" shall mean the written notice provided by the State and/or Casella to the City each month indicating the number of tons of Mill Waste, Biomass Ash and other waste of any kind or material disposed of or utilized at or in the Landfill during the month.

"Resolve" shall mean Resolve 2003, Chapter 93 of the Maine Legislature pursuant to which the State was authorized to acquire from FJ, and to own and cause to be operated, the Landfill.

"SPO" shall mean the State Planning Office, an Executive Department of the State.

SECTION 2 STATE LAW, OPERATING SERVICES AGREEMENT

2.1 State Law. The parties agree that the construction, operation and maintenance of the Landfill are subject to the procedures and requirements of 38 M.R.S.A. §§ 2170 to 2177 and the Resolve, as in effect on the date of this Agreement. In the event that any provision of 38 M.R.S.A. §§ 2170 to 2177 conflicts with the specific language of the Resolve, the language of the Resolve shall prevail. The City agrees that Casella's and the State's performance of their obligations under this Agreement fully satisfies the State's and Casella's obligations to the City under these statutory sections and the Resolve for the duration of Casella's role as operator under the OSA.

2.2 Operating Services Agreement. The responsibilities of the State and Casella, relative to the landfill and its operation, are identified in the Operating Services Agreement between the parties, signed February 5, 2004. The State Planning Office is the owner of the landfill property and holds the landfill permits and licenses. .

SECTION 3 FEES

The City shall receive the following fees:

3.1 Host Community Fee. Casella shall pay the City a monthly Host Community Fee for Acceptable Waste disposed of at or in the Landfill, as follows:

- (a) Per ton fee. \$ 1.85 per ton for all Acceptable Waste disposed of at or in the Landfill, except as otherwise provided herein. Construction and Demolition Debris and other Acceptable Waste generated by the City and disposed of at the Landfill at no cost pursuant to Section 4, FJ Mill Waste, as described in Section 2.8 (b)(i) of the OSA (up to 50,000 tons per calendar year), and Lincoln Biomass Ash, as described in Section 2.8 (c) of the OSA (up to 6000 tons per calendar year), disposed of at or in the Landfill, materials approved for beneficial use by MDEP in writing and set forth in Exhibit 1, as expanded from time to time by Casella as new materials are approved in writing by MDEP for beneficial use at or on the Landfill, tire chips or wire for drainage, lime, fine woodash for cell construction or odor control or other such beneficial use, which must be generated by third parties and used on a short term, sporadic basis, or other materials that Casella accepts for beneficial use and for a tipping or disposal fee (exclusive of transportation costs) of \$5.00 per ton or less, shall be exempt from the per ton fee. Waste collected from City residents or businesses shall not be deemed generated by the City. FJ Mill Waste in excess of 50,000 tons per calendar year and Lincoln Biomass

Ash in excess of 6000 tons per calendar year, respectively, disposed of at the Landfill shall be subject to the \$1.85 Host Community Fee described above.

Annual adjustment. The base Host Community Fee set forth above shall be adjusted annually by multiplying 3.7% times the increase (assuming there is one) in the annual average third party tipping fee (exclusive of transportation, intra-Casella company tip fees and any tipping fees on waste or material not subject to the Host Community Fee) paid at the Landfill. Casella agrees to maintain tipping fees on waste separate and distinct from transportation fees and to avoid offering third parties the opportunity to dispose of waste at lower tipping fees in exchange for higher transportation fees. The first annual adjustment shall be made effective May 1, 2006 and will be in effect for the following twelve months. The next annual adjustment shall be made (assuming an increase or decrease is calculated) on May 1, 2007 and every May 1 thereafter for the term of this Agreement.

(Example of annual adjustment calculation: If the average third party tip fee for the period prior to May 1, 2005 was \$42.50/per ton and the average third party tip for the period May 1, 2005 to May 1, 2006 is \$45 per ton, the annual adjustment effective May 1, 2006 would be: $\$45 \text{ minus } \$42.50 = \$2.50 \times 3.7\% = \$.09$ increase in host per ton fee, or $\$1.85 + \$.09 = \$1.94$ per ton). In no event shall the per ton fee fall below \$1.85 ton.

- (b) Per ton fee on new categories of waste. \$2.50 per ton on any category of solid waste not currently approved by MDEP for acceptance at the Landfill that subsequently is licensed as an Acceptable Waste. The categories of wastes currently approved for acceptance at the Landfill are set forth on Exhibit 2. Casella shall provide the City with a copy of all blanket permits related to categories of waste referred to in Exhibit 2 and copies of all specific permits or approvals related to all other waste streams listed in Exhibit 2. Acceptance of a new customer's waste does not constitute a new category of waste if that customer's waste is listed as a currently approved waste category on Exhibit 1. One example of a category of waste for which Casella agrees to pay this higher per ton fee is any waste disposed at the Landfill after a bypass event at the Maine Energy Recovery Company in Biddeford, ME ("Maine Energy") that involves a complete cessation of processing and incineration at Maine Energy for a period of at least 120 consecutive days. The \$2.50 per ton fee would apply to all such Maine Energy waste disposed at the Landfill after the 120 day period and would revert to the per ton fee under Section 3.1(a) if and when Maine Energy resumed operations. Casella agrees that if Maine Energy ceases to operate permanently as a result of a decision by its management

and/or owners, or the Cities of Biddeford and/or Saco or by order of any governmental authority, then the \$2.50 per ton fee would apply from the date of such cessation of operations.

- (c) Reconciliation Notice. No later than fifteen (15) days following the end of each calendar month, Casella shall provide the City with a written Reconciliation Notice for the previous month showing the Host Community Fee owed for the previous month, the number of tons of waste disposed of at or in the Landfill and specifically the number of tons of Mill Waste, Biomass Ash and Lincoln Biomass Ash disposed of at or in the Landfill.
- (d) Payment. Fees payable under this Section shall be paid monthly with payment to be made no later than thirty-five (35) days after the last day of each calendar month. Payments under this Section shall be deemed to have begun accruing on September 1, 2005.
- (e) Adjustments. Upon receiving the Reconciliation Notice, the City may inspect the relevant books and records from the operation of the Landfill in order to verify the Reconciliation Notice and the City may propose any adjustment that such review of books and records may disclose. Casella may accept or reject said adjustment, and in the event Casella rejects said adjustment, the parties shall resolve such rejection through the dispute resolution process set forth in Section 20 below. In the event that it is ultimately determined through arbitration that the City shall be entitled to the adjustment in whole or in part, the City shall be entitled to said adjustment together with the legal rate of interest the City may charge on overdue taxes from the date the payment was due as set forth in (d) above.
- (f) Suspension of Payments. Notwithstanding anything above to the contrary, the obligation of Casella to make the payments or provide the benefits set forth in Sections 3.1(a) and 3.1(b) above shall be suspended in the event that, and for so long as, the City:
 - (i) appeals or funds a third party to appeal to any administrative or judicial body any federal, state or local permit, license, approval or determination including, but not limited to, any of the foregoing issued by DEP to the State and/or Casella relating to the Landfill or any expansion thereof (provided that the City's participation in any such permit, license, approval or determination process up to the point of decision shall not be a basis for suspending payment under this provision), or

(ii) imposes, through ordinance (whether enacted by the City Council or adopted as a result of a citizen initiative or referendum), permit, condition, or other act (including, but not limited to, denial of a Landfill-related application) or failure to act (including, but not limited to, failure to act on a Landfill-related application within the time period required by law), any substantial or material limitation on the State and/or Casella's ability to operate the Landfill or any expansion thereof in accordance with permits and licenses issued by DEP (e.g., enactment or enforcement of an ordinance or regulation that effectively prohibits the operation of the Landfill or any expansion thereof), other than any such ordinance, permit, condition or other act or failure to act that is authorized to be enacted, implemented, done or omitted by the City under the Resolve.

If any of the actions described in clauses (i) or (ii) above occurs, Casella shall, subject to the notice of suspension provision below, place the Host Community Fees normally due the City into an escrow account as of the effective date of the event until the disputed action is resolved by negotiation, mediation, arbitration, or litigation after all appeals, if any, have been exhausted. Disposition of the escrowed Host Community Fees through negotiation or mediation shall be by agreement of the City and Casella. Disposition of the escrowed Host Community Fees through arbitration shall be as determined by the arbitrator. Disposition of the Host Community Fees through litigation shall be payment to the City if the City prevails, and retention by Casella if Casella prevails. If the City prevails in any arbitration or litigation under this subsection, Casella shall pay the escrowed Host Community Fees, plus interest at the rate set forth in 14 M.R.S.A. § 1602-C (1) (B). Following resolution of the disputed action, Host Community Fee payments shall resume as described in Section 3.1 a-e.

This Section 3.1(f) is not intended to preclude the City from exercising any statutory authority it may have to act in its own interest under applicable law, but rather to provide a contractual means for Casella to withhold certain benefits under this Agreement until resolution of the action taken by the City. With respect to clause (ii) above, the parties agree to conduct ongoing communication concerning the operation of the Landfill or any expansion thereof. The City shall make a good faith effort to provide Casella with: (1) copies of agendas of the meetings of the City on which the Landfill appears at the time they are provided to the City Council, (2) copies of any proposed ordinance relating to the Landfill, and (3) written notice at least 15 to 30 days in advance of any meeting of the City in which the City may take action that could reasonably be anticipated to impose a substantial or material limitation

on the ability of Casella to continue to operate the Landfill including any expansion of same. The commencement of an action by the City to prosecute a violation of its Ordinances or of this Agreement shall not constitute grounds for suspension as set forth in this Section 3.1(f).

Notice of Suspension. Casella shall make a good faith effort to advise the City in writing within 15 days of receipt of notice from the City if any ordinance, or other act, or failure to act, of the City described in clause (ii) above could reasonably be anticipated to impose a substantial or material limitation on the operation of the Landfill including any expansion thereof. In the event that Casella elects to suspend payments pursuant to this Section 3.1(f), Casella shall provide 14 days prior written notice of the suspension to the City, which notice shall state the reason(s) for the suspension. In the event the parties do not resolve the matter within 14 days of the receipt of said notice, the suspension shall become effective as of the date of the acts of the City that trigger the right to suspend or the effective date of a City vote in the case of a referendum, as set forth above ("Suspension Effective Date"). In the event that Casella suspends payments pursuant to this Section 3.1(f), Casella shall pay, and the City shall be entitled to, the fees due under Sections 3.1(a) and 3.1(b) up to the Suspension Effective Date.

- (g) Books and Records. The acceptance of Host Community Fee payments shall be without prejudice to the City's rights to an examination of the relevant books and records from the operation of the Landfill during normal business hours in order to verify the amount of the Host Community Fee payments. The State and/or Casella shall keep accurate and true records, books and dates with respect to all material received at the Landfill. Accurate books and other records and data of account shall be kept of such business whether payment was made for cash or otherwise and whether or not monies were actually received. Any examination of the books and records described in this paragraph shall occur at the usual location where such materials are maintained.

3.2 Impact Payments. Casella shall make annual impact payments to the City in accordance with 38 M.R.S.A. § 2176. The impact payments shall be in the amount of \$50,000.00 payable on an annual basis beginning on the Commencement Date and on each subsequent annual anniversary date of the Commencement Date during the term of this Agreement. Casella agrees that it will make the 2005 Impact Payments upon execution of this Agreement. Every five (5) years during the term of this Agreement, the annual Impact Payments shall be increased by \$5,000. The payments shall be used by the City to help determine or help offset potential impacts on the City's public welfare, budget, infrastructure and services arising

out of the construction, operation and maintenance of the Landfill and any expansion thereof in the City, which may include, without limitation, the following:

- (a) Roads. Improvements, maintenance and repair of local roads or traveled ways affected by the Landfill.
- (b) Emergency Response. Development and maintenance of adequate or additional local emergency response capacity relating to the Landfill.
- (c) Employee Monitoring. Financial support to retain, train and supervise municipally employed personnel to monitor the State's, Casella's or the Landfill's compliance with any Environmental Law or the terms of this Agreement.
- (d) Consultant Monitoring. Financial support to retain and supervise consultants as deemed necessary by the City to monitor the State's, Casella's or the Landfill's compliance with any Environmental Law or the terms of this Agreement.
- (e) Budget. Financial support to offset potential losses of tax revenues due to any reductions in assessed values for properties in the City directly attributable to the construction, operation or maintenance of the Landfill.

3.3 Payment in Lieu of Taxes. Casella has already paid the payment in lieu of taxes for the City's fiscal year 2005-2006, which started on July 1, 2005 and will end on June 30, 2006. Beginning in 2006 and on an annual basis thereafter, Casella shall make on or before October 1 of each year a payment in-lieu of taxes to the City equal to the amount of property tax that would have been assessed during the tax year if said property had not been exempt from municipal taxation, calculated in accordance with the financial model utilized by the City and agreed to by Casella. The financial model is attached as Exhibit 3 and will be updated annually for changes in costs, revenues, capitalization rate and available volumes. By way of example, the application of the model resulted in a taxable basis of \$8,780,192 for the City's fiscal year 2005-2006. Future calculations of the payment in lieu of taxes shall apply such model in a manner consistent with that used to produce the result described in the immediately preceding sentence.

3.4 Exclusive Payment Obligations. The parties agree and acknowledge that the payment obligations set forth in this Section 3 shall be the exclusive payment obligations from the State or Casella arising out of or related to the ownership or operation of the Landfill or any expansion thereof, and that the City may not collect or seek to collect other payments, fees, costs, taxes, or payments in lieu of taxes from Casella or the State in respect thereof under laws, regulations, or common law theories in effect at the Commencement Date or under laws, regulations, or common law theories enacted or arising in the future, provided, however, that

nothing in this section shall limit the City's ability to assess taxes related to new projects developed or in connection with the Landfill or for equipment (including motor vehicles) owned currently or in the future by Casella or third parties or to collect reasonable fees that may be required by local ordinances, development review or otherwise, in effect or enacted in the future in accordance with the limitations of the Resolve, provided that all such ordinances and the fees required therein are applicable to all industrial facilities or other businesses with similar impacts in the City.

SECTION 4 CONSTRUCTION AND DEMOLITION DEBRIS AND OTHER ACCEPTABLE WASTE GENERATED BY OLD TOWN

Casella agrees to dispose up to the following amounts of construction and demolition debris, as defined in MDEP Rules Chapter 400.1(FF), and other Acceptable Waste generated by the City (exclusive of waste collected from residents or businesses) at no cost to the City; provided, however, it shall be the City's responsibility and obligation to deliver said construction and demolition debris and other Acceptable Waste to the Landfill:

<u>Year</u>	<u>Tons per calendar year</u>
May 1, 2005 to April 30, 2006	500 tons
May 1, 2006 to end of term	3000 tons

In the event the State and Casella secure a permit to expand the Landfill (as said Expansion Permit is defined herein), and construct the expansion, Casella agrees to accept up to 3000 tons annually (May 1 to April 30) of construction and demolition debris or other Acceptable Waste generated by the City at no cost to the City. The tipping fee for amounts of City-generated Acceptable Waste in excess of those described above shall be the prices of the published Landfill tipping fees for the waste delivered.

SECTION 5 INFORMATION AND ENFORCEMENT

5.1 Information from the State. During the Term of this Agreement, the State agrees to provide all of the following information to the City or the City's consultant designee in a timely fashion:

- (a) Copies of any State or MDEP inspection report relating to the Landfill within five (5) working days of the preparation of the report or its presentation to the State or MDEP.

- (b) Notification of all enforcement or emergency orders for or related to the Landfill, including, but not limited to, abatement orders, cessation orders, final civil penalty assessments, consent orders and decrees and notices of violation within five (5) working days of issuance.
- (c) Copies of all air, soil and water quality monitoring data collected by the State or the MDEP at the Landfill, including, without limitation, leachate and ash testing results and test results related to landfill gas, within five working days after laboratory analysis becomes available to the State.
- (d) Copies of all analyses of the data compiled under subparagraph (c).

5.2 Information from Casella. During the Term of this Agreement, Casella agrees to provide all of the following information to the City or the City's consultant designee in a timely fashion:

- (a) Copies of all air, soil and water quality monitoring data related to the Landfill, including, without limitation, leachate and ash testing results and test results related to landfill gas, conducted by or on behalf of Casella, within five (5) working days after the information becomes available to Casella. Said information shall include the results of any tests which are not required by permit or State regulation.
- (b) A copy of the annual report prepared by Casella and provided to the State pursuant to Section 10.1 of the Operating Services Agreement summarizing in reasonable detail the business and technical operation of the Landfill during the preceding calendar year or portion thereof and such other books and records as the City may reasonably request at the same time that such information is provided to the State. Casella shall maintain accurate records, books and data with respect to the amount of all Acceptable Waste disposed of at or in the Landfill.

5.3 Local Inspections. The City, acting by and through its Code Enforcement Officer, or his or her designated representative, shall have the right to inspect the Landfill during reasonable business hours to ensure that only Acceptable Waste is being received at the Landfill and to confirm compliance with the provisions of this Agreement and the requirements of all Environmental Laws and other applicable laws. The City shall also have the right to take all necessary action to monitor the amount and type of solid waste materials delivered to the Landfill and to perform air, soil and water quality testing at the site, including the right to perform testing at the Landfill in emergency situations without prior notice to the State and/or Casella.

5.4 Hotline. Casella agrees to continue to operate a hotline twenty-four (24) hours per day. The operator of the hotline shall at all times have access to one or more persons with the authority to address any citizen concerns or emergency conditions at the Landfill. Casella shall maintain a written log of all calls to the hotline and upon request by the City, shall promptly provide a copy of the log to the City. If the parties agree at some point in the future that a twenty-four (24) hour hotline is no longer necessary, then Casella may limit the hours of operation of the hotline to no less than eight (8) hours per day/five (5) days per week.

SECTION 6 PROPERTY VALUE OFFSET

The parties acknowledge that under state statute, 38 M.R.S.A. § 2175-A and Chapter 475, The Property Value Offset Program of the Maine State Planning Office, owners of property in the City, the value of which has been affected by a state-owned landfill are eligible for reimbursement from the state for loss in property value directly attributable to the construction and operation of the Landfill.

SECTION 7 WATER SUPPLY MONITORING AND PROTECTION

The parties acknowledge that under state statute, 38 M.R.S.A. § 2177, persons owning land contiguous to a State-owned Landfill may request that quarterly water quality sampling and analysis be performed on their private water supply and that the provisions of this statute apply.

SECTION 8 OTHER LANDFILL-RELATED DEVELOPMENT

The parties acknowledge that in the future Casella may seek to develop projects at or in connection with the Landfill other than for disposal of solid waste. Such future development projects may include, but are not limited to, a landfill gas to energy generation facility and a greenhouse powered by waste heat from a landfill gas to energy facility, or recycling or processing facilities. Casella agrees to work with the State to establish any such project as a taxable facility and Casella further agrees that the City shall derive tax revenue from any leased property and any new non-Landfill structure built thereon. Moreover, prior to the development of any such project, Casella shall invite the City to become a partner in the development venture, with revenue sharing proportionate to the City's investment. The terms of any such arrangement shall be the subject of future negotiations between the City and Casella, which the parties agree shall be undertaken in good faith. Any agreement reached between the parties shall be memorialized in a separate written agreement.

SECTION 9 **TERM OF AGREEMENT**

The term of this Agreement shall be deemed to commence on the Commencement Date and shall end on the earlier to occur of: (a) thirty (30) years after the Commencement Date; or (b) the date the Operating Services Agreement is terminated by either the State or Casella as provided therein, including, without limitation, as set forth in Section 5.3(a) of said Agreement; or (c) the date this Agreement is terminated by one or more of the parties as provided herein.

SECTION 10 **EXPANSION OF LANDFILL**

The parties specifically acknowledge that Casella has an obligation to the State under the Operating Services Agreement to prepare on or before 5 February 2007, an application for an Expansion Permit. At least sixty (60) days prior to submission of the application to the MDEP, Casella shall provide to the City written notice of said proposed expansion. The parties agree to meet within thirty (30) days after receipt of said notice for purposes of discussing the proposed expansion and the draft application. A copy of the Application shall be provided by Casella to the City not later than its submission to MDEP. If Casella demonstrates to the City's satisfaction that the application for an Expansion Permit meets all applicable environmental standards, including the provisions of the City's Ordinances in effect at that time, the City agrees to use reasonable efforts to actively support the application before all applicable agencies, including the MDEP.

SECTION 11 **COOPERATION BETWEEN THE PARTIES**

During the term of this Agreement, the State and Casella agree to cooperate and to work together with the City to minimize and manage the impacts from the Landfill's operations. The parties agree to conduct ongoing communication concerning the operation of the Landfill or any expansion thereof.

SECTION 12 **SUBCONTRACTING**

In the performance of their obligations hereunder, the State and Casella shall have the unrestricted right to subcontract those services that they deem appropriate in their sole discretion, including, without limitation, construction, engineering, design, permitting, operation, maintenance, management and administration; provided, that the State and Casella shall remain fully responsible for the performance of any and all obligations subcontracted hereunder.

SECTION 13 NO JOINT VENTURE

Except as otherwise provided in Section 8 herein, and without limiting the State's or Casella's obligations hereunder, the parties acknowledge and agree that nothing contained in this Agreement is intended to nor shall be construed to create a partnership or joint venture between the City and Casella or the City and the State or make the City, Casella and the State partners or joint venturers, or make either party in any way liable or otherwise responsible for the debts, actions, obligations or losses of the other party.

SECTION 14 CLAIMS UNDER THIS AGREEMENT

The City agrees that Casella and/or the State may seek injunctive relief to enforce the obligations of the City under this Agreement, and the City hereby waives its governmental immunity for this limited purpose. This provision is expressly intended to permit those legal actions of Casella and the State that may arise directly under or be necessarily related to a breach of this Agreement. Except as provided in Section 3.1(f), the parties agree that, in the event of any dispute or disagreement hereunder, Casella shall continue to make payment of all amounts due hereunder in the manner and at the times specified herein until final resolution of such dispute, whether by mutual agreement or final decision of a court, arbitrator or other dispute resolution mechanism; provided however, that nothing herein shall constitute a waiver of the City's tort immunity.

SECTION 15 CERTAIN REPRESENTATIONS, WARRANTIES AND COVENANTS OF THE CITY

The City represents and warrants to the State and Casella as follows:

15.1 The City is validly existing as a political subdivision of the State of Maine in good standing under the laws of the State of Maine.

15.2 The City has full power and authority to enter into this Agreement and to fully perform its duties and obligations hereunder. The City's Town Council has duly authorized the execution and delivery of this Agreement and the City's performance of its duties and obligations hereunder, and this Agreement constitutes a valid and legally binding obligation of the City, enforceable in accordance with its terms.

SECTION 16

CERTAIN REPRESENTATIONS, WARRANTIES AND
COVENANTS OF CASELLA

Casella represents and warrants to the City and the State as follows:

16.1 Casella is a corporation duly organized and existing under the laws of the State of Delaware and authorized to do business and in good standing under the laws of the State of Maine with the full legal right, power and authority to enter into and fully and timely perform its obligations under this Agreement.

16.2 Casella has duly authorized, executed and delivered this Agreement, and this Agreement constitutes a legal, valid and binding obligation, enforceable against Casella in accordance with its terms, subject to bankruptcy, insolvency and other laws affecting creditors' rights generally.

16.3 Neither the execution nor delivery by Casella of this Agreement nor the performance by Casella of its obligations in connection with the transactions contemplated hereby or Casella's fulfillment of the terms and conditions hereof conflicts with, violates or results in a breach of any law or governmental regulation applicable to Casella or materially conflicts with, violates or results in a breach of, any term or condition of any order, judgment or decree or any agreement or instrument to which Casella is a party or by which Casella or any of its properties or assets is bound, or otherwise constitutes a default thereunder.

16.4 No approval, authorization, order, consent, declaration, registration or filing with any federal, state or local governmental authority or agency is required for the valid execution and delivery by Casella of this Agreement or the performance by Casella of its obligations hereunder.

16.5 Casella covenants and agrees to operate the Landfill and otherwise conduct all aspects of its business at the Landfill including compliance with all closure and post closure requirement in compliance with all Environmental Laws and other applicable laws and regulations and permits.

16.6 Throughout the Term hereof, Casella agrees to participate in, and to use reasonable efforts to support the joint citizen advisory committee comprised of representatives from the City of Old Town, the Penobscot Indian Nation and the Town of Alton, as created by the Resolve and amended by LD 597 in the First Special Session of the 122nd Legislature.

SECTION 17 **SURVIVAL OF REPRESENTATIONS, WARRANTIES AND COVENANTS**

All representations, warranties, promises, agreements, statements and covenants made herein or in any schedules or exhibits attached hereto, or in any instrument or document delivered by or on behalf of any party pursuant to this Agreement, shall remain in effect during the Term and shall survive termination hereof to the extent specifically contemplated herein.

SECTION 18 **TERMINATION**

18.1 This Agreement may be terminated at any time by mutual written agreement of all of the parties.

18.2 This Agreement may be terminated for an Event of Default as set forth in Section 18 below.

18.3 Effects of Termination.

Termination of this Agreement for any reason shall not relieve a party of its obligations arising prior to the termination date or those that expressly survive termination as set forth herein, except obligations that are expressly extinguished by said termination. In the event the Operating Services Agreement is terminated, Casella's obligations hereunder shall terminate, and the State shall notify the City immediately in writing of such termination, however the State shall remain obligated to perform all of the State's obligations under this Agreement. The State further agrees that in any request for proposals issued by the State for a new operator of the Landfill the State shall include as a specification that the successful vendor shall enter into a host community benefits agreement under terms and conditions at least as favorable to the City as those set forth in this agreement. The City and State agree to meet within thirty (30) days after receipt by the City of notice that the Operating Services Agreement has been terminated for the purposes of discussing the impact of the termination.

SECTION 19 **DEFAULT AND REMEDIES**

19.1 Notice/Cure. If any party fails to perform a material obligation under this Agreement, then any other party shall give notice to all parties of such alleged material failure, describing the alleged material failure and the action required to cure such material failure, if any. If the party or parties receiving such notice fail to cure any such material failure to perform pursuant to Section 20 hereof, then an "Event of Default" shall be deemed to have occurred and the other party or parties shall have the rights and remedies set forth in this Agreement.

19.2 Remedies. If any Event of Default occurs (as defined in subsection 19.1 above), then (a) this Agreement may be terminated by a non-defaulting party by giving notice of termination to the defaulting party or parties, and/or (b) pursuant to the dispute resolution process set forth in Section 21 below or the limited judicial process set forth in Section 21.4 below, the non-defaulting party shall have the right to seek whatever damages or remedies that are available in an action at law or in equity it deems necessary or desirable to collect any amounts then due or thereafter to become due under this Agreement or to enforce performance of any covenant or obligation of the defaulting party or parties under this Agreement.

19.3 Sovereign Immunity. Casella and the City acknowledge and agree that nothing in this Agreement, or the execution and delivery of this Agreement, or the agreement by the State to perform its obligations hereunder constitutes or is intended to constitute abrogation of the sovereign immunity of the State with respect to each and every term of this Agreement. In this regard, the State expressly reserves its right of sovereign immunity with respect to its obligations hereunder, and the execution and delivery of this Agreement by the State, and its undertakings herein in no way waive, partially waive, imply a waiver, limit or restrict the State's unconditional right to exercise its right of, or to assert sovereign immunity with respect to any matter, term or issue arising under or relating to this Agreement.

SECTION 20 RIGHT TO CURE BREACH

Upon its receipt of a notice of alleged material failure to perform a material obligation under this Agreement issued under Section 19 hereof, the receiving party or parties shall either:

20.1 Cure the material failure to perform within thirty (30) days of receipt of the written notice from any other party; or

20.2 Continuously demonstrate, within such thirty (30) day cure period, if cure cannot reasonably be effectuated during such period, that it is actively pursuing a course of action which reasonably can be expected to lead to a cure of the material failure to perform (and the cure period shall be extended for so long as the curing party or parties are actively and continuously pursuing such course of action) within a commercially reasonable period of time not to exceed ninety (90) days.

SECTION 21 RESOLUTION OF DISPUTES

21.1 Negotiation. The parties agree that in the event of any dispute, controversy or claim arising under or relating to this Agreement or any alleged breach thereof, other than a breach by Casella of its payment obligations, the parties shall attempt to come to a reasonable settlement of any dispute (a) by having their authorized representatives attempt to negotiate a resolution of the dispute for a period of thirty (30) days, and, if not resolved by the authorized representatives, (b) by having other more senior members of each party's management, who have no previous involvement in the dispute, but who have the authority to resolve the dispute, attempt to negotiate a resolution of the dispute for an additional fifteen (15) days.

21.2 Mediation.

(a) In the event that the parties are unable to resolve any dispute through negotiation, the parties agree to mediate any such dispute. The parties agree that mediation shall be conducted promptly and efficiently in an effort to resolve any such dispute.

(b) Any party desiring to invoke mediation shall send notice to the other party regarding the issues to be mediated. Both parties shall, within ten (10) days of such notice, agree upon a mutually acceptable mediator who shall be independent and impartial, have full authority to implement the process required by this paragraph, and have full authority to schedule meetings and to require the production or exchange of relevant information as is necessary to promptly resolve the dispute. If the parties cannot agree upon a mediator within ten (10) days of such notice, then the dispute shall be referred to the American Arbitration Association for the appointment by them of a mediator reasonably local to Penobscot County. Both parties shall pay the cost of the mediator equally.

(c) Any compromise achieved through mediation shall be memorialized in a report rendered by the mediator. In the event that the dispute is not resolved through mediation within sixty (60) days after the mediator has been appointed, the mediator shall render a report regarding the nature of this dispute, the mediator's opinion as to how the dispute should be resolved, and the mediator's opinion regarding which party is at fault in the dispute. The report rendered by the mediator shall be non-binding and shall not be admissible in court against either party, except in connection with an application for attorney's fees as provided below.

(d) Any time limit in this paragraph may be extended by mutual agreement of the parties.

21.3 Arbitration. Subject to Section 21.4 below, any controversy between the parties hereto involving the construction or application of any terms, covenants or conditions of this Agreement, or any claims arising out of or relating to this Agreement, or the breach or default hereof or thereof, not resolved by negotiation or mediation pursuant to Sections 21.1 and 21.2, will be submitted to and settled by final and binding arbitration in the State of Maine, in accordance with the rules of the American Arbitration Association then in effect, and judgment upon the award rendered by the arbitrator may be entered in any court having jurisdiction thereof. In the event of any arbitration under this Agreement each party shall cover its own expenses, attorney's fees and costs incurred therein. The prevailing party shall be entitled to recover from the losing party reasonable expenses, attorneys' fees and costs incurred in the enforcement or collection of any judgment or award rendered therein.

21.4 Availability of Judicial Relief and Consent to Jurisdiction. In addition to any rights or remedies that the parties might otherwise be entitled to invoke, the parties may seek specific enforcement of any provision of this Agreement or injunctive relief in a legal or equitable proceeding. For purposes of the preceding sentence, and for the enforcement of any arbitration award rendered pursuant to Section 21.3 hereof, the parties and their assigns submit to the jurisdiction of any state or federal court located in the State of Maine in connection with any proceeding or action arising from or relating to this Agreement or the agreements referred to herein. The parties consent to the jurisdiction and venue of any such court and waive any argument that venue in such forums is not convenient. In the event a party commences any action in another jurisdiction or venue under any tort or contract theory arising directly or indirectly from the relationship created by this Agreement, the other parties at their option shall be entitled to have the case transferred to the jurisdiction and one of the venues above-described, or if such transfer cannot be accomplished under applicable law, to have such case dismissed without prejudice.

SECTION 22 FORCE MAJEURE

If any party hereto is rendered unable, in whole or in part, to perform any of its obligations under this Agreement (other than an obligation to pay money when due) as a result of the occurrence of an event of Force Majeure, then the obligations of the affected party shall be suspended and its non-performance thereof excused during the continuation of the event of Force Majeure. At any time that a party intends to rely upon an event of Force Majeure to suspend its obligations or excuse its non-performance as provided in this Section, the affected parties shall notify the other party as soon as reasonably practicable (but in no event later than seventy-two (72) hours following such event) describing in reasonable detail the circumstances of the event of Force Majeure and its ongoing efforts to mitigate the effects of such event of Force Majeure. Notice shall again be given when the effect of the event of Force Majeure has ceased. As a condition of invoking the protection afforded by this Section, the party relying upon an event of

Force Majeure shall be required to exercise its best and most diligent efforts to eliminate the Force Majeure or devise a means of performance notwithstanding the Force Majeure and re-establish performance hereunder as rapidly as possible.

SECTION 23 INSURANCE

23.1 General Insurance Requirements. The State shall require Casella to maintain liability, fire and workers' compensation insurance insuring the City, the State and Casella in the amounts set forth in Schedule 21 of the Operating Services Agreement, as the same may be amended from time to time, issued by financially sound and reputable insurance companies reasonably acceptable to the State that are authorized and licensed to issue such policies in the State of Maine. Casella shall pay any premiums with respect to such policies as they come due. If Casella fails to pay any such premiums when due, the State shall have the right and option to pay any such premiums, whereupon the amount of any such premiums paid by the State shall be reimbursed by Casella to the State upon demand therefore. Upon request from the City, Casella shall promptly provide copies of such policies to the City.

SECTION 24 MISCELLANEOUS PROVISIONS

24.1 Assignment. This Agreement may not be assigned by any party without the prior written consent of the others, which consent may not be unreasonably withheld; notwithstanding the foregoing, Casella shall have the right to assign this Agreement without the consent of the other parties (i) to any Affiliate provided that Casella remains fully liable hereunder and provides reasonable assurances of the same to the State and the City in connection with any such assignment, (ii) in connection with the sale of all or substantially all of Casella's assets (or those of its affiliates) provided, however, in the event of such a sale, Casella shall provide advance notice to the City if in the judgment of Casella's counsel such notice may be given without violating securities or other applicable laws

24.2 Cumulative Remedies. The specified remedies available to a party under this Agreement are not exclusive of any other remedies or means of redress to which such party may be lawfully entitled in the event of any breach or threatened breach by the other party of any provision(s) of this Agreement.

24.3 Captions and Headings. Captions and headings contained in this Agreement are inserted for convenience and reference only and the words contained therein shall in no way be held or deemed to define, limit, describe, explain, modify, amplify or add to the interpretation, construction or meaning of any provision or of the scope or intent of this Agreement, nor in any way to affect this Agreement.

24.4 Amendments and Modifications. This agreement shall not be amended, modified or changed, except pursuant to an agreement in writing signed by or on behalf of the party against whom enforcement of the amendment, modification or change is sought.

24.5 Notices. All notices or other communications required or permitted hereunder shall be in writing and may be given by personal delivery, by overnight express delivery, or by registered or certified U.S. mail, postage prepaid, return receipt requested, properly addressed as follows:

To the State:

Executive Department
State Planning Office
38 State House Station
Augusta, Maine 04333-0038
Attention: Director

With a copy to:

William Laubenstein, Esq.
Office of Attorney General
6 State House Station
Augusta, ME 04333-0006

To Casella:

c/o Casella Waste Systems, Inc.
25 Greens Hill Lane
Rutland, VT 05702-0866

With a copy to:

Thomas R. Doyle, Esq.
Pierce Atwood
One Monument Square
Portland, ME 04101

To City of Old Town:

City Manager
City of Old Town
150 Brunswick Street
Old Town, Maine 04468

With a copy to:

Robert E. Miller, Esq.
282 Main Street, P.O. Box 414
Old Town, Maine 04468
and
Catherine Lee, Esq.
Gallagher, Callahan & Gartrell, P.A.
P.O. Box 5010
Augusta, ME 04332-5010

Any party may change the address to which notices are required to be sent by giving notice of such change in the manner provided in this Section 24.5. All notices shall be deemed to have been received on the date of delivery if service is made in person, on the day after sent by overnight express delivery service, or on the third (3rd) business day after mailing in accordance

with this Section 24.5, except that any notice of a change of address shall be effective only upon actual receipt.

24.6 Strict Performance. The failure of either party to insist on the strict performance of any of the terms, covenants and provisions of this Agreement or to exercise any right, remedy or option herein contained shall not be construed as a waiver or a relinquishment for the future of such term, covenant, condition, provision, right, remedy or option.

24.7 Severability. In the event that anyone or more of the terms or provisions of this Agreement shall for any reason be held by a court or other tribunal of competent jurisdiction to be invalid, illegal or unenforceable in any respect, in whole or in part, such invalidity, illegality or unenforceability shall not affect any other terms or provisions of this Agreement, and this Agreement shall be construed as if such invalid, illegal or unenforceable term or provision had never been contained herein, provided that it is the intention of the parties that, in lieu of such term or provision held to be invalid, illegal or unenforceable, there shall be added by mutual agreement as a part of this Agreement a term or provision as similar in term to such illegal, invalid or unenforceable term or provision as may be possible, valid, legal and enforceable.

24.8 Construction. Words connoting the singular number shall include the plural in each case, and vice versa, and words connoting persons shall include corporations, companies, firms or other entities. The terms "herein", "hereunder", "hereby", "hereof" and any similar terms shall refer to this Agreement; the term "heretofore" shall mean before the date of execution of this Agreement. This Agreement is the result of joint negotiations and drafting and no part of this Agreement shall be construed as the product of anyone of the parties hereto.

24.9 Entire Agreement. This Agreement constitutes the entire agreement between the City, the State and Casella with respect to the subject matter hereof, and supersedes all prior or contemporaneous negotiations, representations, understandings and agreements, whether written or oral, between the parties with respect to the subject matter hereof.

24.10 Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original for all purposes, but all of which together shall constitute one and the same agreement.

24.11 Governing Law. This Agreement shall be governed by and construed and enforced in accordance with the laws of the State of Maine, without regard to the conflicts of law principles of such State.

24.12 Binding Effect; No Third Party Rights. This Agreement shall be binding upon and shall inure to the benefit of the parties hereto and their respective legal representatives, successors (whether by sale, assignment, transfer, merger, other acquisition, operation of law, or

court ruling) and/or permitted assigns. Subject to the foregoing, nothing in this Agreement shall be construed to confer any benefit on, or create any obligation, duty or liability to, or create any standard of care with respect to, any person, firm or entity not a party to this Agreement.

24.13 Authority of Parties. Each party hereto represents and warrants that the individual who has executed this Agreement on its behalf has the full and complete authority to sign on behalf of such party for the purpose of duly binding such party to this Agreement.

IN WITNESS WHEREOF, the undersigned have executed this Agreement on and as of the date first above written.

WITNESSETH:

George M. M... [Signature]
Name:

Catherine Lee [Signature]
Name:

Ben [Signature]
Name:

STATE OF MAINE

By Martha Freeman [Signature]
Its

CITY OF OLD TOWN, MAINE

By Margaret [Signature]
Its City Manager

CASELLA WASTE SYSTEMS, INC.

By [Signature]
Its

EXHIBIT 1

Materials Approved By MDEP For Beneficial Use

Bark pile adjacent to the Landfill.

EXHIBIT 2
List of Acceptable Categories of Maine Waste
Licensed by the DEP for Disposal at WOTL
As of September 2005

Air and water filtration media
Approved land utilization wastes
Ash and soot
Catch basin grit
Commercial and industrial laundry waste
Construction and demolition debris
Contaminated soil
Dredge spoils
Filter press cake and collegin scrapings
Front-end process residue
Leather manufacturing wastes and scraps
Metal grinding waste
Municipal Solid Waste (incinerator bypass only)
Off-spec., spent, or spilled chemicals
Over-sized bulky waste
Papermill sludge
Petroleum contaminated debris
Pigeon waste
Railroad ties and treated wood
Sand blast grit
Spoiled/discarded food or consumable related wastes
Tire shredder waste
Treatment sludge
Waste water treatment plant grit and screenings
Wood chips

EXHIBIT 3

Financial Model for Calculating Annual Payment in Lieu of Taxes

Example 2 of Proposed Landfill Valuation Methodology

	Active Landfill Area	Assume 600 acres of land	
	Licensed and Developed	82 acres	
A	Total Volume	-	cy
B	Volume Consumed to Date	-	cy
C	Remaining Volume	-	cy
B	Estimate Annual Usage of available volume	-	cy
C	Estimate Remaining Life of Active Landfill Area	30.25 years	
D	Estimate Annual Gross Income per year	#DIV/0!	
E	Estimate Annual Expenses per year including escrowed amounts for proper closure	\$	
E	Estimate Annual Net Operating Income Per Year		
F	After Startup	#DIV/0!	
G	Determine a discount rate		15%
	Discount Annual Net Operating Income to Current		
H	Value	Year	Income
	YEAR 1	2005	#DIV/0!
	2	2006	#DIV/0!
	3	2007	#DIV/0!
	4	2008	#DIV/0!
	5	2009	#DIV/0!
	6	2010	#DIV/0!
	7	2011	#DIV/0!
	8	2012	#DIV/0!
	9	2013	#DIV/0!
	10	2014	#DIV/0!
	11	2015	#DIV/0!
	12	2016	#DIV/0!
	13	2017	#DIV/0!
	14	2018	#DIV/0!
	15	2019	#DIV/0!
	16	2020	#DIV/0!
	17	2021	#DIV/0!
	18	2022	#DIV/0!
	19	2023	#DIV/0!
	20	2024	#DIV/0!
	21	2025	#DIV/0!
	22	2026	#DIV/0!
	23	2027	#DIV/0!
	24	2028	#DIV/0!
	25	2029	#DIV/0!
	26	2030	#DIV/0!
	27	2031	#DIV/0!
	28	2032	#DIV/0!
	29	2033	#DIV/0!
	30	2034	#DIV/0!
	31	2035	#DIV/0!
	32	2036	#DIV/0!
	33	2037	#DIV/0!
	Net Present Value	#DIV/0!	

Example 2 of Proposed Landfill Valuation Methodology

Buffer Land				
Value at appropriate value per acre	718 \$	Unit Value	\$	
Total Value				#DIV/0!
Exempt Property @ 40% of Active Landfill				#DIV/0!
Taxable Value				#DIV/0!
ANTICIPATED ANNUAL VOLUME				
TYPE	TONS	FEES	GROSS	
PROCESSING RESIDUAL		\$	\$	
GP SLUDGE		\$	\$	
C&D		\$	\$	
WASTE TO ENERGY ASH		\$	\$	
WASTE TO ENERGY FRONT END RESIDUAL		\$	\$	
WASTE TO ENERGY BIPASS		\$	\$	
SPECIAL WASTE		\$	\$	
TOTAL		\$	\$	
SUMMARY STATEMENT WAS 401,000 CY PER YEAR WITH LIFE OF 30.25 ACRES				
		AVG		#DIV/0!
PERIOD OF 2/4/04 TO 4/30/05				
TYPE	TONS	FEES	GROSS	
PROCESSING RESIDUAL		\$	\$	
GP SLUDGE		\$	\$	
C&D		\$	\$	
WASTE TO ENERGY ASH		\$	\$	
WASTE TO ENERGY FRONT END RESIDUAL		\$	\$	
WASTE TO ENERGY BIPASS		\$	\$	
SPECIAL WASTE (SLUDGE)		\$	\$	
TOTAL		\$	\$	
EXPENSE				#DIV/0!
INCOME				#DIV/0!
ANNUAL COST	COSTS	TONS	COST PER TON	#DIV/0!
	\$			#DIV/0!

FIRST AMENDMENT TO HOST COMMUNITY AND FACILITY OVERSIGHT AGREEMENT

This First Amendment to Host Community and Facility Oversight Agreement ("Amendment") is made as of this 17th day of **September, 2009**, by and between the STATE OF MAINE, acting by and through its Executive Department, State Planning Office (the "State"), the CITY OF OLD TOWN, Maine, having its principal offices at 150 Brunswick Street, Old Town, Maine 04469 (the "City") and CASELLA WASTE SYSTEMS, INC., a Delaware corporation having a place of business at 25 Greens Hill Lane, Rutland, Vermont 05702 ("Casella").

WITNESSETH:

WHEREAS, the State, the City and Casella are parties to a Host Community and Facility Oversight Agreement, dated as of December 8, 2005 (the "Host Community Agreement"); and

WHEREAS, the State and Casella are parties to an Operating Services Agreement dated as of February 5, 2004, as amended by the First Amendment to the Operating Services Agreement dated as of July 28, 2006, and as further amended by the Second Amendment to the Operating Services Agreement dated as of November 2, 2006 (the "OSA"); and

WHEREAS, the State, the City and Casella wish to amend the Host Community Agreement to clarify the Host Community Agreement (HCA). Two amendments to the Operating Services Agreement (OSA) between the State and Casella have resulted in the need to make the amendment to the HCA ;

WHEREAS, in 2009, State Planning Office instituted new rules regarding holding a public hearing prior to making further amendments to the OSA. The inconsistencies between the OSA and HCA created a misperception that Casella is not operating in compliance with the HCA even though the HCA does not regulate landfill operations.

NOW, THEREFORE, in consideration of the mutual promises and agreements hereinafter contained, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree as follows:

1. The recitals and identification of the parties to this Amendment are incorporated by reference as though fully set forth herein. Capitalized terms not defined or amended herein shall have the meaning given to them in Host Community Agreement.
2. The definitions in the Host Community Agreement are intended to be consistent with the definitions in the OSA. To the extent there is any inconsistency between, or conflict with, a definition in the Host Community Agreement and the same term in the OSA, as it may be amended from time to time, the parties shall consult and agree on which definition shall control.
3. For purposes of clarification and the avoidance of doubt, residue and bulky waste generated at a processing facility located in Maine that produces construction and

demolition wood fuel was a category of acceptable Maine waste licensed by the DEP for disposal at Juniper Ridge Landfill as of September 2005 and therefore is included on Exhibit 2 and does not represent an "expansion of the type of waste" as defined in the Resolve.

The Host Community Agreement is intended to provide for the exclusive payments and other benefits provided by the State and Casella to the City pursuant to State law for the duration of Casella's role as operator of the Juniper Ridge Landfill under the OSA. The Host Community Agreement is not intended to regulate the Landfill or any Expansion thereof, or to give rise to City enforcement of the MDEP License Amendment for said Landfill, any expansion thereof, or otherwise. Any City regulation of the Landfill expansion will occur pursuant to the terms of the City Solid Waste Facilities Ordinance, dated June 1, 2009 provided, however, that this paragraph does not exempt the State and Casella from any obligation to make payment to the City of fees for applications, licenses, reviews, permits and approvals under State, local, federal laws, regulations and ordinances, including but not limited to the City Solid Waste Facilities Ordinance, dated June 1, 2009, all of which shall be in addition to any payments required to be made to the City under the OSA and/or the HCA

4. The first sentence of Section 5.2 of the Host Community Agreement is hereby amended as follows: "During the Term of this Agreement, Casella agrees to make available upon request the following information to the City or the City's consultant designee in a timely fashion."
5. The first sentence of Section 10 of the Host Community Agreement is hereby amended as follows: "The parties specifically acknowledge that Casella fulfilled its obligation to the State under the Operating Services Agreement as amended, to prepare a draft application for an Expansion Permit on or before 5 February 2009."
6. In all other respects, the Host Community Agreement shall remain in full force and effect in accordance with its terms.

IN WITNESS WHEREOF, the undersigned have executed this Agreement on and as of the date first above written.

WITNESSETH:

August 11, 2009

Name:

Clare Hayward

Name:

John Beagle

Name:

STATE OF MAINE

By: Margaret Freeman
Its Director, State Planning Office

CITY OF OLD TOWN, MAINE

By: Margaret Drake
Its City Manager

CASELLA WASTE SYSTEMS, INC.

By: Ben
Its Vice President

**SECOND AMENDMENT TO HOST COMMUNITY COMPENSATION
AND FACILITY OVERSIGHT AGREEMENT**

This Second Amendment to the Host Community Compensation and Facility Oversight Agreement ("Second Amendment") is made as of this 22 day of ~~January~~^{February}, 2013, by and among the STATE OF MAINE, acting by and through the Department of Administrative and Financial Services, Bureau of General Services (the "State"), the CITY OF OLD TOWN, Maine, having its principal offices at ~~150 Brunswick Street~~^{268 Main St}, Old Town, Maine 04469 (the "City") and CASELLA WASTE SYSTEMS, INC., a Delaware corporation having a place of business at 25 Greens Hill Road, Rutland, Vermont 05702 ("Casella").

WITNESSETH:

WHEREAS, the State, the City and Casella are parties to a Host Community Compensation and Facility Oversight Agreement, dated as of December 8, 2005, as amended by the First Amendment to Host Community and Facility Oversight Agreement dated as of September 17, 2009 (the "Host Community Agreement"); and

WHEREAS, the State, the City and Casella wish to amend the Host Community Agreement to clarify Casella's obligations in light of the cessation of operations of the Maine Energy Recovery Facility located in Biddeford, Maine ("Maine Energy"); and

WHEREAS, the closure of Maine Energy has resulted in the need to make this amendment to the Host Community Agreement;

NOW, THEREFORE, in consideration of the mutual promises and agreements hereinafter contained, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

1. The recitals and identification of the Parties to this Amendment are incorporated by reference as though fully set forth herein. Capitalized terms not defined or amended herein shall have the meaning given to them in the Host Community Agreement.
2. Section 3.1(b) of the Host Community Agreement currently provides for the payment of a Host Community Fee in the amount of \$2.50 per ton for new categories of waste permitted by the Maine Department of Environmental Protection ("MDEP"), as Acceptable Waste for disposal at the Landfill. For purposes of clarification and the avoidance of doubt, the parties agree that this includes specifically up to 93,000 tons of MSW generated in Maine that is licensed as Acceptable Waste by DEP, including but not limited to the MSW that would have been disposed of at Maine Energy but for a permanent cessation of operations at Maine Energy. Subject to paragraph 5 hereof, the \$2.50 per ton fee shall apply from December 31, 2012, the date of cessation of Maine Energy's operations. Section 3.1(b) of the Host Community Agreement is hereby amended by inserting at the beginning thereof "Notwithstanding any other provision of this Agreement to the contrary,"

3. The Parties have agreed that the \$2.50 per ton fee referred to in paragraph 2 above shall be adjusted annually using the same formula in the Annual adjustment set forth in Section 3.1(a) of the Host Community Agreement. Section 3.1(b) of the Host Community Agreement is hereby amended by adding the following at the end of the existing provision: "Casella agrees to an annual adjustment to the Host Community Fee to be paid for all categories of solid waste not approved by MDEP as of the date of the Host Community Agreement for acceptance at the Landfill that is subsequently licensed as Acceptable Waste, including for MSW generated in Maine, including but not limited to MSW that would have been disposed of at Maine Energy while it was operational but which has been approved for disposal at the Landfill due to a permanent cessation of operations at Maine Energy, and is in fact disposed of at the Landfill. The adjustment shall be calculated by multiplying 3.7% times the increase (assuming there is one) in the annual average third party tipping fee (exclusive of transportation, intra-Casella company tip fees and any tipping fees on waste or material not subject to the Host Community Fee) paid at the Landfill. Casella agrees to maintain tipping fees on waste separate and distinct from transportation fees and to avoid offering third parties the opportunity to dispose of waste at lower tipping fees in exchange for higher transportation fees.

The first annual adjustment (assuming an increase or decrease is calculated) shall be made effective one year after the date on which Casella (or its affiliate) receives a final permit that is not subject to further appeal providing for the disposal at the Juniper Ridge Landfill of up to 93,000 tons of municipal solid waste per year. An annual adjustment (assuming an increase or decrease is calculated) shall be made on each subsequent anniversary thereof for the remaining Term of the Host Community Agreement. In no event shall the per ton fee for such waste fall below \$2.50 per ton."

4. In all other respects, the Host Community Agreement shall remain in full force and effect in accordance with its terms as amended previously.
5. The parties agree and acknowledge that the effectiveness of Section 3 of this Amendment shall be subject to and conditioned upon the receipt by Casella (or its affiliate) of a final permit that is not subject to further appeal, providing for the disposal at the Juniper Ridge Landfill of up to 93,000 tons of municipal solid waste per year, in accordance with the application submitted by Casella which is under consideration as of the date of this Amendment.

IN WITNESS WHEREOF, the undersigned have executed this Agreement on and as of the date first above written.

WITNESSETH:

Name:

STATE OF MAINE

By: *Donald McCormack*
Donald McCormack
Dir. Bureau of General Services

Name:

CITY OF OLD TOWN, MAINE

By: *William J. Mayo*
William Mayo
Its City Manager

Name:

CASELLA WASTE SYSTEMS, INC.

By: *Bill*
Its
Vice President

APPENDIX K

TOWN OF ALTON COMMUNITY BENEFIT AGREEMENT

COMMUNITY BENEFITS AGREEMENT

This Community Benefits Agreement (“Agreement”) is made this 6th day of October, 2005, by and among the STATE OF MAINE, acting by and through its Executive Department, State Planning Office (the “State”), NEWSME Landfill Operations, LLC, a limited liability company organized and existing under the laws of the State of Maine with a principal place of business at 110 Maine Street, Suite 1308, Saco, Maine (“NEWSME Operations”), and the Town of Alton, Maine, a municipal corporation organized and existing under the laws of the State of Maine, having its principal offices at 3352 Bennoch Road, Alton, Maine 04468 (the “Town”).

WITNESSETH:

WHEREAS, NEWSME Operations’ sole member, New England Waste Services of Maine, Inc., is a wholly owned subsidiary of Casella Waste Systems, Inc., a Delaware corporation (“Casella”); and

WHEREAS, the STATE OF MAINE, acting by and through its Executive Department, State Planning Office, pursuant to Resolve 2003, ch. 93 (the “Resolve”), agreed to purchase from Fort James Operating Company (“FJ”), and FJ agreed to sell to the State, FJ’s solid waste landfill (the “Landfill”) located in Old Town, Maine; and

WHEREAS, Casella has entered into an Operating Services Agreement (the “Operating Agreement”) with the State regarding the operation and development of the Landfill; and

WHEREAS, pursuant to the Operating Agreement Casella may assign its obligations to an affiliated company such as NEWSME Operations; and

WHEREAS, by Maine Department of Environmental Protection (“DEP”) Orders dated October 21, 2003 (#S-0200700-WR-M-T) and April 9, 2004 (#S-020700-WD-N-A), the DEP has authorized NEWSME Operations to operate and develop the Landfill pursuant to the terms of such orders and to increase its capacity; and

WHEREAS, Casella, through NEWSME Operations, and the State wish to enter into a community benefits agreement with the Town.

NOW, THEREFORE, in consideration of the foregoing, the mutual promises made herein, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the State, NEWSME Operations and the Town agree as follows:

1. Community Benefits Fee. NEWSME Operations shall pay the Town a fee for solid waste disposed of at the Landfill, as follows:

- a. Fees. \$.15 per ton for years 2005 – 2014
\$.30 per ton for years 2015 – 2024
\$.40 per ton for years 2025 – End of term of Operating Agreement

The per ton fee payable to the Town does not include mill waste and biomass ash delivered to the Landfill by FJ or Lincoln Paper & Tissue, free tonnage, if any, allocated

to the City of Old Town, or materials DEP approves for beneficial reuse at the Landfill, for the duration of this Agreement;

- b. Timing. Fees payable under this Section shall be paid on a monthly basis, with payment to be made no later than 30 days after the end of each calendar month. Payments under this Section shall begin accruing on the first day of the first calendar month following the Effective Date of this Agreement, which is the date all parties have executed this Agreement and any necessary Town approval is obtained ("Effective Date").
- c. CPI Escalator. The per ton fee under paragraph (a) of this Section shall be subject to increase every year (commencing January 1, 2006), in accordance with changes in the Consumer Price Index ("CPI") since the Effective Date of this Agreement (with respect to the initial adjustment) or the immediately preceding adjustment, as applicable. For purposes of this paragraph, the CPI shall mean the Consumer Price Index for "NORTHEAST URBAN REGION, all items (Series I.D. CUUR0100SA0) as published monthly by the United States Bureau of Labor Statistics in a report currently entitled 'CPI Detailed Report.'" If this Index ceases to be available at some time in the future, a comparable Index will be designated by NEWSME Operations and the Town following consultation. In the event the CPI-escalated rate surpasses the rate increase as described in paragraph 1(a) herein before the year designated, the fee per ton will not be decreased at that time, but will continue to be adjusted according to the CPI.
- d. Exclusive Payment Obligations. The parties agree and acknowledge that the payment obligations set forth in this Section 1 shall be the exclusive payment obligations from the State, Casella, and NEWSME Operations arising out of or related to the ownership or operation of the Landfill and any expansion thereof, and that the Town may not collect or seek to collect other payments, fees, costs, grant monies, taxes, or payments in lieu of taxes from the State, Casella, or NEWSME Operations in respect thereof. The preceding sentence is not intended to preclude the Town from recovering any damages it may suffer in the event of any unforeseen catastrophic event caused by the operation of the Landfill.

2. Term of Agreement. The term of this Agreement shall be deemed to commence on the Effective Date and shall end on the earlier to occur of: (a) February 5, 2034, (b) the date the Operating Agreement is terminated by either the State or Casella as provided therein, including, without limitation, as set forth in Section 5.3(a) of said Agreement, or (c) the date this Agreement is terminated by all or any of the parties as provided herein. In the event the Operating Agreement between the State and Casella is extended or renewed beyond February 5, 2034, the parties agree to negotiate in good faith to extend or renew this Community Benefits Agreement on terms mutually acceptable.

3. Authority and Representations. The parties to this Agreement represent and warrant that they have full power and authority and the legal right to enter into and perform in accordance with the terms of this Agreement for the full term set forth herein and to execute and deliver this Agreement, having taken all necessary and required actions therefor. The parties to this Agreement further represent and warrant that no approval or vote by referendum or otherwise is required of any other person, group or entity which is a prerequisite to the valid execution, delivery and performance of this Agreement, other than those that have been duly obtained or made. The Town further represents and warrants that the Landfill purchase and operation is the subject of the Maine

Legislature's Resolve 2003, Chapter 93 and that the Town is not a host municipality for the Landfill as defined in State law.

4. Waiver. No waiver of any of the provisions of this Agreement shall be deemed or shall constitute a waiver of any other provisions hereof, whether or not similar, nor shall such waiver constitute a continuing waiver unless otherwise expressly provided. Any term or provision of this Agreement may be waived at any time by any party entitled to the benefit thereof as set forth in the terms of this Agreement by a written instrument duly executed by such party.

5. Good Faith. Each party shall act in good faith in the performance of all obligations and the exercise of all rights under this Agreement. Use of the term "good faith" elsewhere in this Agreement shall not be construed to limit the general applicability of that standard to the conduct of the parties hereunder.

6. Termination.

- a. This Agreement may be terminated at any time by mutual written agreement of all of the parties and NEWSME Operations' obligations under Section 1 shall be extinguished as of the date of such mutual agreement.
- b. This Agreement may be terminated by NEWSME Operations or the State in the event additional financial obligations to Alton are imposed upon either NEWSME Operations, Casella or the State whether such obligations are the result of a change in or amendment to law, ordinance, rule, regulation or judicial decision.
- c. Effects of Termination; State Assurance. Termination of this Agreement for any reason shall not relieve a party of its obligations arising prior to the termination date or those that expressly survive termination as set forth herein, except obligations that are expressly extinguished by said termination. In the event the Operating Agreement is terminated, this Agreement shall terminate, the parties' obligations hereunder shall terminate, and the State shall notify the Town immediately in writing of such termination. The State further agrees that in any request for proposals issued by the State for a new operator of the Landfill the State will include as a specification that the successful vendor will enter into a community benefits agreement under the terms and conditions set forth in this Agreement. The Town and State agree to meet within ninety (90) days after receipt by the Town of notice that the Operating Agreement has been terminated for the purposes of discussing the impact of the termination.

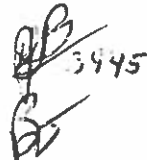
7: Headings and References. The titles and headings included throughout this Agreement are inserted for reference purposes only and shall not be construed or considered in interpreting any term or provision of this Agreement. Except as otherwise provided herein, all references to sections contained herein are references to sections of this Agreement.

8. Governing Law. This Agreement shall be interpreted and construed in accordance with the laws of the State of Maine, excluding conflicts of law principles which would refer to the laws of another jurisdiction.

9. Notices. Any notice, request, demand or statement made under this Agreement shall be in writing and deemed given when delivered by hand, registered or certified mail with postage prepaid, telegraph, telecopy or nationally recognized overnight courier directed to the following addresses:

If to NEWSME Operations: Casella Waste Systems
110 Main Street, Suite 1308
Saco, ME 04720
Attn: Regional Vice-President

With a copy to: Director
Maine State Planning Office
38 State House Station
Augusta, ME 04333-0038

If to the Town:  Town of Alton
3352 Bennoch Road
Alton, Maine 04468
Attn: First Selectman

If to the State: Director
Maine State Planning Office
38 State House Station
Augusta, ME 04333-0038

or at such other address as a party may, from time to time, designate in writing.

10. Binding Effect. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns.

11. Counterparts. This Agreement may be executed in any number of counterparts, each of which will be deemed an original instrument, but all such counterparts together will constitute but one agreement.

12. Modifications. No modifications or amendments to this Agreement shall be valid unless in writing and signed by the parties, their respective successors or assigns.

13. Severability. If the terms, covenants or conditions of this Agreement, or the application of any such term, covenant or condition shall be held invalid by any court having jurisdiction, all other terms, covenants and conditions of this Agreement and their applications shall not be affected thereby and shall remain in full force and effect.

14. Integration. The terms and provisions contained in this Agreement between the State, NEWSME Operations and the Town constitute the entire Agreement and shall supercede all previous and contemporaneous communications, representations, or similar agreements, either

verbal or written, between the parties with respect to this Agreement.

15. No Rights Conferred on Others. Nothing in this Agreement shall be construed as giving any individual, corporation, partnership, joint venture, association, joint stock company, trust, unincorporated organization, governmental entity or quasi-governmental entity, other than the parties hereto, and their successors and assigns, any right, remedy or claim under or in respect to this Agreement, or any provision hereof.

16. Resolution of Disputes

- a. Negotiation. The parties agree that in the event of any dispute, controversy or claim arising under or relating to this Agreement or any alleged breach thereof, the parties shall attempt to come to a reasonable settlement of any dispute by having their authorized representatives attempt to negotiate a resolution of the dispute for a period of thirty (30) days.
- b. Arbitration. Subject to Section 16(c) below, any controversy between the parties hereto involving the construction or application of any terms, covenants or conditions of this Agreement, or any claims arising out of or relating to this Agreement, or the breach or default hereof or thereof, not resolved by negotiation pursuant to Section 16(a), will be submitted to and settled by final and binding arbitration in the State of Maine, in accordance with the rules of the American Arbitration Association then in effect, and judgment upon the award rendered by the arbitrator may be entered in any court having jurisdiction thereof. In the event of any arbitration under this agreement, the parties agree that they will bear their own costs, attorney fees, and expenses associated therewith.
- c. Availability of Judicial Relief and Consent to Jurisdiction. In addition to any rights or remedies that the parties might otherwise be entitled to invoke, the parties may seek specific enforcement of any provision of this Agreement or injunctive relief in a legal or equitable proceeding. For purposes of the preceding sentence, and for the enforcement of any arbitration award rendered pursuant to Section 16 (b) hereof, the parties and their assigns submit to the jurisdiction of any state or federal court located in the State of Maine in connection with any proceeding or action arising from or relating to this Agreement or the agreements referred to herein. The parties consent to the jurisdiction and venue of any such court and waive any argument that venue in such forums is not convenient. In the event a party commences any action in another jurisdiction or venue under any tort or contract theory arising directly or indirectly from the relationship created by this Agreement, the other parties at their option shall be entitled to have the case transferred to the jurisdiction and one of the venues above-described, or if such transfer cannot be accomplished under applicable law, to have such case dismissed without prejudice.

IN WITNESS WHEREOF, the undersigned have executed this Agreement on and as of the date first above written.

WITNESSETH:

NEWSME LANDFILL OPERATIONS, LLC.

Thomas R. Doyle
Name: Thomas R. Doyle

By [Signature]

TOWN of ALTON, MAINE

Ronald F. Boyer
Name:

By [Signature]
Selectman

[Signature]
Name:

By Ronald F. Boyer
Selectman

[Signature]
Name:

By James T. Kennedy Sr.
Selectman

STATE OF MAINE

[Signature]
Name:

By Martha Franzen

APPENDIX L

**MAINE SOLID WASTE GENERATION AND DISPOSAL CAPACITY REPORT FOR
CALENDAR YEARS 2020 AND 2021**

Report to the Joint Standing Committee on the Environment and
Natural Resources

131st Legislature, First Session

Maine Solid Waste Generation and Disposal Capacity Report for Calendar Years 2020 & 2021

January 2023

Contacts:

Paula Clark
Director, Division of Materials Management
207-287-7718
paula.m.clark@maine.gov

Brian Beneski
Supervisor, Recycling Programs
207-592-0248
brian.beneski@maine.gov



MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 State House Station | Augusta, Maine 04333-0017
www.maine.gov/dep

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I. Introduction

This report is submitted to the Joint Standing Committee on Environment and Natural Resources pursuant to 38 M.R.S. § 2124-A which requires the Department to submit a biennial report to the Legislature setting forth information on the statewide generation of solid waste, statewide recycling rates, and available disposal capacity for solid waste. It provides an overview of Maine's solid waste generation, diversion, recycling, and disposal activities for 2020 and 2021, and an evaluation of Maine's progress toward the municipal solid waste (MSW) reduction and recycling goals established at 38 M.R.S. § 2132(1-B), and Maine's statewide recycling goal at 38 M.R.S. § 2132(1). The report also includes a projection of the solid waste disposal needs of Maine for the next 10 years and discussions regarding waste disposal beyond that timeframe.

II. Solid Waste Management in Maine – 2020 & 2021 Highlights

In 2020, a total of 1,930,151 tons of municipal solid waste (MSW) and construction and demolition debris (CDD) was generated in Maine and managed through licensed solid waste facilities or recycling facilities and drop-off points, while a total of 1,872,874 tons was generated and managed in 2021. Maine's per capita disposal rate for this reporting period was approximately 0.69 tons per person in 2020 (1,379.69 pounds), decreasing slightly to 0.66 tons per person in 2021 (1,317.05 pounds). Maine's estimated recycling rate (excluding CDD) was 34% in 2020 and 33.7% in 2021. These per capita disposal and recycling rate estimates were calculated using the best available data as reported by facilities and recycling establishments.

Based on the currently licensed and operating disposal facilities and management systems, the disposal capacity for Maine-generated MSW and its residue streams remains adequate into the near-term future. Beyond 5 years, overall landfill capacity may decrease if several landfills reach currently licensed capacity and do not seek an expansion to increase their capacity.

Maine is not currently meeting its MSW reduction and recycling goals. Overall, solid waste disposal tonnage decreased slightly by 0.4% in Maine over the reporting period from 2020 to 2021 although disposal tonnage has generally been trending upward over the past decade. In contrast, recycling tonnage decreased by 10.6% from 2020 to 2021.

There are a number of factors that have contributed to a recent decline in statewide recycling. As with all commodity markets, recycling commodities markets fluctuate. Global policy changes over the past few years led to a sharp decline in the availability of export markets, resulting in competition for the more limited domestic markets for recyclables, higher processing costs due to the need to meet better quality standards required for domestic processors, and a corresponding cost increase to recycle due to increased supply chain and labor costs. While those global policies disrupted many recycling programs, including China's National Sword policy and changes to the Basel Convention¹ limiting export markets, these policies may create opportunities in the long-term for substantive improvement in domestic markets. Increased focus on domestic processing and scrutiny of packaging recyclability may lead towards the use of more recyclable materials and questioning the sustainability of consuming non-renewable fossil fuels to produce single-use

¹ CalRecycle. (n.d.). *International policies affecting global commodity markets*. <https://calrecycle.ca.gov/markets/nationalsword/globalpolicies/>

disposable items.²

The relatively higher cost of maintaining recycling programs with uncertain revenue streams amidst a competitive labor market and variable commodities markets remains a disincentive for Maine communities to recycle.³ Additionally, many of the communities that are part of the Municipal Review Committee (MRC) opted in to the “one bin, all in” program in conjunction with the Fiberight/Coastal Resources of Maine mixed waste processing facility that was intended to allow collection of trash without residents having to separate out recyclable material beforehand. With the ceased operation of this facility in 2020, many of the MRC communities were no longer able to process recycling as their infrastructure had already transitioned to the “one bin all in” system. In addition, the lingering effects of the COVID-19 pandemic have contributed to stagnant recycling activity in some regions of the state. Initial concerns over how the virus spread led to a pause on many recycling programs due to fears that handling recyclables could lead to increased spread of COVID-19. Many of these programs have not yet resumed due to the cost of re-starting the programs during a period of unstable recycling material market prices.

III. Generation and Management of Solid Waste in 2020 & 2021

A. Overview of the Management of Maine's Solid Waste

Solid waste in Maine is generated by residential, commercial, institutional, and industrial entities, and is categorized depending on its characteristics and how it is generated. These categories include municipal solid waste (MSW), construction and demolition debris (CDD), wood waste, special waste, and universal waste; various types of waste exist within these categories. This report primarily addresses wastes that are generated by households and businesses, as the generation, recycling rates, and disposal of these waste materials are the focus of 38 M.R.S. § 2124-A. Figure 1 provides a map of landfills accepting municipal solid waste and waste-to-energy facilities.

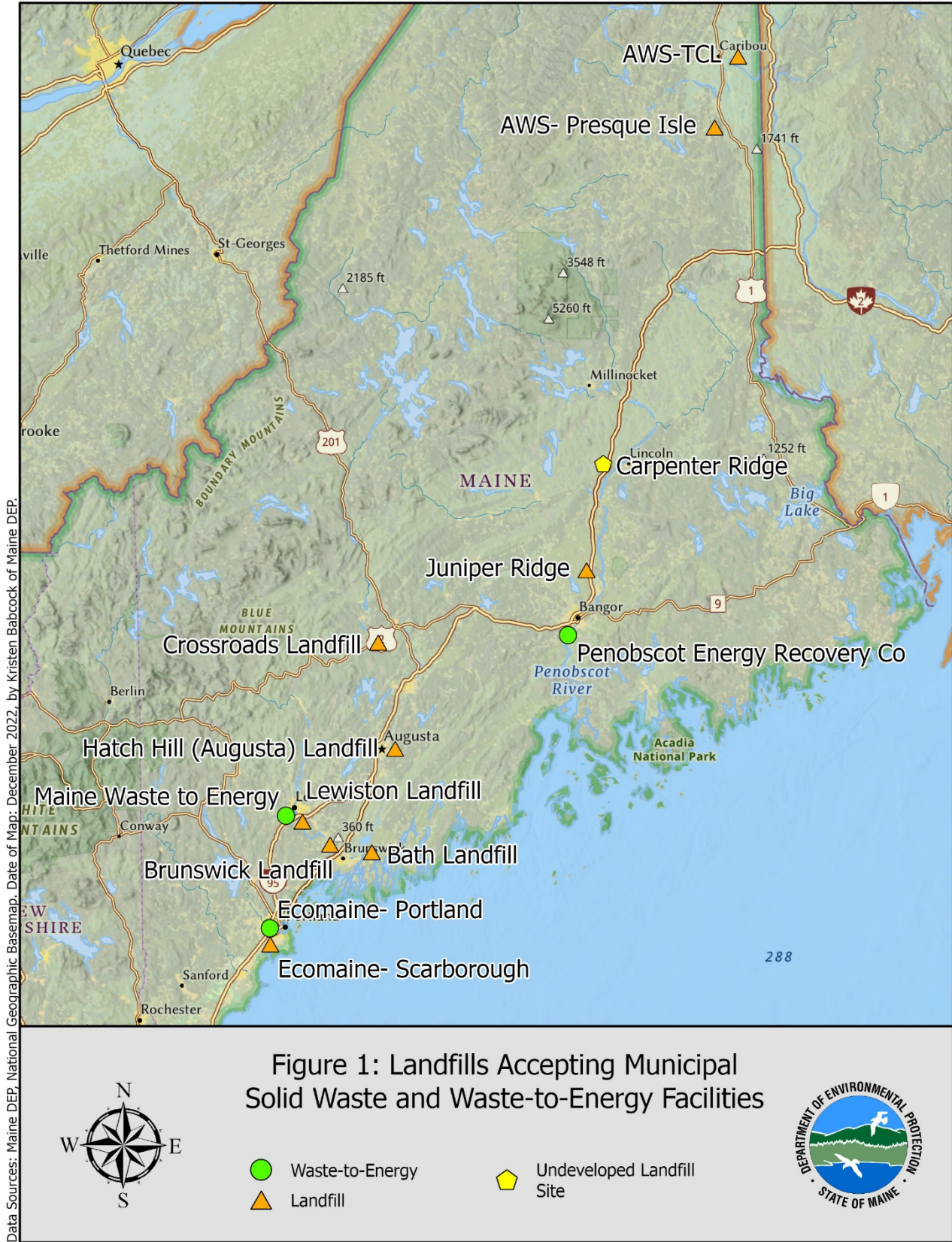
38 M.R.S. § 1305 assigns responsibility for the management of MSW to each municipality: “Each municipality shall provide solid waste disposal services for domestic and commercial solid waste generated within the municipality.” MSW is managed through combinations of municipal and commercial waste handling services, facilities, and systems as each municipality chooses how to meet that responsibility.

Once collected, solid waste may be temporarily stored, transported, recycled, processed, composted, anaerobically digested, beneficially reused, combusted at waste-to-energy facilities, or landfilled. Maine’s *Solid Waste Management Rules* (06-096 C.M.R. chs. 400 – 419) set risk-based standards for the handling of solid waste with the ultimate purpose of protecting public health and the environment.

A significant issue that has come to the forefront in recent years and will likely influence multiple aspects of materials management from recycling to landfilling to organics management in the future is the presence of per- and polyfluoroalkyl substances (PFAS). Used in household products, industrial settings, and firefighting foam since the early 1950s, these chemicals are persistent and

² Heiges, J., & O'Neill, K. (2022, November 16). What analyzing National Sword can teach us about optimizing US plastics recycling. Waste Dive. <https://www.wastedive.com/news/opinion-analyzing-national-sword-plastics-recycling-system-berkeley/636656/>

³ Paben, J. (2022, October 4). Editor’s analysis: Are bale prices foreshadowing recession? *Plastics Recycling Update*. <https://resource-recycling.com/plastics/2022/10/04/editors-analysis-are-bale-prices-foreshadowing-recession/>



bioaccumulate in the environment⁴. The Maine Legislature has enacted a number of laws relating to PFAS, including a ban on the land application and distribution of sludge derived products and the regulation of PFAS in food packaging and more broadly in products sold and distributed in Maine.

38 M.R.S. § 2101, Maine's *Solid Waste Management Hierarchy*, sets an integrated approach to solid waste management as State policy. This "hierarchy" establishes waste reduction as the preferred approach and highest priority, followed by reuse, recycling, composting, volume reduction through waste-to-energy incineration, and landfilling as the management option of last resort. In accordance with 38 M.R.S. § 2122 the Department will update and release the "Maine Materials Management Plan," (MMMP) in January of 2024, which will outline strategies for the State to incorporate this hierarchy in the management of waste. The MMMP will examine the management of MSW, CDD and some typical special wastes generated by Maine households and businesses and provide recommendations to help Maine's policymakers identify opportunities to effect positive changes to divert materials from disposal and move the management of various components of the solid waste stream up the hierarchy and treat waste as a valuable resource to be recovered rather than as a liability. It will identify initiatives and opportunities to support ongoing programs to help Maine's municipalities to improve recycling and organics diversion efforts. It will also identify strategies to further address PFAS-containing solid wastes.

B. Overview of Rate Calculations

The total amount of MSW generated in the State has been calculated through analysis of the amounts of waste at their final points of disposition – waste disposed in landfills, incinerated at waste-to-energy facilities, processed, sent for recycling, beneficially used, and reused, where such data is available. Data was acquired from the annual reports of licensed facilities and of recycling establishments for this 2020 and 2021 report period. This includes data from out of state sources, such as landfills which accept exported waste that was generated in Maine. Data on the recycling of electronics, vehicle batteries, consumer batteries, mercury-added lamps and textiles was obtained through a combination of voluntary and mandatory reporting by the specialized businesses that manage these consumer products, including reports required by Maine's product stewardship laws,⁵ data from hazardous waste manifests, and reporting by major collectors of recyclable items. Organics recovery by commercial-scale organics management entities is also tracked, but data on backyard, school based, and small, on-farm composting operations is generally not collected, and cannot be included in the calculation of Maine's MSW recycling rate.

It is important to point out that the most preferential waste diversion and reuse activities, meaning those at the top of Maine's waste hierarchy such as reuse of goods through donation and resale or food rescue, often take place through unofficial channels and are not quantified in this report. Such activities may include resale of usable goods through yard sales, online sales or trading platforms, and gleaning or food donation activity. While limited data on diversion of textiles and household goods is collected from the largest nonprofits in Maine, most reuse information is not formally tracked and therefore cannot be included despite the fact that these activities have a significant environmental benefit by preventing waste from being generated and reducing resource extraction, energy consumption, use of production and processing inputs, and pollution associated

⁴ See EPA's guide to PFAS for more information: <https://www.epa.gov/pfas/pfas-explained>

⁵ Maine's Product Stewardship Framework law affirms product stewardship programs as an integral part of the State's solid waste management strategy. Learn more at <https://www.maine.gov/dep/waste/productstewardship/index.html>

with producing new goods.

C. Generation of Municipal Solid Waste in Maine

Table 1 presents a summary of the amounts and disposition of MSW generated in Maine in 2020 and 2021 and an overview of recycling rates. CDD generation and disposition is presented in Section D, and wood waste generation and disposition is presented in Section F. These numbers have been adjusted to account for the estimated amounts of material generated in Maine and accepted by licensed solid waste or processing facilities and recycling establishments. For example, if a facility accepted waste or scrap material from Maine and out-of-state entities, this report focuses on activity related to the Maine-generated portion of the facility's accepted material whether that material was landfilled, incinerated, or exported for recycling. This biennial report includes commercial recycling tonnage, such as commercial cardboard recycling, which increases Maine's overall recycling rate. Including commercial recycling numbers as well as residential provides a more complete analysis of the overall recycling rate during the reporting period.

Table 1 - Maine MSW Management - Calendar Years 2020 & 2021

Maine MSW disposition	2020 tons	2021 tons
Maine MSW landfilled in state	408,967	460,128
Maine MSW disposed via waste-to-energy	441,804	365,941
Maine MSW disposed out-of-state	89,046	77,591
Subtotal Maine MSW (exclusive of CDD) disposed	939,817	903,660
Paper, cardboard, plastics, metals, glass, textiles, white goods, and stewardship program materials recycled	211,054	183,501
Other MSW recycled (ferrous and non-ferrous scrap metal, and vehicle batteries)	225,969	225,351
Reported MSW composted ⁶	36,052	35,331
Reported MSW anaerobically digested (AD) ⁷	11,500	14,755
Subtotal Maine MSW recycled, composted, or anaerobically digested	484,574	458,938
Total Maine MSW generated (exclusive of CDD)	1,424,391	1,362,598
Maine's MSW Recycling Rate (exclusive of CDD)	34.0%	33.7%

D. Management of Construction and Demolition Debris

CDD waste is considered a subset of MSW and is generally handled as a separate waste stream which is typically transported, processed, and disposed of separately from MSW. There are several

⁶ Not including backyard, school based, and exempt/small, on-farm composting operations or processing waste such as fish or food processing waste. Compost facilities that accept less than 5 cubic yards of food scraps monthly and on-farm compost facilities that accept less than 60 cubic yards of food scraps monthly are exempt from Department licensing and annual reporting requirements.

⁷ Includes only source-separated organics and does not include liquid wastes or sludge, distillate, de-icing fluid, slurry, or fats, oils, and grease.

CDD processing facilities across Maine that separate and mechanically resize materials for recycling, reuse, and disposal. This includes recovering materials such as glass to be processed into cullet for use in new products, recovering wood waste for recycling into particle board or use as fuel, and recovering scrap metal, which provides feedstock for a wide range of manufacturing activities. These facilities process CDD waste generated in Maine and imported into Maine, but only the Maine-generated portion of this material is counted toward Maine's statewide waste generation and recycling information. For example, although 164,346 tons of CDD processing residue was sent to Juniper Ridge landfill for disposal, only 18,156 tons or approximately 11% of this overall tonnage was Maine-generated waste. CDD is disposed at Maine landfills and waste-to-energy facilities. In addition to the larger landfills that accept MSW and CDD, several municipalities operate their own smaller CDD only landfills (further discussed in Section V). Table 2 outlines Maine's CDD disposal rates and the disposition of CDD generated in Maine for 2020 and 2021.

Table 2 - Maine CDD Management - Calendar Years 2020 & 2021

Maine-generated CDD disposition	2020 tons	2021 tons
Mixed CDD disposed in state	481,050	485,238
Mixed CDD disposed out of-state	4,736	4,424
Processed CDD sent to a landfill for daily cover, shaping, grading ⁸	13,828	15,392
Processed CDD recycled into new wood products or glass cullet	5,665	4,887 ⁹
Processed CDD beneficially used as fuel	831	336
Subtotal Maine CDD recycled into new products & beneficially used as fuel	6,496	5,223
Total CDD generated in Maine	506,110	510,277
Maine's CDD recycling rate (all non-landfill uses)*	1.28%	1.02%

**Solid waste processing facilities (including CDD processing facilities) that generate residue requiring disposal are required under the provisions of 38 M.R.S. § 1310-N(5-A)(B)(2) to "recycle or process into fuel for combustion all waste accepted at the facility to the maximum extent practicable, but in no case less than 50%". For purposes of calculating this recycling rate the law defines "recycle" to include the use of residue at a solid waste landfill "for daily cover, frost protection or other operational or engineering related purpose, including . . . landfill shaping or grading . . ." For purposes of this report and evaluating recycling rates against the State goal, only CDD that has been recycled into new products or beneficially used as fuel has been included.*

E. Management of Special Waste

Special waste, as defined by 38 M.R.S. § 1303-C(34) means "any solid waste generated by sources other than domestic and typical commercial establishments that exists in such an unusual quantity or in such a chemical or physical state, or any combination thereof, that may disrupt or impair effective waste management or threaten the public health, human safety or the environment and requires special handling, transportation and disposal procedures." Special waste includes, but is not limited to: ash, industrial and industrial process waste, wastewater treatment plant (WWTP) grits and screenings and sludge, debris and residuals (including contaminated soil) from nonhazardous chemical spills, petroleum spills and cleanup of those spills, and asbestos and

⁸ Includes only Maine-generated portion of CDD wastes from processing facilities located in Maine.

⁹ One facility that recycled CDD in 2020 did not report for 2021, so there may be missing data on CDD recycled, but the tonnage is likely to be similar to 2020 and would not represent a significant increase in overall CDD recycling.

asbestos containing waste. Special waste may be composted, beneficially used, land applied, incinerated, anaerobically digested, used as alternative daily cover and/or landfilled. Several industrial facilities in Maine (e.g., paper mills) operate “generator owned” landfills for the special waste generated at their facilities. Special wastes, as they are defined as being generated by sources other than domestic and typical commercial establishments, are not included in the waste generation calculations for Maine in this report. However, special wastes disposed in landfills, used as landfill alternative daily cover, or in other landfill-related applications take up disposal capacity and affect the amount of available disposal capacity in Maine.

F. Management of Wood Waste

Wood waste is another category of solid waste that is frequently generated by households and normal commercial sources and handled at facilities that accept MSW and/or CDD. Wood waste includes brush; stumps; lumber; bark; wood chips; shavings; slabs; edgings; slash; sawdust; wood from production rejects; wood pallets that are not pressure treated or visibly contaminated, and from which fasteners have been removed; that are not mixed with other solid or liquid waste. This report does not attempt to evaluate the amount of brush, stumps, and lumber wood waste but concentrates instead on wood waste generated in residential or commercial sectors during construction and demolition or other operations.

Licensed solid waste facilities in Maine accepted 8,023.88 tons of wood waste in 2020 and 7,723.25 tons of wood waste in 2021. In 2020, approximately 3,708.28 tons of collected wood waste was sent to landfills for shaping, grading, and cover, while 3,484.6 tons were exported for use in manufacturing particle board, and the remaining 831 tons used as biomass fuel. In 2021, 4,023.28 tons of wood waste was used for shaping, grading, and cover in landfills, 3,363.97 tons was shipped out for particle board feedstock, and 336 tons of wood waste was used for biomass fuel. A small amount of clean wood (between 50 to 100 tons) was also landfilled per year.¹⁰

These numbers have been adjusted to account for estimated amounts of wood waste generated in Maine and accepted by licensed solid waste or processing facilities. For example, if a facility accepted 50 tons of waste from Maine and 50 tons of waste from another state, this report only quantifies the activity related to the Maine-generated portion of the facility’s wood waste. As noted above, this report does not factor in wood waste that is processed and marketed for mulch, other landscaping uses, and erosion control material. Data on wood waste that is managed other than at licensed facilities is not tracked and it is likely that the data reported to the Department represents only a small portion of the overall wood waste generated in Maine during the report period.

IV. Progress toward Maine’s Waste Reduction and Recycling Goals

A. Maine’s Municipal Solid Waste Disposal Reduction Goal

In 2017, Maine’s statutory goal for waste reduction was amended to focus on the readily measurable amount of MSW sent for disposal. 38 M.R.S. § 2132(1-B) states:

State waste disposal reduction goal. It is the goal of the State to reduce the statewide per capita disposal rate of municipal solid waste tonnage to 0.55 tons disposed per capita by January 1, 2019 and to further reduce the statewide per capita disposal rate by an additional 5% every 5 years thereafter. The

¹⁰ Estimated based on partial/incomplete reporting.

baseline for calculating this reduction is the 2014 solid waste generation and disposal capacity data gathered by the department.

In 2014, Maine generated and disposed (at landfills and waste-to-energy facilities) 757,049 tons of MSW, exclusive of CDD. This established the baseline per capita disposal rate at 0.5697 tons per person (Maine's estimated 2014 population was 1,328,903). In 2017, this goal was not only met but exceeded with an estimated 0.54 tons (1,080 pounds) of waste disposed per capita in Maine. However, per capita disposal tonnage during the 2020-2021 reporting period did not meet the statewide goal, as shown in Table 3 below.

Table 3 - Maine MSW Per Capita Disposal - Calendar Years 2020 & 2021

Maine MSW Disposal vs. Goal	2020	2021
Tons MSW Disposed	939,817	903,660
Statewide Population ¹¹	1,362,359	1,372,247
Per Capita MSW Disposal in Tons	0.69	0.66
Per Capita MSW Disposal in Pounds	1,379.69	1,317.05

Figure 2 below shows the estimated pounds of MSW disposed or recycled per person on a daily basis across Maine since 2013, highlighting a recent uptick in disposal and overall MSW generation.¹²

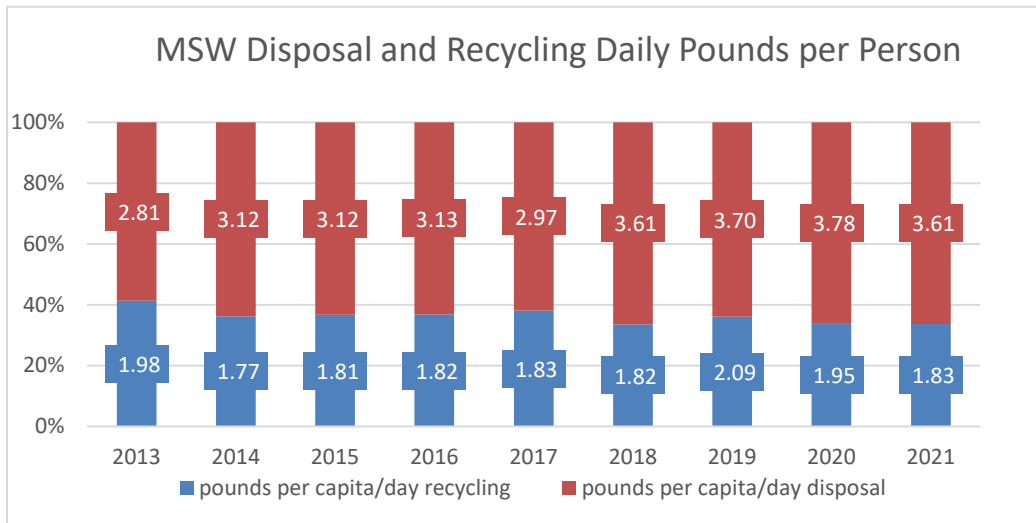


Figure 2. Per Capita (Person) MSW Disposal and Recycling Pounds Per Day

B. Maine’s Municipal Solid Waste Recycling Rate

¹¹ Based on US Census Data for 2020 and US Census Bureau's 2021 Population Estimates Program

¹² Generation includes materials that are disposed as well as those diverted from disposal through recycling or composting.

38 M.R.S. § 2132(1) sets Maine's statewide goal for the recycling of municipal solid waste:

***State recycling goal.** It is the goal of the State to recycle or compost, by January 1, 2021, 50% of the municipal solid waste tonnage generated each year within the State.*

Unfortunately, waste diversion in the past few years has not kept pace with waste generation, with the result that Maine has not achieved the statewide recycling or composting goal. Maine's statewide recycling rates for 2020 and 2021 were comparable or slightly lower than in years past, as shown in Table 4 below. Maine's MSW recycling rate (including composting and anaerobic digestion) average for 2020 and 2021 was estimated to be 33.9%, with respective recycling rates per year of 34% in 2020 and 33.7% in 2021.

Table 4 – MSW Generation, Disposal, and Recycling since 2017

	2017 ¹³	2018	2019	2020	2021
Tons MSW Generated	1,165,702	1,327,373	1,421,101	1,424,391	1,362,598
Tons MSW Disposed	721,646	882,074	907,906	939,817	903,660
Tons MSW Recycled	444,056	445,299	513,195	484,574	458,938
MSW % Change (Year over Year)	-3.0%	13.9%	7.1%	0.2%	-4.3%
Disposal % Change (Year over Year)	-5.0%	22.2%	2.9%	3.5%	-3.8%
Recycling % Change (Year over Year)	0.4%	0.3%	15.2%	-5.6%	-5.3%
Estimated Recycling Rate	38.1%	33.5%	36.1%	34.0%	33.7%
Statewide Population	1,331,479	1,338,404	1,344,212	1,362,359	1,372,247
Population % Change (Year over Year)	0.1%	0.5%	0.4%	1.4%	0.7%

The Maine Legislature has taken some steps in recent years to help Maine further its recycling programs, including passing a law to establish an Extended Producer Responsibility (EPR) program for packaging.¹⁴ The Department is in the early stages of implementing this EPR program for packaging, which presents a significant opportunity to expand and improve recycling infrastructure statewide. However, it will be crucial for municipalities to participate in recycling, composting and other waste reduction activities to help Maine achieve its statewide diversion goals. Laws were also enacted prohibiting the use of items that have typically proven problematic for recyclers, including polystyrene foam and single-use plastic bags. Additional funding assistance will soon be made available from the federal government as part of the Bipartisan Infrastructure Law (BIL), which provided appropriations to the U.S. Environmental Protection Agency to fund the Solid Waste Infrastructure for Recycling Grant (SWIFR) program. These grants will provide States with capacity to support long-term planning and data collection needs to demonstrate progress toward the National Recycling Goal and Food Loss and Waste Reduction Goal and advance a Circular Economy for materials¹⁵.

In addition to the ongoing financial assistance that will be available for recycling programs through the EPR for packaging program, the legislature established the Maine Solid Waste Diversion Grant

¹³ 2017 year-over-year percent changes reflect a comparison to 2016 data, which is not shown in this table.

¹⁴ The Department's timeline and additional program implementation information is available online at <https://www.maine.gov/dep/waste/recycle/epr.html>

¹⁵ <https://www.epa.gov/recyclingstrategy>

Program at 38 M.R.S. § 2201-B (P.L. 2015 c. 461) in 2015 to “assist in the development, implementation or improvement of programs, projects, initiatives or activities designed to increase the diversion of solid waste from disposal in the State”. In 2020 and 2021, the Department awarded grants totaling \$402,660 to both public and private entities, with a total of \$886,000 in funding dispersed since the program began allocating funding in 2018. Maine’s Solid Waste Diversion Grant program is open to both public and private entities and has provided funding for 45 different programs and projects focused on waste diversion including organics recovery, recycling, and reuse or waste reduction.

C. Maine’s Combined MSW and CDD Recycling Rate

Table 5 shows a breakdown of total waste diversion including CDD and the estimated overall recycling rate for MSW and CDD per year for 2020 and 2021. This table includes the MSW and CDD generated in Maine and disposed out of state in New Hampshire and New Brunswick.

The MSW recycling rate is calculated by dividing the total amount of MSW recycled by the total amount of reported in-state generated MSW. The term “municipal solid waste” is defined in 06-096 C.M.R. ch. 400 as “. . . solid waste emanating from household and normal commercial sources. Municipal solid waste includes front-end process residue from the processing of MSW.” Maine has historically included CDD as a subset of MSW since it fits the criteria included in the definition of MSW. However, other states and the U.S. Environmental Protection Agency (US EPA) exclude CDD from their calculations of MSW recycling rates. To address this, the Department has calculated the recycling rate for MSW as defined by the US EPA (Table 1) as well as a recycling and diversion rate for CDD alone (Table 2), and a separate recycling rate that includes both MSW and CDD, shown in Table 5. This approach allows Maine to perform a like comparison with other states’ MSW recycling rates, while also enabling Maine to evaluate where additional efforts are needed to improve diversion of the array of materials handled by municipalities in Maine.

Table 5 - Maine CDD & MSW Management - Calendar Years 2020 & 2021

Waste Type and Disposition	2020 tons	2021 tons
Total MSW & CDD reported as generated in Maine	1,930,501	1,872,659
Total MSW & CDD disposed ¹⁶ (includes materials used in landfill for cover, shaping, and grading)	1,439,431	1,408,714
Total MSW, CDD, and organics recycled and composted (including wood waste used as fuel chips)	491,070	463,945
Maine's Combined MSW, CDD & Organics Recycling Rate	25.44%	24.77%

D. Reporting Requirements for Recycling

In addition to enacting a new mandatory recycling establishment reporting requirement, the Maine

¹⁶ Includes only Maine-generated portion of CDD processing wastes from processing facilities located in Maine

Legislature made changes to 38 M.R.S. § 2133(7) concerning municipal recycling progress (P.L. 2021 c. 291). Municipal recycling reports, previously submitted on an annual basis, are now required to be submitted biennially. The progress reports include data on what options are available to residents and businesses within each municipality for managing solid waste, including recyclables, organics, and CDD. This reporting requirement is intended to help municipalities and the State assess progress toward achieving an MSW recycling rate of 50%. Municipalities are not required to meet the statewide MSW recycling goal of 50% but are required to demonstrate “reasonable progress” in achieving that goal, as determined by the Department. However, it should be noted that the law does not provide for any consequence to municipalities that do not demonstrate “reasonable progress” or do not report as required. Waste management decisions remain the responsibility of the municipality and decisions and actions at the local level significantly impact the overall statewide MSW recycling rate.

In 2018, 487 municipalities were sent letters notifying them of the reporting requirement and providing instructions on how and when to report. Out of the 487, only 104 municipalities submitted their recycling progress reports to the Department. The Department mailed out postcard notifications prior to the report deadline for the 2019-2020 biennial recycling progress report and received positive feedback on this method of outreach from several municipalities. Reporting rates were much higher for 2019 and 2020, with over 215 municipalities reporting. Out of the municipalities that reported, 85% have a recycling program, while 54% have an organics program, primarily for leaf and yard waste composting. The municipal recycling progress reports provide valuable information that enables the Department to better identify materials management opportunities and needs across the state. The next municipal reports are due to the Department April 30, 2023 and will help further inform discussions about future recycling infrastructure needs.

E. Waste Diversion and Recycling

As outlined in Table 1, in 2020, an estimated 1,424,391 tons of MSW was generated in Maine, while approximately 1,362,598 tons of MSW was generated in 2021. Out of that MSW, approximately 939,817 of MSW was sent for disposal in 2020, and approximately 903,660 tons was sent for disposal in 2021. Maine’s MSW is disposed of at either landfills or is utilized at waste-to-energy facilities after which the ash is landfilled.

An estimated 484,574 tons of MSW was diverted from disposal in 2020, and approximately 458,938 tons was diverted in 2021. These MSW materials were diverted from disposal through a number of avenues that include donation and resale, municipal and commercial recycling programs, Maine’s product stewardship programs,¹⁷ including the returnable beverage container program, composting and anaerobic digestion, and by scrap metal businesses. Waste diversion activities included in this report primarily include materials that are tracked through licensed facilities or drop-off points. Much of the data is self-reported and may be based on estimates rather than tracking of actual weight by material type. These diversion programs can be categorized in several distinct ways, as detailed below.

1. Donation and Resale

¹⁷ Maine’s existing product stewardship programs allow residents and other entities to recycle certain mercury-containing products including light bulbs, auto switches, and thermostats, oil-based and latex architectural paint, rechargeable consumer batteries, and cell phones. New programs for packaging and pharmaceuticals are in the process of implementation.

As noted previously, this report is not able to capture comprehensive data on reuse. The exception is data from several of the largest charitable organizations in Maine, which voluntarily provide estimates for the amount of textiles (clothing, curtains, etc.) and household goods (furniture, toys, books, etc.) they divert from disposal on an annual basis. In total, these entities diverted approximately 13,575 tons of household goods and textiles in 2020 and 11,417 tons in 2021. Figure 3 shows the composition of diverted reuse materials. Reuse tonnage is included in Maine's statewide diversion totals along with recycling, composting, and anaerobic digestion. This reuse data likely represents a small fraction of the overall amount of material diverted through reuse channels in Maine, including transfer station swap shops as well as resale shops, flea markets, online sales, and various trading platforms for buying, selling, and exchanging materials.

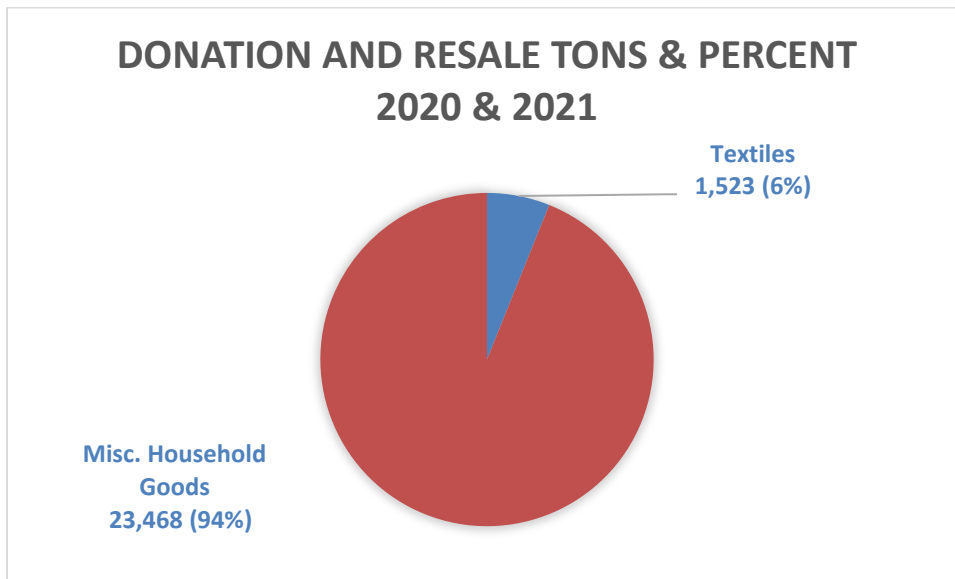


Figure 3. Donation and resale by tons, material, and percent in 2020 and 2021

2. Household/Business Traditional Recyclables Summary

Figures 4 through 10 show the composition in tons and percent of traditional recyclables by material type in 2020 and 2021. Traditional recyclables include regularly generated items such as bottles, cans, cardboard boxes, jugs, tubs, office paper, and unwanted mail. The recyclable materials represented in these figures are typically collected curbside or at municipal transfer stations, as well as through the beverage container redemption program, store drop-off points for plastic film, or recyclables managed internally by businesses that generate large quantities of specific material, such as cardboard. Scrap metal is represented separately from these typical household or business materials. These recyclables have been divided up into four primary categories: plastics, fibers (cardboard and paper), glass, and metal. Each pie chart shows the overall amount by weight and percent of each distinct material per category of recyclable. For example, approximately 904 tons of #1 polyethylene terephthalate (PET) “flat pack”¹⁸ was baled and sent to a processor for use in

¹⁸ “Flat pack” is a term used to refer to berry boxes, clamshells, and other non-bottle polyethylene terephthalate packaging.

new products during the two-year period, and these PET clamshells comprised 3% of the total plastics sent to processors by various recycling establishments during this time frame.

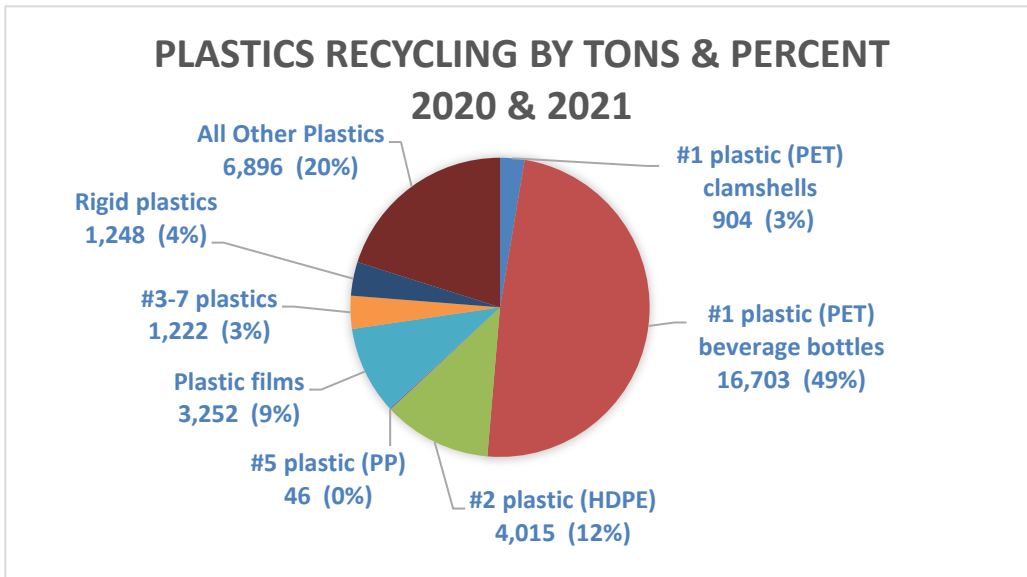


Figure 4. Plastics recycling by tons, material, and percent

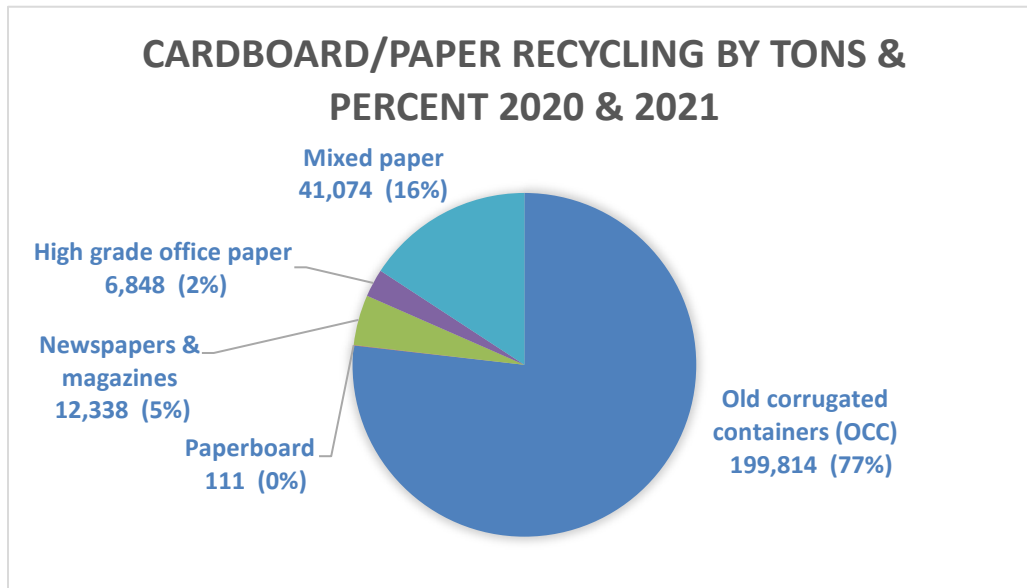


Figure 5. Cardboard and paper recycling by tons, material, and percent

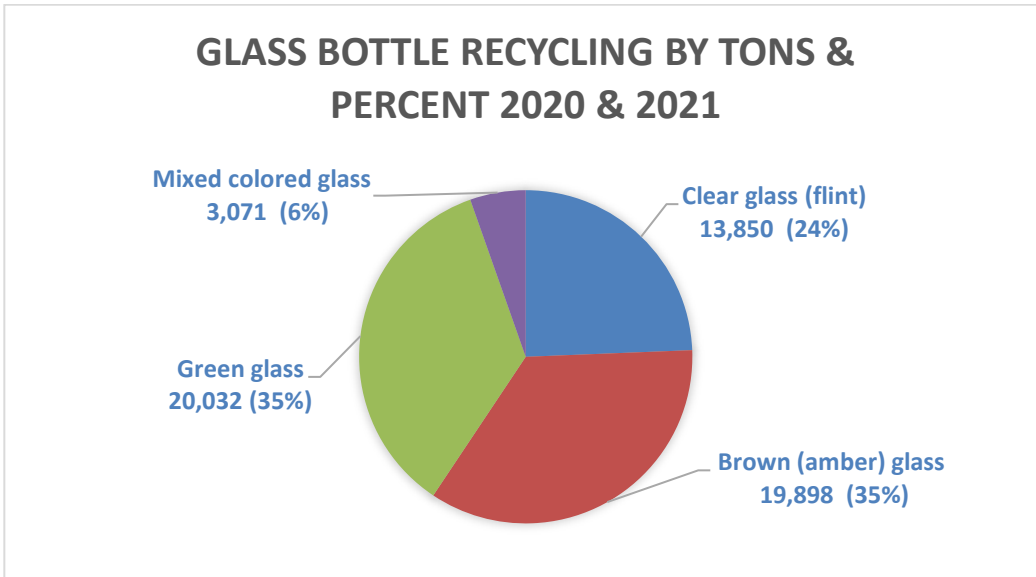


Figure 6. Glass recycling by tons, material, and percent

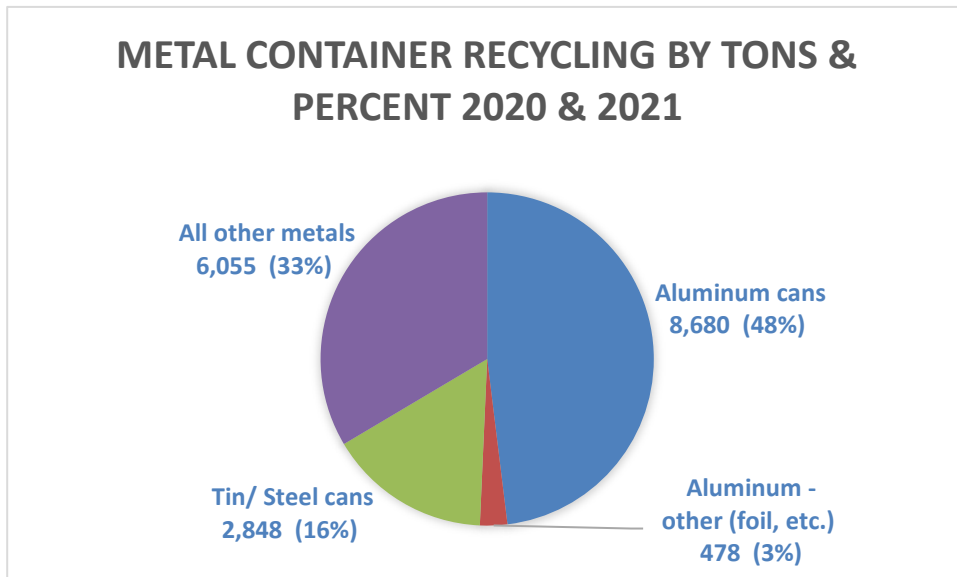


Figure 7. Metal container (includes some foil) recycling by tons, material, and percent

The “bottle bill” or container redemption program falls under the programmatic umbrella of Maine’s product stewardship programs and is a crucial piece of the recycling infrastructure throughout the state. A significant amount of the bottles and cans recycled in Maine were collected through the bottle bill program during 2020 and 2021. Figures 7 and 8 below highlight the important contribution of the bottle bill to Maine’s statewide recycling efforts.

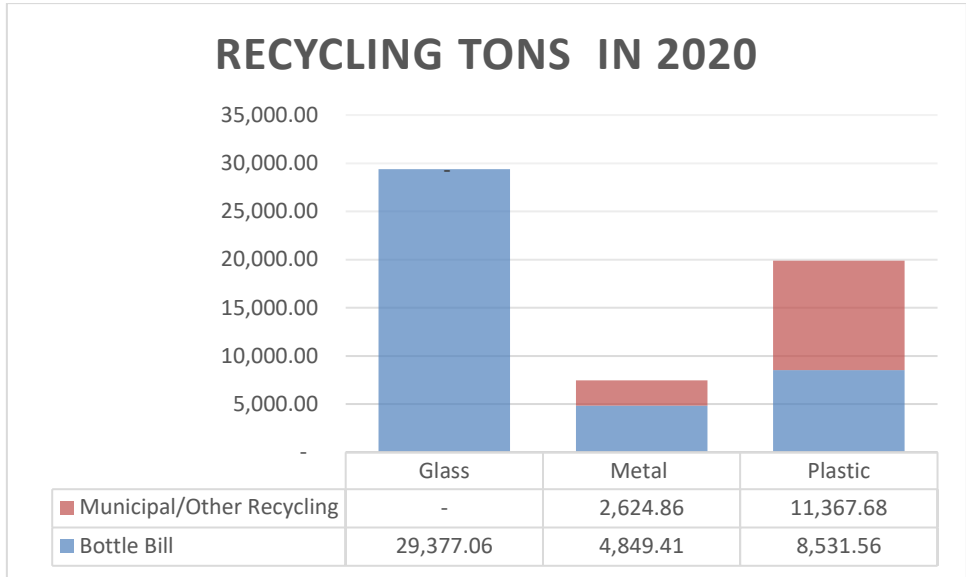


Figure 8. Bottle bill and municipal or other recycling program contributions to statewide recycling of glass, metal,¹⁹ and plastic in 2020

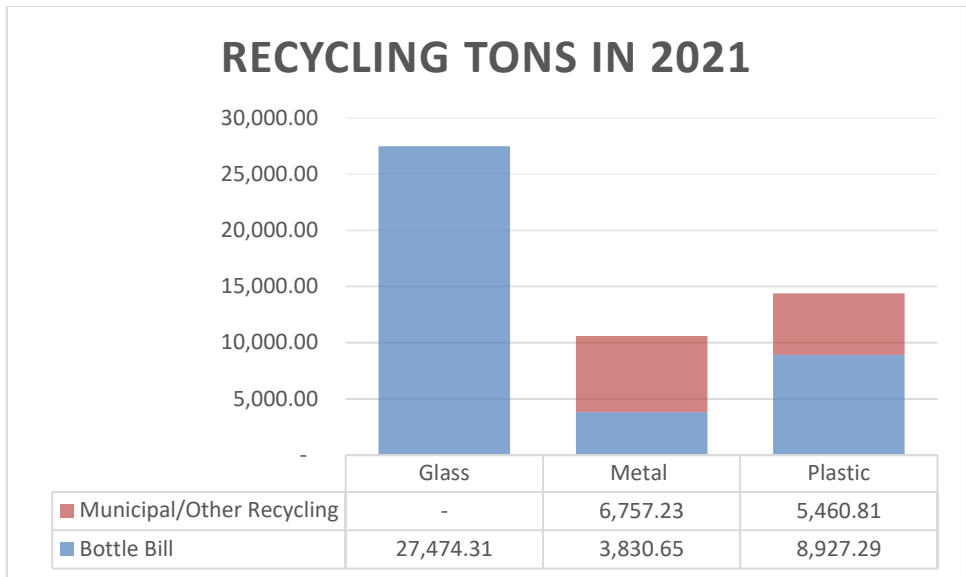


Figure 9. Bottle bill and municipal or other recycling program contributions to statewide recycling of glass, metal, and plastic in 2021

¹⁹ Metal represented here are traditional recyclables such as cans and other materials collected curbside or at transfer stations, not scrap metal such as white goods

3. Scrap Metal Recycling

Scrap metal dealers in Maine recycled an estimated 225,969 tons of scrap metal and vehicle batteries in 2020 and approximately 225,351 tons in 2021.

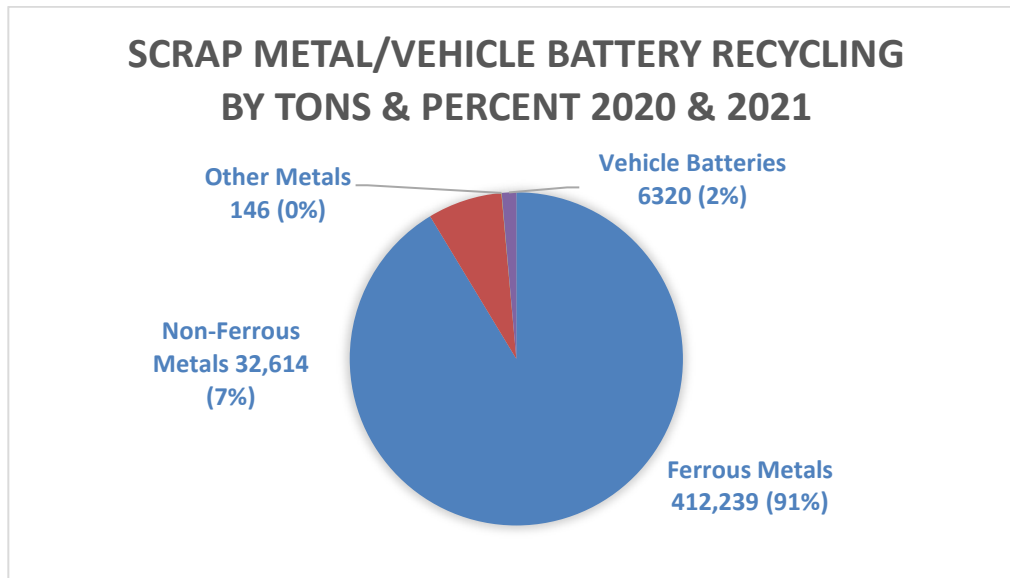


Figure 10. Scrap metal recycling by tons, material, and percent

4. Product Stewardship Programs

Maine’s product stewardship laws mandate some level of manufacturer (producer) responsibility for proper product management at the end-of-life for the products that they produce. These laws may also be known as extended producer responsibility (“EPR”) laws. EPR provides incentive for manufacturers to consider the end-of-life impacts of their products and relieves the public sector of some of the burden of managing those products. The Department publishes a separate report each year focused specifically on Maine’s product stewardship programs, which provides a more in-depth analysis of each program with detailed information on material recovery as well as program performance.

Approximately 5,605 tons of material (excluding organics) were diverted from disposal through Maine’s product stewardship programs, as shown in Table 6 below.

Table 6 – Materials Recycled through Maine’s Product Stewardship Programs in 2020 and 2021

Product Stewardship Programs Estimated Material Recovery (Tons)							
Year	Paint	Paint Cans	Mercury Lamps	Mercury Thermostats	Electronic Waste	Rechargeable Batteries	Total
2020	105	106	95	.47	2,654	14	2,974
2021	131	106	86	1	2,289	17	2,631

5. Organics Management: Composting and Anaerobic Digestion

Organics management covers a wide range of materials; however, for the purpose of this report, municipal solid waste is the primary focus. In addition, municipal organics diversion is generally reported here but the challenges and opportunities to expand these programs are not addressed in detail.

A comprehensive analysis of potential impacts to materials management related to these efforts will be included in the forthcoming 2024 MMMP, as well as an analysis of opportunities related to increasing organics diversion. While waste audits would be needed to confirm how much food is in the residential and commercial waste, the low quantity of food scraps diverted via composting and anaerobic digestion as detailed below suggest there is room to improve Maine's food scrap collection efforts to increase organics diversion.

a. Composting

As with reuse, a great deal of composting activity is not tracked as it takes place informally and at a small, local scale. Composting activity that is not tracked includes backyard, school based, and exempt/small, on-farm composting operations.²⁰ While large-scale composting of industrial processing waste such as fish or food processing waste, wood shavings, manure, and FOG (fats, oils, and grease) is tracked, this activity is not described in detail here as it is separate from the municipal solid waste stream and not the focus of this report. Approximately 84,191 tons of these industrial and commercial wastes were composted during the reporting period. Organics composting included in Table 7 below includes food scrap and leaf and yard composting from municipalities.

Table 7 – Tracked Composting Activity in 2020 and 2021

Material	2020 Tons	2021 Tons
Food Scraps	12,447.30	15,879.00
Yard Waste	23,605.00	19,452.00
Total	36,052.30	35,331.00

b. Anaerobic Digestion

During 2020, approximately 11,499.60 tons of source separated organics were sent for anaerobic digestion, while 14,754.90 tons were anaerobically digested in 2021. These organics are collected from municipalities and businesses and provide valuable outputs such as energy and animal bedding amendment. An additional 15,430 tons of material managed via anaerobic digestion included processing waste from commercial operations such as distillate and aircraft de-icer. As with certain industrial and commercial processing waste that is composted, this material is not included in Maine's MSW generation or recovery figures; a list of all facilities licensed to process organics in Maine is available online for more details.²¹

²⁰ Compost facilities that accept less than 5 cubic yards of food scraps monthly and on-farm compost facilities that accept less than 60 cubic yards of food scraps monthly are exempt from Department licensing and annual reporting requirements.

²¹ Lists of licensed composting, anaerobic digestion, and sludge composting facilities: <https://www.maine.gov/dep/maps-data/data.html#re>

V. Solid Waste Disposal Capacity

In 2020 and 2021, Maine's active solid waste disposal facilities included three waste-to-energy facilities and approximately forty landfills of varying sizes and types. Of these landfills, nine are licensed to accept municipal solid waste or MSW bypass. Of these nine, seven are municipally owned, one is owned by the State but operated by a commercial waste handling company, and one is commercially owned and operated. Nineteen of the forty are municipally owned smaller landfills (generally less than 6 acres in size) that accept wood waste and CDD only; one of these is a small secure landfill that in addition to wood waste and CDD accepts WWTP sludge. Additionally, two municipal landfills that accepted MSW during their operational history now only accept CDD. The remainder of the forty are generator-owned landfills that are associated with a specific manufacturing facility and are licensed to take waste from that facility.

Since the wastes disposed at these generator-owned landfills are specific to those facilities and are not placed into the general waste stream, they are not included in this report for calculating Maine waste generated, disposed, and for determining recycling rates. There is one waste processing facility in Maine that accepts MSW, but it was not fully operational in 2020 and 2021 and is currently not in operation.

A. Current and Projected Capacity

1) Waste-to-Energy Facilities – Current and Projected Capacity

Three waste-to-energy facilities operate in Maine and accept both in state and out of state waste. The total amount of waste accepted by these facilities in 2020 and 2021 can be found in Table 8. Waste-to-energy facilities in Maine accounted for the disposal of 441,804 tons of MSW and 6,817 tons of other waste in 2020 (448,621 total tons) and 365,941 tons of MSW and 4,758 tons of other waste (370,698 total tons) in 2021, averaging about 44% of all Maine-generated MSW waste during those two years.

Table 8 – Tons of Waste Incinerated in W-T-E Facilities – Calendar Years 2020 & 2021

Facility	Maine tons (MSW & other materials)		Imported tons		Total tons	
	2020	2021	2020	2021	2020	2021
ecomaine	173,414	182,396	2,292	2,149	175,706	184,544
Mid Maine Waste Action Corporation (MMWAC)	81,005	83,994	0	0	81,005	83,994
Penobscot Energy Recovery Corporation (PERC)	194,201	104,309	11,596	12,253	205,796	116,561
Total	448,621	370,698	13,887	14,401	462,508	385,100

All three waste-to-energy facilities are expected to maintain their physical capacity to dispose of wastes in the coming years. Table 9 presents available licensed disposal capacity for these facilities.

Table 9 - Available Licensed MSW Disposal Capacity at Maine's Waste-to-Energy Facilities - as of December 31, 2020

Waste-to-Energy Facilities	Annual capacity (tons/year)	2020 (tons/year)	2025 (tons/year)	2030 (tons/year)	2035 (tons/year)
MMWAC – Auburn	70,000	70,000	70,000	70,000	70,000
ecomaine – Portland	170,000	170,000	170,000	170,000	170,000
PERC – Orrington*	310,000	210,000	210,000	210,000	210,000
Total Waste-to-Energy Facility capacity in tons	550,000	450,000	450,000	450,000	450,000

*The PERC annual capacity of 310,000 is the engineered capacity of its two boilers operating full time. In 2020, PERC changed its boilers' operating time, resulting in an operational reduction in waste incineration capacity to 210,000 tons annually. PERC can revert to handling up to 310,000 tons/year without modifications to any equipment.

2) Landfills – Current and Projected Capacity

The nine landfills that accept MSW or MSW bypass are detailed in Table 10 below, with each landfill's reported amount of waste accepted, capacity data, and estimated life span, as determined by a review of each landfill's annual reports for 2020 and 2021. Not all facilities provided an estimated lifespan and only provided capacity used during the reporting year and remaining capacity. In these cases, the Department estimated the life span using the capacity data provided by the landfill for that specific year. Total amount of waste disposed is based on the actual tonnage of all waste material the landfill received, including waste that was utilized for cover material. In most cases, the landfill capacity used, and capacity remaining is calculated by the facility from annual physical surveys of the landfill. Therefore, capacity estimates include capacity that may have been gained by the landfill through settlement of previously disposed waste as well as capacity used by waste that was utilized as daily cover.

MSW is a commodity, and generators and haulers will seek to find the most cost-effective disposal facility for their material. Landfills will alter their disposal amounts to take into account market conditions for various wastes and ability to use waste as cover material. Therefore, estimates of capacity or life beyond 5 – 10 years may not be accurate, as waste stream amounts can vary significantly from year to year as generators and haulers seek more cost-effective facilities and landfills change their operations.

Table 10 - Current Maine Landfill Capacity

Landfill	Amount of waste disposed	Capacity used in year	Total capacity remaining in licensed area	Estimated life
Hatch Hill – 2020	53,745 tons	78,700 cubic yards	503,000 cubic yards	6.3 years
Hatch Hill – 2021	52,289 tons	52,500 cubic yards	470,000 cubic yards	5.8 years
Bath – 2020	5,389 tons	12,200 cubic yards	332,300 cubic yards	27 years
Bath – 2021	15,858 tons	15,800 cubic yards	321,500 cubic yards	29 years
Brunswick – 2020	3,966 tons	Closed 2021	Closed 2021	Closed 2021
Brunswick – 2021	392 tons*	Closed 2021	Closed 2021	Closed 2021
Presque Isle – 2020	25,070 tons	35,651 cubic yards	116,149 cubic yards	3.4 years current capacity; 17 years potential
Presque Isle – 2021	29,729 tons	30,724 cubic yards	41,260 cubic yards	1.3 years current capacity; 17 years potential
Tri-Community-2020	30,574 tons	13,701 cubic yards	1,431,953 cubic yards	20 years current capacity
Tri-Community-2021	25,883 tons	33,680 cubic yards	1,470,812 cubic yards	20 years current capacity
Lewiston Municipal - 2020	17,419 tons	12,124 cubic yards	467,200 cubic yards	38 years
Lewiston Municipal – 2021	17,000 tons	13,330 cubic yards	441,115 cubic yards	33 years
Crossroads Landfill– 2020	395,287 tons	437,745 cubic yards	1,197,999 cubic yards	2.7 years
Crossroads Landfill– 2021	425,442 tons	425,442 cubic yards	776,231 cubic yards	1.8 years current area/ 17 years expanded area
Juniper Ridge - 2020	670,463 tons	1,115,000 cubic yards	7,458,799 cubic yards	6.6 years
Juniper Ridge - 2021	726,149 tons	1,274,592 cubic yards	6,184,207 cubic yards	4.8 years
ecomaine – 2020	50,049 tons	13,358 cubic yards	903,008 cubic yards	67 years
ecomaine – 2021	51,095 tons	15,154 cubic yards	887,854 cubic yards	58 years

*Brunswick stopped accepting waste as of April 1, 2021; this reflects their three months of operation in 2021.

The Hatch Hill Landfill is expected to reach capacity in approximately 5-6 years at current fill rates. Augusta is currently considering applying to amend their existing license for a vertical increase expansion, which, at current fill rates, would provide an additional 13 years of capacity. Augusta has not yet determined whether it will move forward with the vertical increase or permanently close the landfill. Augusta currently operates as a regional solid waste facility for eight other communities and is considering putting a cap on how much waste is landfilled annually if the vertical increase is constructed.

The Brunswick Landfill ceased accepting waste in 2021 and is going through the closure process.

The Presque Isle Landfill (PILF) and Tri-Community Landfill (TCL) (located in Fort Fairfield) are both owned and operated by Aroostook Waste Solutions (AWS). AWS is operating the landfills in a manner that will reduce redundancy and provide AWS with waste disposal options for the next 40 years. Both landfills are currently receiving waste, however the PILF, at current fill rates, is expected to reach its constructed capacity in 2023. Upon reaching capacity the PILF will be temporarily closed with an interim cover and AWS will divert all landfill destined waste to the TCL. At current waste generation rates, the TCL is then expected to provide AWS with disposal capacity for an additional 20 years. After the TCL reaches capacity, AWS will permanently close the TCL and re-open the PILF for disposal, which is expected to provide an additional 17 years of disposal capacity.

The Lewiston Landfill, although licensed to accept MSW, only accepted ash from the MMWAC facility and smaller amounts of special waste such as grits and screenings from various sewage treatment facilities, crushed glass, and CDD. The ecomaine landfill also accepted ash from the ecomaine waste-to-energy facility and accepted smaller amounts of similar industrial special waste such as wastewater treatment plant grits and screenings. The ecomaine landfill is also licensed to temporarily store MSW received by the ecomaine's waste-to-energy facility at times when the amount of MSW reaching the ecomaine waste-to-energy facility is greater than its capacity, thus allowing it to process the stored MSW at times of lower daily input.

The Crossroads landfill in Norridgewock is owned and operated by Waste Management, a private company. As a privately owned and operated landfill, it receives waste from outside of Maine in addition to in-state waste. The landfill is expected to reach current constructed capacity within the next two years. However, an expansion has been recently approved and the landfill is expected to start using this new licensed space in 2023. The expansion is expected to add approximately 7,757,000 cubic yards of additional capacity and expand the life of the landfill by 17 years.

The Juniper Ridge Landfill (JRL) is owned by the State and is operated by Casella Waste Systems, a private company. JRL is licensed to accept MSW when it is bypassed from one of the three Maine waste-to-energy facilities and the Coastal MSW waste processing facility in Hampden (discussed later in this report) and front-end processing waste generated by a waste-to-energy facility. It also accepts a variety of special wastes, some of which it utilizes as daily cover as discussed below. JRL also accepts CDD and CDD processing residue, some of which is utilized as daily cover as discussed earlier in this report. As noted in Table 10, JRL has slightly less than five years of remaining capacity, and at this time a formal plan for future expansion has not been put forward.

Landfills that accept waste requiring daily cover are frequently licensed to use a waste material as a specific alternative daily cover (ADC). In 2020 and 2021, Crossroads used the following wastes as ADC: processed utility poles, crushed glass, CDD and wood chips and fines, ashes, contaminated

soil, some WWTP sludge, auto shredder fluff and some other special wastes. JRL is also licensed to use several wastes as ADC: ashes, CDD processing residues and fines, and some contaminated soils. During 2020 and 2021, JRL used CDD fines and processing residues as ADC.

As mentioned earlier, several small (generally less than six acres in size) municipal landfills also operate in Maine. These landfills are limited to accepting CDD, wood waste and small amounts of ash material; one is a small secure landfill that in addition to CDD also accepts WWTP sludge for disposal from several Maine treatment plants. The total amount of waste disposed at these landfills was 27,080 tons in 2020 and 32,216 tons in 2021. As many of these smaller landfills do not have scales, this tonnage is an estimate.

It should also be noted that the City of Rockport and the Mid-Coast Solid Waste Corporation (MCSW) each operate a landfill in spent hard rock quarries. Although earlier during their operation these facilities accepted MSW, they are currently only accepting CDD. Rockland accepted 6,069 tons of CDD waste in 2020 and 18,260 tons in 2021, and MCSW accepted 4,694 tons of CDD waste in 2020 and 2,002 tons in 2021. The City of Rockland is working towards closing its landfill to disposal within two years.

3) Municipal Solid Waste Processing Facility

One MSW processing facility exists in Maine – the Municipal Review Committee, Inc./Fiberight, LLC/Coastal Resources of Maine, LLC waste processing facility (CRM) in Hampden. In 2017, Fiberight LLC and the Municipal Review Committee, Inc. (MRC) (an organization of 115 municipalities developed for the purpose of handling those communities’ waste needs) received a license from the Department to develop a new solid waste processing facility designed to accept and manage 650 tons of MSW per day. However, the facility has only operated for a short amount of time in a limited capacity and has been idle since May of 2020, requiring the MRC communities to find other options for their waste.

Until April 2020, MSW from the 115 MRC municipalities was disposed at the Penobscot Energy Recovery (PERC) waste-to-energy facility in Orrington, Maine. When construction of the CRM facility was not completed by April 2020, MRC redirected the MSW from its communities to the privately-owned Crossroads landfill in Norridgewock. MRC had negotiated an exclusive contract with Crossroads for the disposal of “bridge capacity” waste during construction, start-up and initial operation of the CRM facility. Through a waste swap agreement that addressed logistical waste handling issues, waste from the MRC communities was also diverted to JRL.

Currently a portion of waste from the MRC communities is being diverted to PERC while the rest is diverted to Juniper Ridge landfill. During this time period, some of the municipalities that contracted to deliver their MSW to CRM began altering their recycling methods to utilize CRM’s sorting process, reducing or eliminating recycling programs that separated out recyclable material from household trash. Since the recyclable portion of the waste was not collected separately or sorted out from the trash, it has been landfilled or incinerated with their MSW, although a small portion of recyclable material delivered to PERC was pulled out from the mixed MSW before incineration.

The MRC is in the process of negotiating a contract with the Revere Capital Advisors group, which would own 95% of the shares of Municipal Waste Solutions, LLC, (MWS), the new identity of the Hampden facility, upon financial closure. The MRC has stated that recapitalization of MWS will fund a Profit Improvement Plan and provide funds to hopefully restart the facility in 2023. If the

facility resumes operation and maintains operational capacity, it will significantly reduce the amounts of solid waste destined for landfilling.

B. Factors Affecting Future Disposal Capacity

1) Closure and Consolidation of Landfills in 2020, 2021, and Near Future

The Brunswick landfill, one of Maine's few remaining municipal landfills, closed in 2021. The facility accepted waste until April 1st of 2021.

Although not expected to greatly impact the solid waste landscape in Maine, a few small municipally operated landfills accepting only CDD are expected to close within the next 5 years. The closure of these landfills will have a minimal impact on future disposal capacity due to the limited amount of waste they are currently receiving.

2) Long Term Landfill Capacity

Maine's anticipated long-term solid waste disposal facilities for MSW include three waste-to-energy facilities, four municipally owned landfills that routinely accept MSW, one state owned landfill, and one privately owned commercial landfill. Using the generation and capacity numbers provided by the facilities, the amount of MSW generated in Maine that was disposed either in a landfill or waste-to-energy facility during 2020 and 2021 is estimated at 1,843,477 tons in total, or at an annual average rate for those years of approximately 921,738 tons. Of this estimate, approximately 403,872 tons per year, or 44% was disposed through waste-to-energy. Waste-to-energy capacity is available for the long term if those facilities are maintained and remain operable. Assuming that these rates were to remain constant, the remaining approximately 517,866 tons of MSW²² generated per year would require landfill disposal; this does not include consideration of the MSW waste processing facility in Hampden that is currently not operating or landfill capacity for the additional 508,018 tons of CDD generated annually in Maine.²³

It is apparent that available landfill disposal capacity for the next 5 years is sufficient for current levels of Maine generated MSW.²⁴ However, Maine may see reduced waste disposal capacity after five years if the Juniper Ridge Landfill and the Hatch Hill Landfill do not apply for an expansion and close. Both landfills have not yet determined whether they will seek an expansion. With the approval of an expansion request, Crossroads landfill has extended its capacity by 17 years at current disposal rates. However, Crossroads landfill's life expectancy may potentially be affected if other landfills were to close or if the MWS facility becomes fully operational. If the MWS facility ever becomes fully operational, it should provide additional capacity through the waste it would process.

In the mid-1990s the Carpenter Ridge landfill, located in T2 R8, was licensed by the State. This landfill has not been completely designed or developed; it is held by the State for future development of disposal capacity if needed. It would provide an estimated two million cubic yards of capacity for special wastes.

²² This figure includes the estimated amount of MSW landfilled out-of-state per year in 2020 and 2021.

²³ This number reflects the estimated amount of CDD generated on average per year in 2020 and 2021.

²⁴ The focus of this report is on capacity for MSW. There are waste capacity challenges that will be further evaluated in 2024 relating to other waste streams including PFAS-contaminated wastes and sludges.

The Aroostook County area appears to have disposal capacity well beyond 30 years in both the AWS-Presque Isle and AWS-Tri-Community landfills.

If recycling rates are increased, the overall waste disposal capacity will be extended as the volume of waste needing disposal will decrease. Given the possibility of two major landfills closing after five years, additional resources should be put into increasing Maine's recycling rates in addition to locating waste disposal capacity for future years.

VI. Disposal Fees and Supracompetitive Prices

A. Disposal Fees

Current municipal solid waste tipping fees vary by facility, but with a few exceptions and depending on contract type and length, they generally range from \$40 to \$100 per ton at Maine's waste-to-energy facilities and landfills, with an estimated average tip fee of around \$75. As some fees and contract terms are considered confidential between the facility and their customers, a general range and average are provided to the Department, and thus in this report rather than specific facility fees. Tipping fees for CDD also vary by facility, but they tend to track similar to MSW with some facilities charging slightly more and some charging slightly less, again depending on contract.

The State's Operating Services Agreement with Casella Waste Systems Inc. for the state-owned Juniper Ridge Landfill sets a maximum tipping fee for each waste type. This cap does not include fees established in legislation on wastes being disposed in the landfill.

B. Supracompetitive Pricing

Supracompetitive, when applied to pricing, means prices that are higher than they would be in a healthy competitive market; usually resulting from overconcentration, collusion, or some form of monopolistic practice. 38 M.R.S § 2124-A requires the Department to determine whether changes in available landfill capacity have generated, or have the potential to generate, supracompetitive prices and if so, to provide recommendations for legislative or regulatory changes as necessary.

Currently, available and potential disposal capacity at all the operating municipal, commercial and state-owned landfills within Maine does not appear to have or be at risk of having generated supracompetitive disposal fees.²⁵

C. Recycling Pricing

Municipalities must weigh the cost of recycling against comparatively low tipping fees and current ample capacity for disposal. The fact that some municipalities have saved money by cutting recycling programs has led to a situation where Maine is unlikely to meet recycling or per capita disposal reduction goals without solid investments to improve the State's recycling system. The average per-ton cost of recycling is generally higher than disposal under current market conditions, sometimes significantly so. The contracts and pricing arrangements for recycling programs are not widely available public information, so it is difficult to determine the specific price differential, although the Department has heard reports that the number of competitors for

²⁵ This report's focus is on MSW waste streams. The Department has become aware of cost concerns about disposal fees pertaining to other waste streams like PFAS contaminated sludge and other PFAS contaminated waste streams and will further evaluate those concerns in 2024.

recycling services has diminished, resulting in lack of competition and possibly increased costs for recycling.

Despite the challenges following several years of strain due to global policy and market changes, Maine is well poised to grow recycling programs with the EPR for packaging program in the early stages of development. Shipping delays and Basel Convention²⁶ changes will likely continue to make domestic recycling markets an attractive and cost-competitive option. However, domestic markets tend to have higher quality standards for material and Maine will need to improve its recycling infrastructure to meet these standards.

As noted above, Maine's Extended Producer Responsibility for Packaging has the potential to lay the foundation for a strong and stable statewide recycling infrastructure. However, for the program to meet its potential, municipal participation is necessary. With possible landfill closures looming beyond five years, now is the time to increase Maine's recycling rate to further extend our disposal capacity.

In the updated "Maine Materials Management Plan," to be published in January of 2024, the Department will provide guidance and direction to municipalities in planning and implementing waste management and recycling programs at the state, regional and local levels. The plan will also highlight specific strategies to reduce waste and increase opportunities to grow Maine's economy by treating waste streams as valuable commodities and move materials up the waste hierarchy from disposal efficiently and effectively.

VII. Solid Waste Industry Consolidation in 2020 & 2021

38 M.R.S. § 2124-A requires that the biennial Waste Generation and Disposal Capacity Report include "...an analysis of consolidation of ownership in the disposal, collection, recycling and hauling of solid waste". The Department has performed a review of the solid waste industry in Maine based on available information and found that there were no significant changes in facilities and services operating in Maine in 2020 and 2021 that may impact future pricing.²⁷

The two largest landfills (not considering generator-owned landfills) in Maine which provide the greatest amount of waste disposal capacity are either privately operated (Waste Management Disposal Services of Maine, Inc., a subsidiary of Waste Management, Inc., owns the Crossroads Landfill) or State owned but privately operated (NEWSME, a subsidiary of Casella Waste Systems Inc., operates JRL). Casella Waste Systems and Waste Management are both vertically integrated nationwide waste management services company providing collection, transportation, recycling and disposal services to the communities of Maine. The remaining landfills are all owned and operated by municipalities, groups of municipalities, or regional associations. Two municipal landfills, the Presque Isle Municipal Landfill and Tri-Community Landfill in Fort Fairfield, merged operations in 2019 to form Aroostook Waste Solutions and manage both facilities. Two of the waste-to-energy

²⁶ The 187 countries that are party to the Basel Convention (the United States is not a party) approved amendments to set rigorous standards on shipping of plastic waste, including the classification of certain common scrap plastics as hazardous material.

²⁷ While this is true for the 2020-2021 operating years, with passage of both [Public Law 2021, Chapter 641, An Act to Prevent the Further Contamination of the Soils and Waters of the State with So-Called Forever Chemicals](#), and [Resolve 2021, Chapter 172, Resolve, To Address PFAS Pollution at State-owned Solid Waste Landfills](#), facility services and operations at Maine's landfills are likely to change. Further discussion on these changes and impacts are already taking place with various stakeholders and will be further evaluated in 2024.

facilities are owned and operated by quasi- municipal organizations consisting of multiple municipalities, each with partial ownership of the facilities. Non-member municipalities may also use these facilities but will pay higher fees than member municipalities. The Municipal Review Committee, a nonprofit organization consisting of 115 Maine municipalities that originally contracted for MSW disposal with (and held ownership interests in) PERC, dissolved its relationship with PERC in 2020 and is one of the licensees for the MSW processing facility located in Hampden. Currently there appears to be a mix of private and public operating entities that keep disposal pricing somewhat competitive.

The presence of the landfills that serve the entire state (Crossroads and JRL) and the other waste services in the State do provide a measure of competition for waste disposal ancillary services, in addition to the presence of the municipally owned and operated facilities. When setting disposal tipping fees, these municipalities consider the cost of operation of the facility, immediate operational needs and long-term maintenance after closure. These municipal facilities provide an additional level of competition for waste disposal. Collection, hauling, and recycling is also conducted in Maine with a mix of municipal and private entities, as each municipality chooses how it will provide its waste management services to the community.

Overall, fees for solid waste disposal appear competitive. Solid waste disposal rates and fees are still lower than the current rates for most types of recycling when hauling and processing fees are factored in.

Appendix A - Definitions

The following definitions are provided to assist the reader in reviewing this document:

Beneficial Use – *to use or reuse a solid waste or waste derived product as a raw material substitute in manufacturing, as construction material or construction fill, as fuel, or in agronomic utilization.*

Construction/Demolition Debris (CDD) – *solid waste resulting from construction, remodeling, repair, and demolition of structures. It includes but is not limited to: building materials, discarded furniture, asphalt, wall board, pipes, and metal conduits. It excludes: partially filled containers of glues, tars, solvents, resins, paints, or caulking compounds; friable asbestos; and other special wastes.*

Disposal - *the discharge, deposit, dumping, spilling, leaking, placing or incineration of any solid waste into or on any land, air or water so that the solid waste or any constituent thereof may enter the environment or be emitted into the air, or discharged into any waters, including ground waters. This term does not include beneficial use activities approved or exempted under the Solid Waste Management Rules.*

Handle - *to store, transfer, collect, separate, salvage, process, recycle, reduce, recover, incinerate, dispose of, treat, or beneficially use.*

Land clearing debris - *solid wastes resulting from the clearing of land and consisting solely of brush, stumps, soil material, and rocks.*

Municipal Solid Waste (MSW) – *solid waste emanating from household and normal commercial sources. Municipal solid waste includes front end process residue from the processing of municipal solid waste.*

Recycling - *the collection, separation, recovery and sale or reuse of materials that would otherwise be disposed of or processed as waste, and the creation and recovery of reusable materials to create new products; the incineration or use of recovered materials as a fuel for the generation of electricity is not recycling.*

Solid waste - *useless, unwanted or discarded solid material with insufficient liquid content to be free flowing, including but not limited to rubbish, garbage, refuse-derived fuel, scrap materials, junk, refuse, inert fill material, and landscape refuse, but does not include hazardous waste, biomedical waste, septic tank sludge, or agricultural wastes.*

Special Waste – *wastes that are generated by other than domestic and typical commercial establishments that exist in such an unusual quantity or in such a chemical or physical state that require special handling, transportation and disposal procedures.*

APPENDIX M

**MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION LIST
OF ACTIVE LANDFILLS**



Maine Department of Environmental Protection

ACTIVE/LICENSED LANDFILLS

LOCATION	LICENSEE	ADDRESS	TELEPHONE	DEP NUMBER
AUGUSTA	AUGUSTA, CITY OF	16 CONY STREET AUGUSTA ME 04330	2076262435	S-007914-WD-AC-N
BAILEYVILLE	BAILEYVILLE, TOWN OF	P.O. BOX 370 BAILEYVILLE ME 04694	2074273442	S-021532-WF- A-N
BAILEYVILLE	WOODLAND PULP LLC	144 MAIN ST BAILEYVILLE ME 04694		S-008837-WD- F-R
BATH	BATH, CITY OF	450 OAK GROVE AVE BATH ME 04530	2074438357	S-004991-WD- I-R
BREWER	BREWER, CITY OF	80 NORTH MAIN ST BREWER ME 04412	2079897500	S-020981-WF- A-N
BRUNSWICK	BRUNSWICK, TOWN OF	9 INDUSTRY RD- BRENDA POPLASKI, BOOKKEEPER BRUNSWICK ME 04011	2077256654	S-008458-WC- F-N
BUCKSPORT	BUCKSPORT MILL LLC.	PO BOX 1874 ATTN DAVID BRYANT BUCKSPORT ME 04416	9204701061	S-007713-WD- S-R
CARIBOU	LORING DEVELOPMENT AUTHORITY	154 DEVELOPMENT DR SUITE F LIMESTONE ME 04750	2073287005	S-021927-WF- A-N
CORINNA	MID MAINE SOLID WASTE ASSOC	PO BOX 68 DEXTER ME 04930	2079243650	S-020048-WF- B-R
CORINTH	CENTRAL PENOBSCOT SOLID WASTE	PO BOX 405 CORINTH ME 04427	2072853271	S-021278-WF- A-N
DOVER-FOXCROFT	DOVER-FOXCROFT, TOWN OF	48 MORTON AVE SUITE A DOVER-FOXCROFT ME 04426	2075643318	S-021213-WF- B-N
EAST MILLINOCKET	DOLBY LANDFILL - STATE OF MAINE DEC D	19 UNION ST38 STATE HOUSE STA AUGUSTA ME 04333	2076247436	S-000796-WD- A-N
FAIRFIELD	SAPPI NORTH AMERICA INC	1329 WATERVILLE RD SKOWHEGAN ME 04976	2072383000	S-007404-WD-AA-N
FORT FAIRFIELD	AROOSTOOK WASTE SOLUTIONS	P O BOX 605 CARIBOU ME 04736	2074737840	S-003707-WD- D-R
FRENCHVILLE	TWIN RIVERS PAPER CO	82 BRG AVE MADAWASKA ME 04756	2077283321	S-007843-WD- E-R
GLENBURN	GLENBURN, TOWN OF	144 LAKEVIEW RD GLENBURN ME 04401	2079422905	S-005162-WF- F-N
GREENBUSH	GREENBUSH, TOWN OF	PO BOX 230 GREENBUSH ME 04418	2077323644	S-021244-WF- A-N
HARTLAND	HARTLAND, TOWN OF	PO BOX 280 HARTLAND ME 04943	2079384401	S-003463-WD- N-R
JAY	PIXELLE ANDROSCOGGIN LLC (ANDROSCOGGIN MILL)	300 RILEY ROAD JAY ME 04239	2078973431	S-006247-WD- N-R
JAY	PIXELLE ANDROSCOGGIN LLC (ANDROSCOGGIN MILL)	300 RILEY ROAD JAY ME 04239	2078973431	S-022072-WD- A-N
LEWISTON	LEWISTON, CITY OF	103 ADAMS AVE LEWISTON ME 04240	2077820917	S-005242-WD- C-N
MASARDIS	MAIBEC LUMBER INC	P.O. BOX 749 ASHLAND ME 04732	2074356401	S-020628-WF- A-N
MECHANIC FALLS	MECHANIC FALLS, TOWN OF	108 LEWISTON ST MECHANIC FALLS ME 04256	2073452871	S-020497-WF- A-N
MEXICO	ND PAPER INC.	35 HARTFORD STREET RUMFORD ME 04276	2073644521	S-000686-WD- Q-R
MILO	PENQUIS SOLID WASTE CORP	586 MAIN RD BROWNVILLE ME 04414	2079652561	S-021850-WF- A-N
NASHVILLE PLT	IRVING FOREST PRODUCTS-ASHLAND SAWMILL	P.O. BOX 389 ASHLAND ME 04732	2074353166	S-010461-WF- G-R
NORRIDGEWOCK	WASTE MANAGEMENT DISPOSAL SERVICES OF MAINE, INC	PO BOX 629 NORRIDGEWOCK ME 04957	2076342714	S-010735-WD-YB-N

LOCATION	LICENSEE	ADDRESS	TELEPHONE	DEP NUMBER
NORRIDGEWOCK	WASTE MGT DISP SERV OF ME INC	PO BOX 4745 ATTN LCLARK12@WM.COM PORTLAND OR 97208	2076342714	S-010735-WD-UW-N
NORWAY	NORWAY-PARIS SOLID WASTE INC	39 BROWN ST NORWAY ME 04268	2077438518	S-020186-WF- A-N
OAKLAND	OAKLAND, TOWN OF	PO BOX 187 OAKLAND ME 04963	2074657357	S-021052-WF- A-N
OLD TOWN	JUNIPER RIDGE LANDFILL - STATE OF MAINE DECD	38 STATE HOUSE STA AUGUSTA ME 04333	2073944372	S-020700-WD- A-N
OLD TOWN	OLD TOWN, CITY OF	265 MAIN ST OLD TOWN ME 04468	2078273974	S-020004-WF- C-R
ORONO	ORONO, TOWN OF	59 MAIN ST ORONO ME 04473	2078662556	S-020996-WF- A-N
PORTLAND	ECOMAINE	64BLUEBERRY RD PORTLAND ME 04102	2077731738	S-013127-WD-AH-N
PRESQUE ISLE	AROOSTOOK WASTE SOLUTIONS	P O BOX 605 CARIBOU ME 04736	2077644485	S-007501-WD- X-N
RANGELEY	RANGELEY, TOWN OF	15 SCHOOL ST RANGELEY ME 04970	2078643326	S-015668-WF- D-R
SANFORD	SANFORD SEWERAGE DISTRICT	PO BOX 338 SPRINGVALE ME 04083	2073245313	S-007972-WD- A-R
SOUTH PORTLAND	ECOMAINE	64 BLUEBERRY ROAD PORTLAND ME 04102	2077736465	S-013127-WD- U-R
T02 R08 NWP	CARPENTER RIDGE LANDFILL - STATE OF MAINE DECD	77 SHS ATTN BILL LONGFELLOW AUGUSTA ME 04333	2072875300	S-021372-WD- A-N
WALDOBORO	WALDOBORO, TOWN OF	P.O. BOX J WALDOBORO ME 04572	2078325369	S-013067-WF- G-R

10/2/2023

APPENDIX N

**JUNIPER RIDGE LANDFILL NOT-TO-EXCEED TIPPING FEE
MARCH 2023 OSA UPDATE**



JUNIPER RIDGE LANDFILL

Operated By

March 14, 2023

NEWSME Landfill Operations, LLC

William Longfellow
Department of Economic and Community Development
SHS #59
Augusta, Maine 04333-0059

Dear Mr. Longfellow:

In accordance with the Operating Services Agreement (“OSA”), the “not-to-exceed” tipping fees in Section 2.11 are adjusted annually based on the change in the prior year’s consumer price index, U.S. National market. The index increased 6.04 percent between February 2022 and February 2023. Therefore, the revised tipping fees in Section 2.11, effective February 5, 2023, are as follows:

- Certain Special Wastes, including without limitation bottom ash/fly from municipal solid waste incinerators and sandblast grit \$78.29/Ton
- Oversized, bulky waste from municipal solid waste incinerators, that are unacceptable at municipal solid waste incinerators. \$94.60/Ton
- Front-end residue from municipal solid waste incinerators. \$78.29/Ton
- Municipal solid waste, including municipal solid waste designated as “bypass” on an infrequent basis. \$94.60/Ton
- Construction and demolition debris, free of putrescible waste. \$97.22/Ton
- Other special waste. \$78.29/Ton

Please give me a call if you have any questions.

Sincerely,



Wendy Plissey

APPENDIX O

**PROPERTY DEED AND RESOURCE PROTECTION AREA DECLARATION OF
COVENANT**

Bk 9188 Pg 152 #3751
02-05-2004 @ 03:12p

QUITCLAIM DEED WITH COVENANT

KNOW ALL BY THESE PRESENTS, that Fort James Operating Company, "GRANTOR(S)," a Virginia corporation with a place of business at Old Town, Penobscot County, Maine, for consideration paid, grants to the State of Maine, acting by and through its Executive Department, State Planning Office "GRANTEE", and pursuant to Resolves, 2003, ch. 93, with Quitclaim Covenant, the land and buildings described in Exhibit A attached hereto and incorporated herein by reference, located in Old Town, Penobscot County, Maine (the "Premises"). The Premises are conveyed subject to the restrictive covenants and right of reverter set forth in Exhibit B attached hereto and incorporated herein by reference.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

Bk 9188 Pg153 #3751

IN WITNESS WHEREOF, the said Fort James Operating Company has caused this instrument to be sealed with its corporate seal and signed in its corporate name by Michael C. Burandt, its Executive Vice President this 3rd day of February, 2004.

FORT JAMES OPERATING COMPANY

By: [Signature]
Its: Executive Vice President
Printed Name: Michael C. Burandt



STATE OF _____
COUNTY OF Fulton, ss.

On February 3, 2004, personally appeared the above-named Michael C. Burandt, Executive Vice Pres of said corporation in his said capacity, and acknowledged the foregoing to be his free act and deed and the free act and deed of said corporation.

Before me,

[Signature]
Notary Public **A. CLAIRE SHERWOOD**
Printed Name: **Notary Public, Fulton Cty, Georgia**
Commission Expires June 16, 2007



**Exhibit A
To
Quitclaim Deed with Covenant**

Parcel Description

Four parcels located at Old Town, Penobscot County, Maine, and described as follows (individually referred to as "Parcel" and collectively referred to as "Parcels"):

PARCEL ONE: A certain parcel of land with any buildings thereon, situated on the northeast side of Route 43, 3.4 + miles west of the intersection of Route 43 and Route 95, in the city of Old Town, County of Penobscot, State of Maine and being more particularly described as follows:

- 1) **BEGINNING** at a 3/4 inch rebar located on the northeast side of Route 43, at the northwest corner of land now or formerly of Scott E. Bergquist as described in deed recorded at the Penobscot County Registry of Deeds in Book 3608, Page 247. Said rebar is also located at the southwest corner of the "Cadorette Parcel" as shown on plan entitled "Perkins & Cadorette Parcels, Standard Boundary Survey (with exceptions)" by Squaw Bay Corp. of Cumberland, Maine, June, 1995, Ronald M. Carpenter, PLS #2042, recorded at the Penobscot County Registry of Deeds, Plan Book D46-95, to which reference is hereby made;
- 2) **THENCE** South 82° 12' 30" East, 1445.38 feet along the land of said Bergquist to a cedar post and the land now or formerly of James River Paper Company, Inc. as described in the deed recorded at the Penobscot County Registry of Deeds in Book 4870, Page 200;
- 3) **THENCE** North 4° 27' 20" East, 809.31 feet along the land of said James River Paper Company, Inc. to a point;
- 4) **THENCE** North 5° 59' 05" East, 15.69 feet along the land of said James River Paper Company, Inc. to a 5/8 inch rebar with plastic survey cap marked "RMC NO. 2042" and the land now or formerly of Alfred Perkins and Florine Perkins as described in the deed recorded at the Penobscot County Registry of Deeds in Book 1448, Page 22;
- 5) **THENCE** North 82° 46' 26" West, 2014.87 feet along the land of said Perkins to a 5/8 inch rebar with plastic survey cap marked "RMC NO. 2042" and the sideline of Route 43;
- 6) **THENCE** South 29° 43' 31" East, 1013.29 feet along Route 43 to a 3/4 inch rebar and point of beginning.

The above-described parcel contains 32.4 acres.

Being the same premises described in a Warranty Deed given by Francis R. Cadorette and Rhonda B. Cadorette to James River Paper Company, Inc., dated June 13, 1995, and recorded in said Registry in Book 5878, Page 272.

PARCEL TWO: A certain parcel of land with any buildings thereon situated on the northeast side of Route 43, 3.4+ miles west of the intersection of Route 43 and Route 95, in the City of Old Town, County of Penobscot, State of Maine, and being more particularly described as follows:

COMMENCING at a 5/8 inch rebar with survey cap marked "RMC NO. 2042" located at the intersection of the northeast sideline of Route 43, and the southerly boundary line of land now or formerly of Alfred Perkins and Florine Perkins as described in deed recorded at the

Bk 9188 Pg 155 #3751

Penobscot County Registry of Deeds in Book 1448, Page 22. Said rebar is also located at the northwest corner of the "Cadorette Parcel" as shown on plan entitled "Perkins & Cadorette Parcels, Standard Boundary Survey (with exceptions)" by Squaw Bay Corp. of Cumberland, Maine, June, 1995, Ronald M. Carpenter, PLS #2042. to be recorded at the Penobscot County Registry of Deeds to which reference is hereby made. Thence South 82° 46' 26" East, 1485.52 feet along the Cadorette parcel to the point of Beginning.

- 1) THENCE from the Point of Beginning South 82°46'26" East, 529.45 feet along the Cadorette Parcel to a 5/8 inch rebar with plastic survey cap marked "RMC NO. 2042" and the land now or formerly of James River Paper Company, Inc., as described in the deed recorded at the Penobscot County Registry of Deeds in Book 4870, Page 200;
- 2) THENCE North 5° 59' 05" East, 828.72 feet along the land of said James River Paper Company, Inc. to a cedar post and the land of Alfred J. Meister as described in the deed recorded at the Penobscot County Registry of Deeds in Book 3738, Page 197;
- 3) THENCE North 84° 06' 52" West, 529.33 feet along the land of said Meister to a 5/8 inch rebar with plastic survey cap marked "RMC NO. 2042" and the land now or formerly of said Perkins;
- 4) THENCE South 5° 59' 05" West, 816.33 feet along the land of said Perkins to a 5/8 inch rebar with plastic survey cap marked "RMC NO. 2042" and the Point of Beginning.

The above-described parcel contains 10 acres.

Being the same premises described in a Warranty Deed given by Alfred K. Perkins and Florine J. Perkins to James River Paper Company, Inc. dated June 13, 1995, and recorded in said Registry of Deeds in Book 5878, Page 278.

PARCEL THREE: Lots 1 through 9 and 14 through 22, inclusive, as shown on the survey "Tyron Tree Farm" dated February 23, 1988, recorded in the Penobscot County Registry of Deeds in Plan file C26-88, together with a strip of land fifty (50) feet wide leading from Bennoch Road to the northerly line of Lot 11 on said plan, which strip was conveyed to Patten Corporation - Downeast by deed of Lyman B. Feero and Rosalita Feero, dated June 4, 1988, and recorded in said Registry in Book 4244, Page 5, and together with a right of way for all purposes over the roads fifty (50) feet wide, the centerlines of which are shown on said plan, leading from the northerly line of Lot 11 to the lots hereby conveyed. This right of way includes, but is not limited to, the right to install, use, maintain, repair and replace utility lines, poles and cables.

Together with all right, title and interest in and to that portion of the discontinued roadway lying northerly of the above described Parcel Three and southerly of the Town of Alton southerly line.

Being the same premises described in a Warranty Deed given by James River Corporation to James River Paper Company, Inc. dated July 10, 1991, and recorded in said Registry in Book 4870, Page 200.

Exceptions

Bk 9188 Pg 156 #3751

The Parcels are conveyed subject to the following exceptions:

ALL PARCELS:

1. State of Maine, Department of Environmental Protection, Site Location Findings of Fact and Order, dated August 24, 1995, and recorded in the Penobscot County Registry of Deeds in Book 5939, Page 147.
2. Declarations of Covenants and Restrictions by James River Paper Company, Inc., dated December 20, 1993, recorded in said Registry in Book 5518, Page 67; Corrected Declaration of Covenants and Restrictions, dated January 20, 1994, recorded in said Registry in Book 5549, Page 162; and Amendment to Declaration of Covenants and Restrictions, dated November 30, 1995, recorded in said Registry in Book 6044, Page 118.

PARCELS ONE AND TWO ONLY:

1. Such state of facts as shown on the plan entitled "Cadorette House Lots, Route 43, Old Town, Maine," prepared by Squaw Bay Corp., dated June 1995, and recorded in said Registry in Plan 1996-59.
2. Such statement of facts as shown on the plan entitled "Perkins & Cadorette Parcels, Route 43, Old Town, Maine," prepared by Squaw Bay Corp., dated June 1995, recorded in said Registry in Plan D46-95.

PARCEL THREE ONLY:

1. Rights of way acquired by the University of Maine System by deeds dated July 27, 1989, and recorded in said Registry in Book 4490, Page 322 and Book 4490, Page 325.
2. Restrictions and conditions set forth in the deed from Pattern Corporation to James River Corporation recorded in said Registry in Book 4654, Page 310.
3. Rights of way reserved in the deed from Camillis G. Kidder to Napoleon Parady, dated January 10, 1910, and recorded in said Registry in Book 750, Page 407.
4. Order of the Grantee of Maine, Department of Environmental Protection, dated October 3, 1988, recorded in said Registry in Book 4345, Page 19.
5. Such statement of facts, including easements and rights of way, as shown on the plan entitled "Tryon Tree Farm, Patten Corporation-Downeast," prepared by Raymond S. Silsby, dated February 23, 1988, and recorded in said Registry in C26-88.

NOTICE OF SOLID WASTE DISPOSAL FACILITY

Pursuant to Maine Department of Environmental Protection Solid Waste Management Regulation, Chapter 400 Appendix C.11, Grantor provides the following notice:

The Premises contains an active secure solid waste disposal facility (the "Facility"). The Facility was licensed by the Maine Board of Environmental Protection on July 28, 1993. The Facility began operations on December 2, 1996. The Facility is 68 acres and is located southern quadrant of Parcel Three of the Premises. The following non-hazardous wastes have been placed in the Facility to a maximum depth of approximately 30 feet:

- pulp and papermill wastewater treatment plant sludge,
- lime wastes and grit,
- woodwastes and inert debris,
- small quantities of soil and sawdust contaminated with process chemicals that are non-hazardous,
- virgin oily contaminated debris,
- soil rags, oil filters, absorbent materials, crushed grease drums and waste grease,

Bk 9188 Ps157 #3751

- sand from sand filters,
- non-hazardous sand from sand blasting,
- multifuel fly ash and bottom ash from the Lincoln Pulp and Papermills, and
- wood ash from the City of Old Town

**Exhibit B
To
Quitclaim Deed with Covenant**

Use Restrictions. So long as Grantee is obligated to provide disposal capacity to Grantor pursuant to Section 5.1 of the Amendment and Restatement of Agreement Regarding Solid Waste Disposal Facility Acquisition and Operation between Fort James Operating Company and State of Maine, acting by and through its Executive Department, State Planning Office, as it may be amended from time to time ("Acquisition Agreement") dated on or about the date of this Quitclaim Deed with Covenant the Premises will not be used in any manner that would prohibit or impair, in any way, the construction and operation of a solid waste landfill of sufficient size, nature, scope and location as is required to satisfy the Grantee's capacity commitment to Grantor under Section 5.1 of the Acquisition Agreement. The Grantee is prohibited from constructing any facility or improvement at the Premises that would prohibit or impair, in any way, the construction and operation of a solid waste landfill of sufficient size, nature, scope and location as is required to satisfy the Grantee's capacity commitment to Grantor under Section 5.1 of the Acquisition Agreement. In addition to the foregoing, the Premises shall not be developed for any uses unrelated to use as a solid waste landfill that creates any undue risk of harm to public health resulting from the use of a portion of the Premises as a solid waste landfill.

Transfer Restrictions The Grantee is restricted from selling, assigning, transferring or otherwise disposing of any interest in, granting any rights to, mortgaging or otherwise encumbering all or any portion of the Premises, during the term of the capacity commitment under Section 5.1 of the Acquisition Agreement, without the transferee or successor explicitly assuming the Grantee's capacity commitments under Section 5.1 of the Acquisition Agreement in a written document reasonably acceptable to Grantor, provided, however, that the Grantee may collaterally assign its rights under any operating agreement and, on notice to Grantor, may dispose of an interest in, or grant rights to, the Premises so long as such disposition or grant does not prohibit or impair, in any way, the construction and operation of a solid waste landfill of sufficient size, nature, scope and location as is required to satisfy the Grantee's capacity commitment to Grantor under Section 5.1 of the Acquisition Agreement. Any sale, assignment, transfer or other disposition of the Premises, whether with or without assumption of the Section 5.1 capacity commitments, will not discharge the Grantee from its responsibilities to satisfy those commitments except to the extent specifically released by Grantor in writing.

Covenants Running with the Land. The foregoing terms and conditions constitute covenants running with the land and shall touch and concern the land during the term of their applicability. Such terms and conditions are binding upon the Grantee, its successors and assigns, as well as all transferees, lessees or future owners of the Premises or any portion thereof.

Reverter Option.

(a) The Grantor reserves the option to cause reversion of title to the Premises to Grantor in the event the Grantee fails to perform, in any material respect, any of its material obligations under the Acquisition Agreement. Grantor will provide the Grantee with prompt written notice of the alleged default or breach, specifying in reasonable detail the facts relative to the breach and the related obligation under the Acquisition Agreement. Grantee shall have

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ninety (90) days to cure such default or breach, or if such default or breach, by its nature, cannot be cured within such period, such additional time as may be necessary to cure the default (not to exceed one hundred eighty (180) days), provided Grantee has exercised its reasonable commercial efforts and taken reasonable steps to begin a cure within the initial ninety (90) day period. A delay in performance caused by a Force Majeure (as defined in the Acquisition Agreement) is not a basis for exercise of Grantor's right of reverter. The right of reverter expires if it is not exercised on or before the thirtieth (30th) anniversary of the recording of this Quitclaim Deed with Covenant.

(b) Upon expiration of the cure period referenced above, Grantor may, at its option but subject to the terms hereof, exercise the reverter on thirty (30) days prior written notice to the Grantee and thereby cause immediate and automatic fee simple title to the Premises to revert to Grantor, or any affiliate thereof specified as the entity taking title under this reverter, upon recordation of a certificate executed by a duly authorized officer of Grantor certifying that:

- (i) The conditions required to give rise to Grantor's rights under this reverter clause have been satisfied;
- (ii) Grantor is thereby exercising its right to cause reversion of the fee simple title to the Premises to Grantor, or an affiliate of Grantor named in the certificate as the entity to receive reversionary title to the Premises;
- (iii) The cure periods referenced above have expired and Grantor has given Grantee thirty (30) days prior written notice of Grantor's intent to exercise reverter and (A) the Grantee has not disputed Grantor's right to exercise the reverter following the expiration of the cure periods referenced above or (B) if Grantee has disputed Grantor's right to exercise the reverter, a court of competent jurisdiction has determined that Grantor is authorized to exercise its reverter, and such decision shall not be subject to further appeal; and
- (iv) Upon recordation of the certificate, title automatically and irrevocably shall revert to Grantor, or its designated affiliate, without any action required by or of the Grantee or any other party.

(c) The Grantee may, at its option, terminate the reverter upon recordation of a certificate executed by a duly authorized officer of the Grantee certifying that:

- (i) the conditions required to give rise to the Grantee's rights to terminate the reverter have been satisfied;
- (ii) the Grantee has given Grantor notice of breach of the terms of the Acquisition Agreement by Grantor, and the Grantee has given Grantor thirty (30) days prior written notice of the Grantee's intent to terminate the reverter following the expiration of the cure periods referenced above and (A) the Grantor has not disputed the Grantee's right to terminate the reverter or (B) if it has disputed the Grantee's right to terminate the reverter, a court of competent jurisdiction has determined that the Grantee is authorized to terminate the reverter, and such decision shall not be subject to further appeal; or

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- (iii) Grantor has ceased to operate both its papermaking and commercial pulping operations at the Old Town Mill for a period of one (1) year.
- (iv) Upon recordation of the certificate, the right of reverter contained herein shall automatically and irrevocably be deemed to be terminated, without any action required by or of the Grantor or any other party.

(d) The Grantee may seek judicial relief to enjoin the reversion provided for hereunder or seek a declaratory judgment on the issue of whether such conditions to exercise or terminate the right of reverter have been satisfied. Grantor may seek injunctive or other equitable relief to enforce the reversion provided for hereunder or seek a declaratory judgment on the issue of whether the conditions to exercise or terminate the right of reverter have been satisfied. If a party elects to seek an injunction and a court fails to enjoin the reversion or permit the termination of the reversion, as the case may be, such party may pursue all other legal remedies available to it to challenge a party's right to exercise or terminate the right of reversion. After the final resolution of any dispute, or if the Grantee does not dispute the reverter, if it is determined that exercise of the right of reverter by Grantor was authorized, the Grantee will cooperate fully with Grantor and exercise its reasonable commercial efforts to assist Grantor in transferring any and all necessary Governmental Approvals relating to the ownership and operation of the Facility (as defined in the Acquisition Agreement) provided, however, that Grantor acknowledges that the Grantee's commitment for cooperation is not a guaranty of issuance of any permit or approval of transfer because the Department of Environmental Protection is an independent permitting authority.

**"Maine Real Estate
Transfer Tax Paid"**

PENOBSCOT COUNTY, MAINE

Susan F. Bulay
Register of Deeds

DECLARATION OF COVENANTS AND RESTRICTIONS

THIS DECLARATION OF COVENANTS AND RESTRICTIONS made as of this 2nd day of March, 2018, by the **STATE OF MAINE**, Department of Administrative and Financial Services, (the "Declarant").

WITNESSETH

WHEREAS, the Declarant holds title to a certain lot or parcel of land in the City of Old Town, Penobscot County, Maine, a portion of which is comprised of approximately 270.5 acres located northerly of and adjacent to the Juniper Ridge Landfill, and said portion is more particularly described in Exhibit A attached hereto and incorporated herein (the "Protected Property") and as shown on the plan attached hereto and incorporated herein as Exhibit B (the "Protected Property Plan"); and

WHEREAS, Declarant, by and through NEWSME Landfill Operations LLC (the "Operator"), has obtained approval from the Department of Environmental Protection ("DEP") pursuant to permit #S-020700-WD-BI-N and #L-19015-TG-D-N, and the U.S. Army Corps of Engineers ("ACOE") pursuant to permit #NAE-1991-1909-M1 for a 74 acre expansion of the Juniper Ridge Landfill, which expansion will result in unavoidable filling of 2.04 acres of freshwater wetlands not designated as Wetlands of Special Significance, as defined by 06-096 CMR 310.4, clearing of 0.10 acres of wetland vegetation, tree clearing impacts to 1 man-made vernal pool, tree clearing impacts in the terrestrial habitat of a Significant Vernal Pool, and direct impact to 6 man-made vernal pools; and

WHEREAS, the DEP and the ACOE have approved a compensation plan for said filling and clearing impacts as set forth in said permit, Declarant has agreed to preserve in perpetuity the Protected Property, which Protected Property includes 57 acres of wetlands, 209 acres of adjacent upland, and 25 documented vernal pools, as open space in its natural state;

WHEREAS, the **CITY OF OLD TOWN**, a body politic and corporate existing under the laws of the State of Maine, with a mailing address of 265 Main Street, Old Town, ME 04105 ("Third Party"), at a meeting held on July 28, 2016, by a vote of its City Council, was authorized to accept rights to enforce this Declaration of Covenants and Restrictions as set forth herein for the purpose of preserving the said Protected Property.

NOW, THEREFORE, the Declarant hereby declares that the Protected Property is and shall forever be held, transferred, sold, conveyed, occupied and maintained subject to the terms, covenants, conditions, and restrictions set forth herein, which terms, covenants and restrictions which will run with and bind the Protected Property in perpetuity:

1. TERMS, COVENANTS AND RESTRICTIONS

The Protected Property shall remain in its present natural condition in perpetuity and the natural characteristics of the Protected Property shall be retained and protected in perpetuity to assure availability for recreational and open space use, to protect natural resources including wetlands and vernal pools, to maintain and improve water quality of the adjacent existing brook and wetlands and of the Protected Property, and to prevent any use of the Protected Property that would significantly impair or interfere with the uses set forth above.

2. USE RESTRICTIONS

- a. The Protected Property may not be divided, subdivided, partitioned or otherwise partially conveyed in separate ownership.
- b. Commercial, industrial, quarrying or other surface mining activities or removal of rocks, minerals, gravel, sand, topsoil, or other similar materials, and agricultural and forestry activities on the Protected Property are prohibited. Agricultural and forestry activities shall include animal husbandry, floricultural, and horticultural activities, the production of plant and animal products for domestic or commercial purposes, the growing, stocking, cutting and sale of trees of any size capable of producing timber or other forest products and the processing and sale of products produced on the Protected Property.
- c. Except as set forth in Section 3, no structures, temporary or permanent, including but not limited to, dwellings, vehicle parking areas, subsurface wastewater treatment and disposal systems, mobile homes, utility towers or poles, or wireless communication facilities are permitted on the Protected Property except that Declarant retains the right to locate, use, remove from or maintain fences, solely to mark boundaries, and boundary markers on the Protected Property.
- d. Except as set forth in Sections 3 and 5, there shall be no filling, dumping, storing, or excavation of soil, loam, peat, sand, gravel, concrete, rock or other mineral substance, or other alteration made to the surface of the Protected Property, or alteration or manipulation of the topography of the Protected Property, all except as necessary for groundwater and surface water monitoring conducted by Declarant or Operator pursuant to any regulatory requirements related to the Protected Property or adjacent property of the Declarant.
- e. Disposal of or storage of rubbish, garbage, debris, abandoned vehicles or equipment, or parts hereof, or other unsightly or offensive waste material on the Protected Property is prohibited.
- f. Dumping, burning, release, burial, injection, or disposal of any type of material on the Protected Property is prohibited.
- g. Except as related to trail signage for trails constructed pursuant to Section 3 below, the placement of signs, billboards or other advertising materials or structures of any kind on the Protected Property is prohibited.
- h. Except as set forth in Section 5 below, the use of pesticides, poisons, biocides or fertilizers, draining of wetlands, burning of marshland or disturbances or changes in the natural habitat of the Protected Property is prohibited.
- i. The manipulation or alteration of the natural watercourses, lakeshores, marshes or other water bodies, or any activities which could be detrimental to water purity or to any vegetative, wildlife or hydrological function of the Protected Property is prohibited.

- j. Except as set forth in Section 3 below, operation of motorized vehicles, snowmobiles, dune buggies, motorcycles, mini-bikes, go-carts, all-terrain vehicles, or any other type of vehicle on the Protected Property is prohibited.

3. PUBLIC ACCESS AND VEHICLES

- a. Declarant may, with Third Party and Operator's written consent, grant appropriate permission to the general public to enter the Protected Property for recreational purposes which may include hiking, walking, cross-country skiing, travel by snow shoes, hunting, picnicking, or bird-watching, but which shall not include bicycling. Declarant may, with written consent of Third Party and Operator, construct a trail or trails on the Protected Property provided that (i) any public access shall be in full conformance with the terms and conditions of this Declaration; (ii) Third Party shall be solely responsible for maintaining the existing trails and any future trails existing or constructed on the Protected Property; (iii) no trails shall be constructed, and no public access shall be permitted within 75 feet of any wetland or vernal pool delineated on the Protected Property Plan; (iv) no trails shall be constructed and no public access shall be permitted within 225 feet of the permitted expansion solid waste boundary of the Juniper Ridge Landfill as shown on the Protected Property Plan and (v) any acquiescence or permission to enter the Protected Property shall not be construed as an invitation or license, and neither the Declarant nor the Operator assumes any liability to recreational users for accidents, injuries, acts, or omissions beyond the standard of care owed or beyond the limitations of liability for injury to the public under Title 14, M.R.S. Section 159-A, or successor provisions thereof, and other applicable law.
- b. No motorized vehicles shall be permitted on the Protected Property, excepting (i) emergency vehicles; (ii) vehicles used in the maintenance or repair of the Protected Property; (iii) vehicles used to maintain or repair the facilities or rights set forth in Section 5 below; and (iv) recreational use of snowmobiles and all-terrain vehicles, but such use must be limited to the use of one trail to be constructed by the Declarant or Third Party, or the Third Party's designee, pursuant to the provisions of Section 3(a) in a specified location mutually agreed upon between Third Party and Declarant.

4. RESERVED RIGHTS OF DECLARANT AND NOTICES

Except as expressly limited herein, Declarant reserves all rights as owner of the Protected Property, including the right to convey and use the Protected Property for all purposes not inconsistent with this Declaration, including but not limited to the uses specified in §§4(a), (b) and (c) below. Declarant must provide at least sixty (60) days advance written notice to Third Party and the DEP, before undertaking any permitted use of the Protected Property that may have a material adverse effect on the purposes of this Declaration. Without limiting the generality of the foregoing, the following rights are expressly reserved:

- a. The right to advertise the Protected Property for sale or rent and to convey the Protected Property, always subject to the terms of this Declaration;

- b. The right to enter the Protected Property to conduct all activities necessary to comply with the terms and conditions of the following, as the same may be amended from time to time (collectively, the "Permits"):

DEP Permit #S-020700-WD-BI-N/#L-19015-TG-D-N, June 1, 2017
 ACOE Permit #NAE-1991-1909-M1, November 14, 2017
 City of Old Town Planning Board Solid Waste Facilities Permit, November 14, 2017
 DEP Permit #S-020700-WD-N-A, April 9, 2004, as amended or modified

- c. The right of Declarant and the Operator to exercise or carry out any rights or obligations as set forth in any matter of record and as set forth in that certain Operating Services Agreement between Declarant and Casella Waste Systems, Inc., dated February 5, 2004, as the same may be amended or modified.

Notices to Third Party: Any notice to Third Party required hereunder must be made by first class mail, addressed to: City Manager, City of Old Town, 265 Main Street, Old Town, Maine 04468 or other authorized person hereafter designated in writing by Third Party.

Notices to DEP: Any notice to DEP required hereunder must be made by first class mail, addressed to: James R. Beyer, DEP Regional Licensing and Compliance Manager, 106 Hogan Road, Bangor, ME 04401 or other authorized person hereafter designated in writing by DEP.

Notices to Third Party and DEP, and requests for approval must include, at a minimum, sufficient information to enable Third Party and DEP to determine whether proposed plans are consistent with the terms of this Declaration. Within thirty (30) days of receipt of Declarant's notice made in compliance herewith, Third Party and DEP will respond to said notice, either requesting any necessary additional information or stating any specific objections and including suggested changes to guide Declarant in modifying proposed plans to bring them into compliance with the terms of this Declaration.

Notices to Declarant: Any notice to Declarant required hereunder must be made by first class mail, addressed c/o Commissioner, Dept. of Administrative and Financial Services, 78 State House Station, Augusta, Maine 04333-0078 or other authorized person hereafter designated in writing by Declarant, with a copy to Operator at NEWSME Landfill Operations, LLC, Attn: General Counsel, 25 Greens Hill Lane, P.O. Box 866, Rutland, Vermont 05702, or other authorized person hereafter designated by Operator.

5. CUTTING OF TIMBER AND VEGETATION: Excepting the maintenance or construction of trails conducted in accordance with the terms of this Declaration, the destruction or removal of standing timber, plants, shrubs or other vegetation shall not be permitted, except however, there are retained in the Declarant, the following rights:

- a. The right to clear and restore forest cover and other vegetation that is damaged or disturbed by the forces of nature, such as fire or disease;
- b. The right to clear and restore forest cover and other vegetation, in the event of an emergency, or when necessary to prevent the spread of fire or disease;
- c. The right to remove debris, dead trees, or brush for the purpose of promoting safety and conservation values.

- d. The right to prune and thin live trees and brush for the purpose of promoting safety and conservation values.
 - e. The right to plant trees, shrubs, or other vegetation for the purpose of promoting wildlife or conservation values.
 - f. The right to grade and landscape at the direction and approval of the Third Party and the DEP. Work must maintain conservation values.
 - g. The right to control the introduction, spread, or the increased risk of invasion of invasive plant or animal species.
 - h. The right to clear forest cover and other vegetation to the extent convenient or necessary to exercise Declarant's right to construct trails on the Protected Property as set forth in Section 3(a) above.
6. MONITORING AND ENFORCEMENT OF RIGHTS

Each party has the right to assure that the condition of the Protected Property is in compliance with all of the terms, covenants and restrictions herein. In connection with such efforts, a person(s) designated by Third Party and DEP has the right to enter the Protected Property to make periodic inspections in any reasonable manner and at any reasonable time after providing Declarant with notice by first class mail or telephone. Third Party agrees to keep on file and provide to the Declarant, via first class mail, copies of any reports made in connection with inspections of the Protected Property.

In the event any party determines in its best judgment that a breach by the other party of this Declaration has occurred or is in existence, the non-breaching party will notify breaching party via certified mail return receipt requested, with a copy to DEP. The breaching party must discontinue the breach and, at the non-breaching party's request, restore the Protected Property to its condition at the time of this grant, subject to permitted changes made subsequently.

If the breaching party fails within a reasonable time to discontinue the breach or to undertake or complete requested corrective action, the non-breaching party is entitled to pursue its remedies at law and in equity, including the right to seek an order requiring restoration at the breaching party's cost as aforesaid. Requirement of written notice is waived in matters requiring more immediate action, in which case the non-breaching party is entitled immediately to pursue its remedies at law or in equity, ex parte as necessary, after making reasonable efforts to contact the breaching party. Declarant, Third Party, and the DEP agree that non-compliance with the terms of this Declaration constitutes immediate and irreparable injury, loss and damage to the Protected Property and accordingly entitles the non-breaching party to such equitable relief as a Court deems just. If a Court, or other finder of fact chosen by the parties, determines that this Declaration has been breached, the breaching party must reimburse non-breaching party for any reasonable costs of enforcement, including court costs, reasonable attorneys' fees, and any other payments ordered by such Court.

Declarant is not responsible for injury to or change in the Protected Property resulting from causes beyond the Declarant's control, such as, but not limited to, fire, flood, storm, and earth movement, or from any prudent action taken by Declarant under emergency conditions to prevent, abate, or mitigate significant injury to the Protected Property resulting from such causes. Nothing herein should be construed to preclude Declarant's and Third Party's rights to recover damages from any third party for trespass or other

violation of their respective rights in this Declaration and the Protected Property. The failure or delay of the Third Party, for any reason whatsoever, to enforce this Declaration shall not constitute a waiver of its rights. Declarant hereby waives any defense of laches, prescription or estoppel.

7. MORTGAGE FORECLOSURE

The right of Third Party to enforce the terms, restrictions and covenants created under this Declaration shall not be extinguished by foreclosure of any mortgage or of any publicly or privately placed lien, and Third Party's rights hereunder are paramount to any subsequently placed mortgage or lien except with respect to Third Party's right to damages based upon a violation that occurs subsequent to recording of such mortgage or lien.

8. BINDING EFFECT; NOTICE OF CONVEYANCE.

The covenants agreed to and the terms, conditions, restrictions and purposes imposed with this Declaration shall be binding upon the Declarant, its heirs and assigns, any successor-in-interest to the Protected Property and its executors, administrators and legal representatives, and shall be binding upon Third Party and its successors and assigns. The Declarant, its successors and assigns agree that the terms, conditions, restrictions, and purposes of the grant will be inserted in any subsequent conveyance of any interest in the Protected Property, and that the Declarant will notify Third Party and DEP, its successors and assigns, of any such conveyance in writing by certified mail within fifteen (15) days after closing.

9. EXCEPTIONS TO TITLE

This Declaration is made SUBJECT TO all matters, terms, easements, conditions, covenants and restrictions of record.

10. MISCELLANEOUS

- (a) If any provision of this Declaration is found to be invalid, the remainder of the provisions of this Declaration shall not be affected thereby.
- (b) Any uncertainty in the interpretation of this Declaration should be resolved in favor of conserving the Protected Property in its natural and open scenic state.
- (c) Declarant, its successors and assigns reserve the right to assign all or any portion of its rights and obligations in the Protected Property to the Operator, and Third Party agrees to consent to the same, so long as such assignment is evidenced by a written instrument recorded in the Penobscot County Registry of Deeds.
- (e) Third Party hereby releases Declarant from any and all claims arising out of Third Party's exercise of its rights hereunder, excepting claims arising from Declarant's negligent or other wrongful act or omission. Third Party agrees to hold Declarant harmless from and to indemnify Declarant against any claim, including, but not limited to, reasonable attorney's fees and costs incurred in defending such claim or enforcing this indemnity, or other liability of Third Party that may be asserted against Declarant in connection with or arising from any negligent or other wrongful act or omission of Third Party in performing its obligations or exercising its rights under this Declaration.

- (f) Declarant hereby releases Third Party from any and all claims arising out of Declarant's exercise of its rights hereunder, excepting claims arising from Third Party's negligent or other wrongful act or omission. Declarant agrees to hold Third Party harmless from and to indemnify the Third Party, its officers, directors, agents and employees against any claim including, but not limited to, reasonable attorney's fees and costs incurred in defending such claim or enforcing this indemnity, or other liability of Declarant that may be asserted against Third Party in connection with or arising from any negligent or other wrongful act or omission of Declarant in exercising its rights or performing its obligations under this Declaration.
- (g) This Declaration may be amended or revoked only in writing, signed by the Declarant, or its successors and assigns, the Third Party, or its successors and assigns, and the DEP.
- (h) This Declaration shall be governed by and interpreted in accordance with the laws of the State of Maine.

[REMAINDER OF PAGE INTENTIONALLY BLANK. SIGNATURE PAGE FOLLOWS]

STATE OF MAINE, by and through the Department of Administrative and Financial Services, has caused this instrument to be executed by Alexander E. Porteous, its Commissioner, this 27 day of March, 2018.

STATE OF MAINE
Department of Administrative and Financial Services

By: *Alexander E. Porteous*
Name: Alexander E. Porteous
Its: Commissioner

STATE OF MAINE
COUNTY OF KENNEBEC, ss.

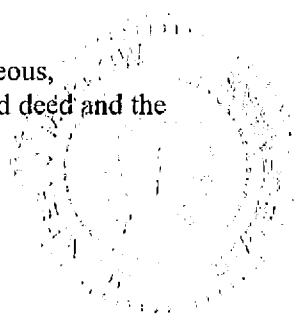
On March 2, 2018, personally appeared the above-named Alexander E. Porteous, Commissioner, in his said capacity, and acknowledged the foregoing to be his free act and deed and the free act and deed of the State of Maine.

Before me,

Jennifer J. Merrow
Notary Public

Printed Name:

JENNIFER J. MERROW
Notary Public • Maine
My Commission Expires September 17, 2023



THIRD PARTY ACCEPTANCE

The above and foregoing Declaration was authorized to be enforced by the City of Old Town, Third Party as aforesaid, and the said Third Party does hereby accept the right to enforce the Declaration, by and through William J. Mayo, its City Manager, hereunto duly authorized this 7 day of February, 2018.

CITY OF OLD TOWN, a body politic and corporate under the laws of the State of Maine

David Russell
Witness

By: William J. Mayo
Name: William J. Mayo
Its: Manager

STATE OF MAINE
COUNTY OF PENOBSCOT

Dated: 2-7-18

Personally appeared before me the above-named William J. Mayo, of the above-named Third Party, City of Old Town, and acknowledged the foregoing instrument to be his/her free act and deed in his/her said capacity, and the free act and deed of the City of Old Town.

Irene Pehrson
Notary Public
My Commission Expires:
Irene E. Pehrson
Notary Public • Maine
My Commission Expires
January 7, 2020
(Type or print name of Notary)



DEPARTMENT OF ENVIRONMENTAL PROTECTION, STATE OF MAINE

Lynn Boutillier
Witness

By: Mark Bergeron
Name: Mark R. Bergeron
Its: Director, Bureau of Land Resources

STATE OF Maine
COUNTY OF Kennebec

Dated: FEB 6, 2018

Personally appeared before me the above-named Mark Bergeron, LRR of the above-named Maine Department of Environmental Protection, and acknowledged the foregoing instrument to be his/her free act and deed in his/her said capacity, and the free act and deed of the Maine Department of Environmental Protection.

Ruth Ann Burke

Notary Public
My Commission Expires:

(Type or print name of Notary)

Ruth Ann Burke
Notary Public, State of Maine
My Commission Expires February 21, 2022



EXHIBIT A

PROTECTED PROPERTY LEGAL DESCRIPTION

A certain lot or parcel of land with the improvements thereon situate in the City of Old Town, County of Penobscot, State of Maine, more particularly described as follows:

Tract One: Beginning at a wood post found marking the southeasterly corner of lot numbered one (1) as shown on a plan titled, Final Plan Tryon Tree Farm ...” dated February 23, 1988, recorded in Penobscot County Registry of Deeds, Plan File C26-88; thence on an easterly prolongation of the southerly line of said lot numbered one, North 80 degrees, 46 minutes, 40 seconds East, a distance of 183.6 feet to an iron rod set; thence North 11 degrees, 21 minutes West a distance of 539.2 feet to an angle; thence North 25 degrees, 18 minutes West a distance of 364.6 feet to an iron rod set; thence North 18 degrees, 00 minutes East a distance of 332.9 feet to an angle; thence North 9 degrees, 11 minutes West a distance of 507.9 feet to an iron rod set; thence North 12 degrees, 32 minutes East a distance of 225.9 feet to an angle; thence North 42 degrees, 32 minutes East a distance of 273.9 feet; thence North 71 degrees, 8 minutes East a distance of 234.3 feet to an iron rod set; thence North 87 degrees, 3 minutes East a distance of 468.2 feet to an angle; thence South 45 degrees, 47 minutes East a distance of 206.3 feet to an iron rod set; thence South 73 degrees, 48 minutes East a distance of 258.5 feet to an angle; thence North 20 degrees, 16 minutes East a distance of 183.6 feet to an angle; thence North 60 degrees, 28 minutes East a distance of 112.4 feet to an iron rod set; thence South 36 degrees, 11 minutes East a distance of 169.7 feet to an angle; thence South 25 degrees, 18 minutes West a distance of 183.3 feet to an iron rod set; thence South 72 degrees, 57 minutes East a distance of 224.8 feet to an angle; thence South 62 degrees, 35 minutes East a distance of 204.8 feet to an angle; thence North 89 degrees, 59 minutes East a distance of 149.1 feet to an iron rod set; thence South 62 degrees, 23 minutes East a distance of a distance of 247.3 feet to an angle; thence South 74 degrees, 1 minute East a distance of 202.5 feet to an angle; thence South 87 degrees, 17 minutes East a distance of 251.3 feet to an angle; thence North 67 degrees, 45 minutes East a distance of 194.3 feet to an iron rod set; thence North 21 degrees, 8 minutes West a distance of 2,319.0 feet to an iron rod set on the municipal boundary between the City of Old Town and the Town of Alton; thence along said municipal boundary line, South 79 degrees, 44 minutes West, a distance of 3347.5 feet to a point on the southeasterly boundary of Lot 12 of “Preservation Wetlands” as described in Exhibit B of a Declaration of Covenants and Restrictions made by James River Paper Company recorded in Penobscot County Registry of Deeds, Book 5518, Page 67; thence following the southeasterly boundary of Lot 12 of “Preservation Wetlands”, South 6 degrees, 33 minutes West, a distance of 479.3 feet; thence continuing along the southeasterly boundary of Lot 12 of “Preservation Wetlands”, South 28 degrees, 18 minutes West, a distance of 446.9 feet; thence continuing along the southeasterly boundary of Lot 12 of “Preservation Wetlands”, South 2 degrees, 35 minutes East, a distance of 604.7 feet; thence continuing along the southeasterly boundary of Lot 12 of “Preservation Wetlands”, South 47 degrees, 39 minutes West, a distance of 961.3 feet to the westerly boundary of lot numbered two (2) as shown on the aforementioned plan of Tryon Tree Farm recorded in Penobscot County Registry of Deeds, Plan File C26-88; thence along the westerly boundary of lot numbered two (2), as shown by said plan, South 10 degrees, 50 minutes East, a distance of 792.5 feet to the northerly boundary line of lot numbered one (1) as shown on the aforementioned plan of Tryon Tree Farm; thence along the northerly boundary line of lot numbered one (1), South 79 degrees, 19 minutes West a distance of 554.7 feet to the northwesterly corner of said lot numbered one (1); thence along the westerly boundary of lot numbered one (1),

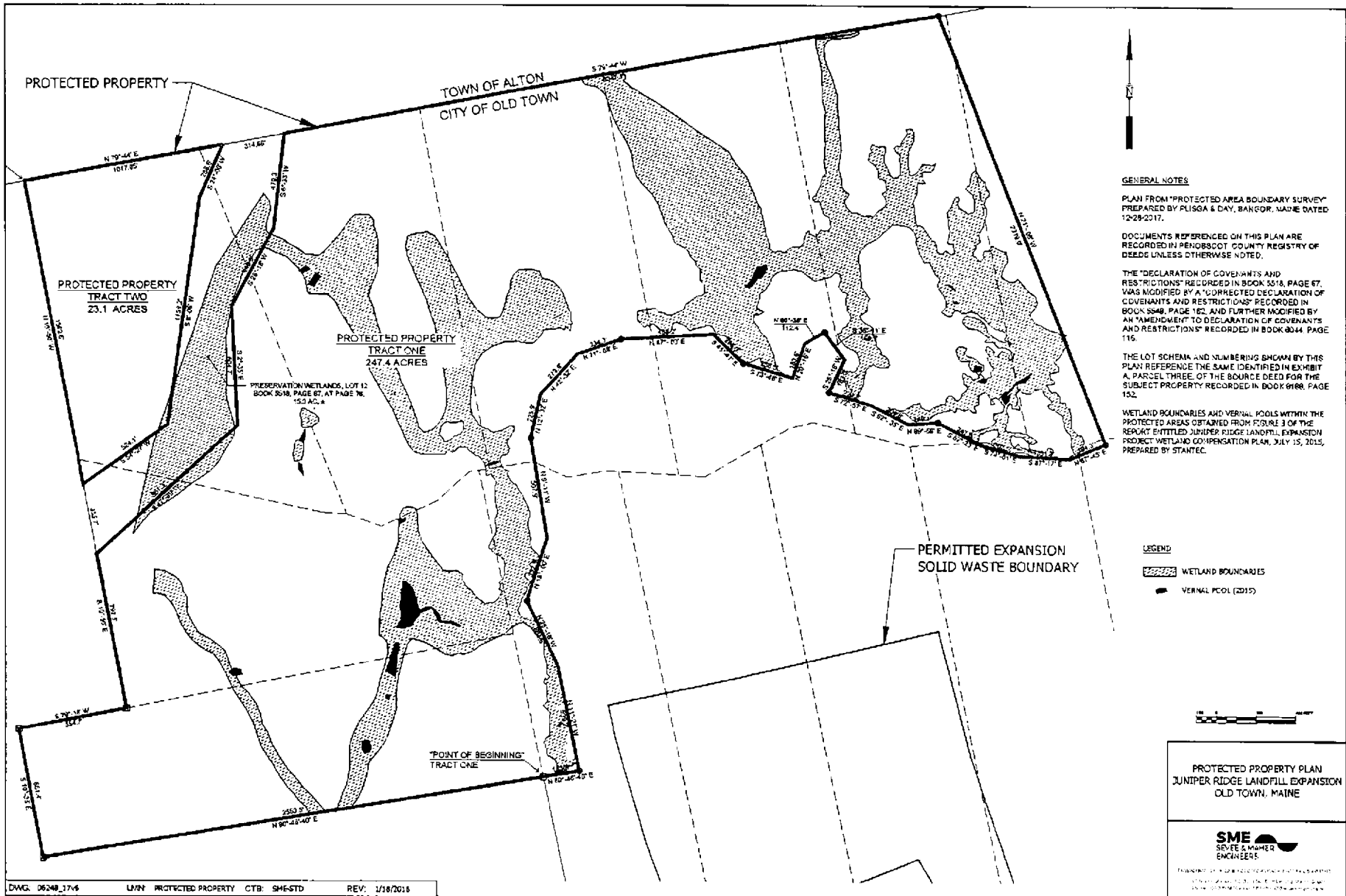
South 10 degrees, 33 minutes East, a distance of 661.4 feet to the southwesterly corner of said lot numbered one (1); thence following the southerly boundary line of lot numbered one (1), North 80 degrees, 46 minutes, 40 seconds East, a distance of 2,553.5 feet to the point of beginning, enclosing 247.4 acres.

Tract Two: Beginning at the point of intersection formed by the northerly prolongation of the westerly boundary of lot numbered three (3) as shown on the plan of Tryon Tree Farm recorded in Penobscot County Registry of Deeds, Plan File C26-88, with the municipal boundary between the City of Old Town and the Town of Alton; thence following the municipal boundary, North 79 degrees, 44 minutes East, a distance of 1,017.05 feet to the northwesterly boundary of Lot 12 of "Preservation Wetlands" as described in Exhibit B of a Declaration of Covenants and Restrictions made by James River Paper Company recorded in Penobscot County Registry of Deeds, Book 5518, Page 67; thence following the northwesterly boundary of Lot 12 of "Preservation Wetlands", South 24 degrees, 0 minutes West, a distance of 288.6 feet; thence continuing along the northwesterly boundary of Lot 12 of "Preservation Wetlands", South 8 degrees, 6 minutes West, a distance of 1,159.2 feet; thence continuing along the northwesterly boundary of Lot 12 of "Preservation Wetlands", South 54 degrees, 27 minutes West, a distance of 524.1 feet to the westerly boundary of lot numbered two (2) as shown on the aforementioned plan of Tryon Tree Farm recorded in Penobscot County Registry of Deeds, Plan File C26-88; thence following the westerly boundary of lot numbered two (2) and the westerly boundary of lot numbered three (3), as shown by said plan, North 10 degrees, 50 minutes West, a distance of 1,562.5 feet to the point of beginning, enclosing 23.1 acres

Bearings referenced herein are oriented to magnetic north, July 1992, as determined by a survey conducted by Plisga & Day, Land Surveyors.

For the Grantor's source of title reference is made to Parcel Three in a deed from Fort James Operating Company to State of Maine dated February 3, 2004, recorded in Penobscot County Registry of Deeds, Book 9188, Page 152.

EXHIBIT B
PROTECTED PROPERTY PLAN



GENERAL NOTES

PLAN FROM "PROTECTED AREA BOUNDARY SURVEY" PREPARED BY PLISSA & DAY, BANGOR, MAINE DATED 12-28-2017.

DOCUMENTS REFERENCED ON THIS PLAN ARE RECORDED IN PENOBSCOT COUNTY REGISTRY OF DEEDS UNLESS OTHERWISE NOTED.

THE "DECLARATION OF COVENANTS AND RESTRICTIONS" RECORDED IN BOOK 5518, PAGE 67, WAS MODIFIED BY A "MODIFIED DECLARATION OF COVENANTS AND RESTRICTIONS" RECORDED IN BOOK 5649, PAGE 162, AND FURTHER MODIFIED BY AN "AMENDMENT TO DECLARATION OF COVENANTS AND RESTRICTIONS" RECORDED IN BOOK 6044, PAGE 116.

THE LOT SCHEMA AND NUMBERING SHOWN BY THIS PLAN REFERENCE THE SAME IDENTIFIED IN EXHIBIT A, PARCEL THREE, OF THE SOURCE DEED FOR THE SUBJECT PROPERTY RECORDED IN BOOK 6166, PAGE 152.

WETLAND BOUNDARIES AND VERNAL POOLS WITHIN THE PROTECTED AREAS OBTAINED FROM FIGURE 3 OF THE REPORT ENTITLED JUNIPER RIDGE LANDFILL EXPANSION PROJECT WETLAND COMPENSATION PLAN, JULY 15, 2015, PREPARED BY STANTEC.

LEGEND

WETLAND BOUNDARIES

VERNAL POOL (2015)

DWG: 06248_17-6 LMV: PROTECTED PROPERTY CTB: SME-STD REV: 1/18/2016

PROTECTED PROPERTY PLAN
 JUNIPER RIDGE LANDFILL EXPANSION
 OLD TOWN, MAINE

SME
 SOUZA & WILMER
 ENGINEERS

REGISTERED PROFESSIONAL ENGINEERS
 PENOBSCOT COUNTY MAINE
 LICENSE NO. 10001 & 10002

APPENDIX P

PUBLIC FILING NOTICE DOCUMENTS

PUBLIC NOTICE OF INTENT TO FILE

Please take notice that the Maine Bureau of General Services (207.624.7314), as Owner, and NEWSME Landfill Operations LLC (358 Emerson Mill Road, Hampden, Maine, 207.862.4200), as Operator, are intending to file an application with the Maine Department of Environmental Protection (MEDEP) on or about June 10, 2024 pursuant to the provisions of 38 M.R.S.A., Sections 1310-N-sub-3-A and 1310-AA.

The application is for a Public Benefit Determination for a proposed Expansion at the Juniper Ridge Landfill facility located at 2828 Bennoch Road in Old Town, ME.

According to Department regulations, interested parties must be publicly notified, written comments invited, and if justified, an opportunity for public hearing given. A request for a public hearing must be received by the Department, in writing, no later than 20 days after publication of the public notice.

The application and supporting documentation are available for review at the Department's Bangor office, during normal working hours. A copy of the application and supporting documentation may also be seen at the municipal office in Old Town, Maine.

Send all correspondence to: Maine Department of Environmental Protection, Solid Waste Program, 17 State House Station, Augusta, ME 04333-0017 (207.287.2651 or 1.800.452.1942).

1-800-432-7964 (TOLL-FREE IN MAINE)
207-990-8020, Fax: 207-941-0885
 Email: classifieds@bangordailynews.com

CLASSIFIEDS

Classified Hours:
Monday - Friday 8 a.m. - 4:30p.m.
 1 Merchants Plaza, Bangor

BDN bangordailynews.com

Classified In-Column Deadlines

Monday Issue: 12 noon Friday
Tues. - Fri. Issue: 12 noon previous day
Saturday Issue: 12 noon Thursday

Classified Display Deadlines

Monday Issue: Previous Thursday, 12 noon
Tuesday Issue: Previous Friday, 12 noon
Wednesday Issue: Previous Monday, 12 noon
Thursday Issue: Previous Tuesday, 12 noon
Friday Issue: Previous Wednesday, 12 noon
Saturday Issue: Previous Wednesday, 1 p.m.

PLEASE ALLOW ONE EXTRA DAY IF REQUESTING A PROOF.

Legal Notices
TOWN OF HAMPDEN
PUBLIC HEARING NOTICE

Notice is hereby given that the Hampden Town Council will conduct public hearings beginning at 6:00 p.m. on Monday, June 17, 2024, in the Municipal Building Council Chambers, located at 106 Western Avenue, Hampden, to hear the following:

- Proposed Amendment to the Town of Hampden E911 Addressing Ordinance.
- Proposed Amendment to the Town of Hampden Maine Uniform Building and Energy Code Ordinance.
- Proposed Amendment to the Town of Hampden Victualer's Ordinance.
- Proposed Amendment to the Town of Hampden Zoning Ordinance.
- Proposed Amendment to the Town of Hampden Edythe L. Dyer Community Library Ordinance.
- Proposed Amendment to the Town of Hampden Fees Ordinance.

The full text of the proposed ordinance amendments is available at the Town Office during regular business hours or online at www.hampdenmaine.gov.

Gayle Decker, Town Clerk
 June 7, 2024

Legal Notices
NOTICE OF PUBLIC SALE

Notice is hereby given that in accordance with the Judgment of Foreclosure and Sale entered February 29, 2024 in the action entitled U.S. Bank Trust National Association, not in its individual capacity, but solely as Trustee of Citigroup Mortgage Loan Trust 2021-RP3 v. Kelly L. Asbury, by the Penobscot County Superior Court, Docket No. PENS-REA-2022-00034, wherein the Court adjudged the foreclosure of a mortgage granted by Kelly L. Asbury to Mortgage Electronic Registration Systems, Inc., as nominee for USAA Federal Savings Bank, its successors and assigns dated May 25, 2007 and recorded in the Penobscot County Registry of Deeds in Book 10971, Page 127, the period of redemption having expired, a public sale of the property described in the mortgage will be conducted on Tuesday, July 9, 2024, commencing at 10:30 AM, 707 Sable Oaks Dr., South Portland, ME 04106 on the front steps of the building in front of the flag pole.

The property is located at 16 Dexter Street, Dexter, Maine.

The sale will be by public auction. All bidders for the property will be required to make a deposit of \$5,000.00 by certified or bank check at the time of the public sale made payable to Korde & Associates, P.C., which deposit is non-refundable as to the highest bidder. The balance of the purchase price shall be paid within thirty (30) days of the public sale. In the event a representative of the mortgagee is not present at the time and place stated in this notice, no sale shall be deemed to have occurred and all rights to reschedule a subsequent sale are reserved. Additional terms will be announced at the public sale.

Korde & Associates, P.C., 707 Sable Oaks Dr., Suite 250, South Portland, Maine 04106, (207) 775-6223. Updates may be found at: <http://www.logs.com/me-sales-report.html>.

22-001035
 June 7, 14, 21, 2024

Legal Notices
NOTICE OF PUBLIC SALE

Notice is hereby given that in accordance with the Judgment of Foreclosure and Sale entered February 27, 2024, in the action entitled Wells Fargo Bank, National Association as Trustee for Option One Mortgage Loan Trust 2007-1, Asset-Backed Certificates, Series 2007-1 v. Donald N. Alley, Jr., by the Maine District Court, Division of Machias, Docket No. MACDC-RE-19-13, wherein the Court adjudged the foreclosure of a mortgage granted by Donald N. Alley, Jr., mortgagor(s), to Option One Mortgage Corporation dated August 21, 2006 and recorded in the Washington County Registry of Deeds in Book 3185, Page 168, should the period of redemption have expired without redemption of the property by the mortgagor(s), a public sale of the property described in the mortgage will be conducted on

July 18, 2024, commencing at 10:00 AM at the Holiday Inn by the Bay, 88 Spring Street, Portland, ME 04101.

The property is located at 79 Mill Pond Rd, Beals, ME 04611, in Washington County, reference as described in said mortgage.

The sale will be by public auction. All bidders for the property will be required to make a deposit of \$5,000.00 in cash, certified or bank check at the time of the public sale made payable to Brock & Scott, PLLC, which deposit is non-refundable as to the highest bidder. The balance of the purchase price shall be paid within thirty (30) days of the public sale. In the event a representative of Wells Fargo Bank, National Association as Trustee for Option One Mortgage Loan Trust 2007-1, Asset-Backed Certificates, Series 2007-1 is not present at the time and place stated in this notice, no sale shall be deemed to have occurred and all rights to reschedule a subsequent sale are reserved.

Additional terms will be announced at the public sale.

Wells Fargo Bank, National Association as Trustee for Option One Mortgage Loan Trust 2007-1, Asset-Backed Certificates, Series 2007-1 by its attorneys, Brock & Scott, PLLC
 Caleb D. Howell, Esq.
 30 Danforth Street
 Suite 104
 Portland, ME 04101
 June 7, 14, 21, 2024

Help Wanted General 114

Healthcare/Social Services 117

NOW HIRING

BUS DRIVERS

If you are looking for a seasonal job opportunity that not just a job but more of an experience, then working with Island Explorer is for you! You will join a family that lives, works and plays in one of the most beautiful National Parks & surrounding communities in the US. Our enthusiastic team of bus drivers is now welcoming new full and part time members for our 2024 season (June through October 14th). Starting pay is \$23.25/ hour with flexible schedules, and night and weekend differentials. Drivers must have a Commercial Driver's License (CDL). If you do not have a CDL we may be able to help the right candidate obtain one.

To apply contact **Jodi Moore** at 207-667-5796 or via email jodi.moore@explorecadia.com. Equal Opportunity Employer.

CLINICAL PHARMACIST - FULL TIME

MaineHealth seeks a Clinical Pharmacist (Critical Care, Cardiology, Research, Operations) in Portland, ME to dispense drugs prescribed by physicians and other health practitioners. The Pharmacist will provide information to Maine Medical Center's Cardiothoracic Intensive Care Unit, Medical Intensive Care Service, Surgical Critical Care Service, and Neuro-critical Care patients about medications and their use; support enrollment, dosage and record keeping for drug trials; and provide operational leadership for MaineHealth pharmacy services.

Qualifications:

- * Doctor of Pharmacy degree or a Bachelor's degree in Pharmacy or Pharmaceutical Sciences degree. State of Maine Pharmacist licensure.
- * 3 years of experience as a pharmacist in a hospital setting and one year of postgraduate Year 1 residency (PGY1)

Maine Medical Center is a Magnet designated 700-bed tertiary care and teaching institution. MMC is Maine's largest hospital and a state-wide health care resource. MMC offers outstanding career opportunities and quality of life in Portland.

For more information and to apply, please contact **Todd.Nevins@mainehealth.org**

Business Opportunities 155

SCULPTURE STUDIO TECHNICIAN

Orono, University of Maine Department of Art. Assists with operations of sculpture curriculum and facilities. Coordinates, supports, and/or supervises various activities, including instruction; safety training and compliance; maintenance of specialized equipment (including kilns, furnaces, and power tools); student employees; and the purchase and tracking of supplies and equipment. Typical hiring range for this part-time (30 hrs/week) position with a 9-month work year of Sept 1 to May 31 is \$32,000 to \$35,000 commensurate with qualifications and experience. Apply at <https://umaine.hiretouch.com/job-details?jobid=84256>

NOW HIRING

ELECTRICIAN

AA Electric Service has openings for a Journeyman electrician w/commercial experience. FT w/competitive wage & benefits. Paid travel w/ company vehicle. Overtime available.

\$3k Sign-on Bonus

116 Freedom Pkwy, Hermon, 942-9228 or bob@aaelectric.com EOE

NOW HIRING

EVENING CUSTODIAN

Must have or be eligible for Maine Department of Education CHRC (Criminal History Record Check). **Qualifications:** High School Diploma or equivalent, Demonstrated aptitude or competence for assigned responsibilities. Ability to interact appropriately with students, staff, and the community. All job details may be found at servingschools.com/job/h4umfm/custodian/bangor/maine Send Resumes, and cover letters to: employment@utcdme.org or they can be dropped off at: United Technologies Center 200 Hogan Rd., Bangor

Applications will be accepted until a suitable candidate is found. E.O.E.

House For Rent 217

RentBangor
 Bangor Area Apartment and House Rentals

BANGOR Several homes and condo available soon! \$2000-2800. Visit RentBangor.com for specific addresses & info. 974-6606

Mobile Home Rentals 220

CORINTH 2 BR/2 BA, clean mobile home, \$1,000 per month, first and last with a \$1,000 security deposit. This is a month to month rental. Application to be filled out. No pets or smoking! \$1,000 207-944-6068

VEAZIE 2 BR MH. Clean, 2024 unit. Sm. pets under 40 lbs w/\$200 non-refundable pet dep. All utils. incl. exc. elec. \$1300-1400/mth. + sec. 207-745-0028, line 3.

Rooms 230

Comm./Investment Property 305

BANGOR 4 UNIT apartment building w/ natural gas & basement. Each unit has 1BR/1BA. MLS #1578238. \$349,900. Nadeau/Braddon Team, ERA Dawson, 723-1441 / 447-0701. Call Andy or Bruce to list today!

OLD TOWN - TOTAL AVAILABLE SPACE: 93,000 Sq. Ft. **TOTAL BUILDING SIZE:** 133,000 Sq. Ft. **FEATURES:** 30' clear height, 50' x 50' column spacing, 12 dock high doors, railroad access. **LEASING PRICE NEGOTIABLE** CONTACT: MICHELLE 207-279-1707

Agent Services 310

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 New Home Construction,
 Multi Family & Investment Specialist

Realty of Maine, 942-6310
 974-6606 / 852-6233

R.M.
 Realty of Maine

RECYCLING

House For Sale 315

REDUCED PRICE

DEDHAM HOME w/5 BR, w/guest suite & 3.5 BA. Open & spacious, w/option for 4 Acres. 3+ car garage. MLS# 1584118 \$465,000 Nadeau/Braddon Team, ERA Dawson, 723-1441/447-0701 Call Andy or Bruce to list today!

HOLLY RIDGE, NC 2 BR/2 BA "Maine-like home". After 17 years we would love to pass it to fellow Mainers. Low living costs. 7 miles from free beach parking. 2 miles to Food Lion. 20 miles to Jacksonville, 30 to Wilmington. 2 1/2 hrs to Raleigh, Outer Banks and Myrtle beach, SC. Quiet setting. 1,100 sq ft. .46 acre. Storage shed Set back from road. Electric less than \$100/mo. H2o \$20/mo. 2 mi. to library. 15 min. to Surf City-restaurants, nightly music. 910-545-9814 Email smoulie@hotmail.com for more info. \$225,000

LINCOLN 3 BR 2 BA ranch w/ 200+/- ft of waterfront on 4.14 ac. 36x26 gar., 40x30 barn, fireplace & gym \$459,900 MLS# 1583147 Nadeau / Braddon Team ERA Dawson 723-1441 / 447-0701. Call Andy or Bruce to list today!

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SMITH POND 3BR/2BA, .47 acs. w/ stone patio, 100 feet of waterfront, & hand crafted woodwork. MLS# 1589027 \$489,900 Nadeau/Braddon Team, ERA Dawson 723-1441 / 447-0701 Call Andy or Bruce to list today!

UPPER COLD STREAM POND 2BR/1BA camp w/bunk house. 100+/- ft waterfront. .5 acres. 2 car gar. \$349,900 MLS#1559655 Nadeau / Braddon Team, ERA Dawson, 723-1441 / 447-0701. Call Andy or Bruce to list today!

2023 TAHOE T16 BOWRIDER Mercury 75hp ELPT 4S STD, Trailstar Trailer, Hydraulic Steering, Bimini Top, Ski Tow Bar, Ratchet Mooring Cover and GPS. Maine Delivery. \$27,999 OBO 207-460-1468

Boats/Marine 360

Boats/Marine 360

2023 TAHOE T16 BOWRIDER Mercury 75hp ELPT 4S STD, Trailstar Trailer, Hydraulic Steering, Bimini Top, Ski Tow Bar, Ratchet Mooring Cover and GPS. Maine Delivery. \$27,999 OBO 207-460-1468

Legal Notices

PUBLIC NOTICE OF INTENT TO FILE

Please take notice that the Maine Bureau of General Services (207.624.7314), as Owner, and NEWSME Landfill Operations LLC (358 Emerson Mill Road, Hampden, Maine, 207.862.4200), as Operator, are intending to file an application with the Maine Department of Environmental Protection (MEDEP) on or about June 10, 2024 pursuant to the provisions of 38 M.R.S.A., Sections 1310-N-sub-3-A and 1310-AA.

The application is for a Public Benefit Determination for a proposed Expansion at the Juniper Ridge Landfill facility located at 2828 Bennoch Road in Old Town, ME. According to Department regulations, interested parties must be publicly notified, written comments invited, and if justified, an opportunity for public hearing given. A request for a public hearing must be received by the Department, in writing, no later than 20 days after publication of the public notice.

The application and supporting documentation are available for review at the Department's Bangor office, during normal working hours. A copy of the application and supporting documentation may also be seen at the municipal office in Old Town, Maine.

Send all correspondence to: Maine Department of Environmental Protection, Solid Waste Program, 17 State House Station, Augusta, ME 04333-0017 (207.287.2651 or 1.800.452.1942).
 June 7, 2024

BREAKING NEWS

Updated around the clock
bangordailynews.com

HARRIMAN
FIELD REPRESENTATIVE
CLERK OF THE WORKS

Large scale Pre-K-8 school project in Bar Harbor, ME requires an experienced Clerk of the Works who demonstrates a thorough knowledge of building construction and quality control. The approximate timeline of projects is July 2024 through August 2027. Position is fulltime for an approximate duration of 2 1/2 years, then may be part time to full time for the remainder of the construction process. Applicants must have a

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CLASSIFIED

INSIDE
 Legal Ads
 Garage Sales
 Antiques & Auctions

Friday, June 7, 2024

SECTION D

Public Notices

Public Notices are a permanent and independent record of government and court actions. These include state and local government meetings, rule making, available contracts, zoning changes, and many more, as required by law. In addition, parties to some court proceedings, such as foreclosures, probate, and estate actions are required to publish notices to ensure notification of affected parties, as well as the general public. These notices also alert business owners, large and small, to potential government contractual jobs, helping to ensure economic activity across a level playing field. Public notices have existed to ensure transparency in all levels of government since the founding of the United States.

State and local notices are published in Maine newspapers and are also recorded at mainenotices.com, where anyone can browse or search notices, and sign up to receive email alerts when relevant notices appear.

ANNOUNCEMENTS

Public Notices

Public Notice

NOTICE OF MEETING
 A regular meeting of the Commissioners of the Maine State Housing Authority ("MaineHousing") will be held at 9:00 a.m. on Tuesday, June 18, 2024, at the offices

Public Notices

of MaineHousing, 26 Edison Drive, Augusta, Maine and virtually. All regular meetings are open to members of the public for observation but not participation. Public hearings are open for public comment. The meeting room is accessible to persons with physical disabilities, and upon sufficient notice, appropriate communication auxiliary aids and services will be provided. For more information contact MaineHousing's Board Administrators at (207) 626-4600 (voice); 1-800-452-4668 (voice in state only); or 711 (Maine Relay) or via e-mail: BoardAdmin@mainehousing.org or visit MaineHousing's website at <https://www.mainehousing.org/about/board>.



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Public Notices

Public Notice

State of Maine Department of Defense Veterans and Emergency Management Military Bureau RFP# 202405103 Galaxy and Elk Access Control Systems Repair & Maintenance for MEARNG Statewide

The State of Maine is seeking proposals for Access Control and Electronic Security system maintenance and repair throughout the Maine Army National Guard (MEARNG) System which is statewide. The State of Maine Department of Defense, Veterans, and Emergency Management - Military Bureau has one full time employee and is looking for a company to cover leave and projects that may require more than one person to perform.

A copy of the RFP, as well as the Question & Answer Summary and all amendments related to the RFP, can be obtained at: <https://www.maine.gov/dafs/bbm/procurementservices/vendors/rfps>

Proposals must be submitted to the State of Maine Division of Procurement Services, via e-mail, at: Proposals@maine.gov. Proposal submissions must be received no later than 11:59 p.m., local time, on 6/26/2024. Proposals will be opened the following business day. Proposals not submitted to the Division of Procurement Services' aforementioned e-mail address by the aforementioned deadline will not be considered for contract award.

Public Notice

NOTICE OF PUBLIC SALE

Notice is hereby given that in accordance with the Stipulated Judgment of Foreclosure and Sale entered January 30, 2024, in the action entitled Federal National Mortgage Association v. Clifford Dumont a/k/a Clifford A. Dumont, by the Maine District Court, Division of Waterville, Docket No. WATDC-RE-23-15, wherein the Court adjudged the foreclosure of a mortgage granted by Clifford Dumont, mortgagor(s), to Synergy One Lending, Inc. dba Mutual of Omaha Mortgage dated February 24, 2020 and recorded in the Kennebec County Registry of Deeds in Book 13500, Page 164, should the period of redemption have expired without redemption of the property by the mortgagor(s), a public sale of the property described in the mortgage will be conducted on

July 18, 2024, commencing at 10:00 AM at the Holiday Inn by the Bay, 88 Spring Street, Portland, ME 04101.

The property is located at 86 Trask Rd, Benton, ME 04901, in Kennebec County, reference as described in said mortgage.

The sale will be by public auction. All bidders for the property will be required to make a deposit of \$5,000.00 in cash, certified or bank check at the time of the public sale made payable to Brock & Scott, PLLC, which deposit is non-refundable as to the highest bidder. The balance of the purchase price shall be paid within thirty (30) days of the public sale. In the event a representative of Federal National Mortgage Association is not present at the time and place stated in this notice, no sale shall be deemed to have occurred and all rights to reschedule a subsequent sale are reserved. Additional terms will be announced at the public sale.

Federal National Mortgage Association by its attorneys, Brock & Scott, PLLC Caleb D. Howell, Esq. 30 Danforth Street Suite 104 Portland, ME 04101

Public Notices

OFFICE OF PROFESSIONAL AND OCCUPATIONAL REGULATION

BOARD MEETINGS SCHEDULED FOR THE PERIOD 06/17/2024 THROUGH 06/30/2024

All regular board and commission meetings are open to members of the public. Generally, the public may attend a board or commission meeting in-person or remotely via Zoom. However, **please note** that there may be an emergency or urgent issue such that the board or commission limits public attendance at a meeting solely to remote methods (via Zoom) and there will not be an in-person location, pursuant to 1 M.R.S. § 403-B and the board or commission's remote participation policy.

Please confirm the date-specific meeting location and obtain the meeting Zoom link by visiting the board or commission's webpage no more than 24 hours in advance of the meeting. Please contact (207) 624-8603 if you need assistance.

The Department of Professional and Financial Regulation does not discriminate on the basis of disability in admission to, access to, or operation of its programs, services or activities. Individuals who need auxiliary aid for effective communication in programs and services of the Department are invited to make their needs and preferences known to the Department's ADA Compliance Coordinator, 207-624-8511.

Monday, June 17, 2024 9:00 a.m.
 Manufactured Housing Board – Regular Meeting
<https://www.maine.gov/pfr/professionallicensing/professions/manufactured-housing-board/home/board-meeting-information>

Thursday, June 20, 2023 9:00 a.m.
 Maine Real Estate Commission – Regular Meeting
<https://www.maine.gov/pfr/professionallicensing/professions/real-estate-commission/home/board-meeting-information>

Friday, June 21, 2024 9:00 a.m.
 Electricians' Examining Board – Regular Meeting/Hearing
<https://www.maine.gov/pfr/professionallicensing/professions/electricians/home/board-meeting-information>

Monday, June 24, 2024 9:00 a.m.
 Board of Counseling Professionals Licensure – Regular Meeting
<https://www.maine.gov/pfr/professionallicensing/professions/board-of-counseling-professionals-licensure/home/board-meeting-information>

Tuesday, June 25, 2024 9:00 a.m.
 Board of Licensure for Professional Land Surveyors – Regular Meeting
<https://www.maine.gov/pfr/professionallicensing/professions/board-licensure-professional-land-surveyors/home/board-meeting-information>

Wednesday, June 26, 2024 9:00 a.m.
 Board of Chiropractic Licensure – Regular Meeting
<https://www.maine.gov/pfr/professionallicensing/professions/chiropractic-licensure/home/board-meeting-information>

Wednesday, June 26, 2024 9:00 a.m.
 Board of Elevator and Tramway Safety – Appeal Hearing
<https://www.maine.gov/pfr/professionallicensing/professions/elevator-tramway-safety-program>

Thursday, June 27, 2024 9:00 a.m.
 Board of Complementary Health Care Providers – Regular Meeting
<https://www.maine.gov/pfr/professionallicensing/professions/board-of-complementary-health-care-providers/home/board-meeting-information>

Mailing Address: 35 State House Station, Augusta, ME 04333
 Physical Location: 76 Northern Avenue, Gardiner, ME 04345
 Telephone: Office (207) 624-8603 TTY users call Maine relay 711
 Days/Hours Available: Monday-Friday, 8:00 a.m. - 5:00 p.m.

Public Notice
PUBLIC NOTICE OF INTENT TO FILE
 Please take notice that the Maine Bureau of General Services (207.624.7314), as Owner, and NEWSME Landfill Operations LLC (358 Emerson Mill Road, Hampden, Maine, 207.862.4200), as Operator, are intending to file an application with the Maine Department of Environmental Protection (MEDEP) on or about June 10, 2024 pursuant to the provisions of 38 M.R.S.A., Sections 1310-N-sub-3-A and 1310-AA.
 The application is for a Public Benefit Determination for a proposed Expansion of the Juniper Ridge Landfill facility located at 2828 Bennoch Road in Old Town, ME.
 According to Department regulations, interested parties must be publicly notified, written comments invited, and if justified, an opportunity for public hearing given. A request for a public hearing must be received by the Department, in writing, no later than 20 days after publication of the public notice.
 The application and supporting documentation are available for review at the Department's Bangor office, during normal working hours. A copy of the application and supporting documentation may also be seen at the municipal office in Old Town, Maine.
 Send all correspondence to: Maine Department of Environmental Protection, Solid Waste Program, 17 State House Station, Augusta, ME 04333-0017 (207.287.2651 or 1.800.452.1942).

Charlie's
 FAMILY OF DEALERSHIPS

SUMMER OF SAVINGS

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 Mon.-Fri. 8 a.m.-8 p.m. • Sat. 8 a.m.-6 p.m. • Sun. Closed

LIST OF ABUTTERS – JUNIPER RIDGE LANDFILL

Map/Lot	Name & Address	Location
002/040/000	Laurent & Barbara Beauregard 273 Washington Street Brewer, ME 04412	West Old Town Road Old Town, ME 04468
002/041/000	Laurent & Barbara Beauregard 273 Washington Street Brewer, ME 04412	West Old Town Road Old Town, ME 04468
002/044/000	Robert Hall 631 West Old Town Road Old Town, ME 04468	631 West Old Town Road Old Town, ME 04468
002/046/000	Karen Bertolino & Thomas Dunn 579 West Old Town Road Old Town, ME 04468	579 West Old Town Road Old Town, ME 04468
002/047/000	Town of Old Town 265 Main Street Old Town, ME 04468	West Old Town Road Old Town, ME 04468
002/052/000	Raymond Perkins 55 Old Brooklyn Turnpike Windham, CT 06280	549 West Old Town Road Old Town, ME 04468
002/053/000	Cassandra Goodspeed 519 West Old Town Road Old Town, ME 04468	519 West Old Town Road Old Town, ME 04468
002/054	Greg & Evlynn Wallace 526 West Old Town Road Old Town, ME 04468	526 West Old Town Road Old Town, ME 04468
002/055	Robyn Emmons 488 West Old Town Road Old Town, ME 04468	488 West Old Town Road Old Town, ME 04468
003/001/00A	University of Maine System 107 Maine Avenue Bangor, ME 04401	Bennoch Road Old Town, ME 04468
003/001/00B	SSR LLC PO Box 435 Stillwater, ME 04489-0435	Bennoch Road Old Town, ME 04468
003/006/00B	Scott Bergquist 497 West Old Town Road Old Town, ME 04468	497 West Old Town Road Old Town, ME 04468
003/007	Kevin & Sandilynn Daniel 439 West Old Town Road Old Town, ME 04468	439 West Old Town Road Old Town, ME 04468
003/007/00A	Angela Cyr 449 West Old Town Road Old Town, ME 04468	449 West Old Town Road Old Town, ME 04468
003/041/00C	Herbert Robertson Jr 163 Clewleyville Road Eddington, ME 04428	Bennoch Road Old Town, ME 04468

003/045/00B	SSR LLC PO Box 435 Stillwater, ME 04489-0435	Bennoch Road Old Town, ME 04468
003/050/00A	SSR LLC PO Box 435 Stillwater, ME 04489-0435	Bennoch Road Old Town, ME 04468
003/054/00B	SSR LLC PO Box 435 Stillwater, ME 04489-0435	Bennoch Road Old Town, ME 04468
003/058/00B	SSR LLC PO Box 435 Stillwater, ME 04489-0435	Bennoch Road Old Town, ME 04468
08/97	Harry and Laura Sanborn 2845 Bennoch Road Alton, ME 04468	2845 Bennoch Road Alton, ME 04468
08/98	Second Chance Holdings, LLC 74 Upper Dedham Road Holden, ME 04429	Unknown
08/100	State of Maine South Main St Old Town, ME 04468	Unknown
08/103	ABS Transport LLC 2894 Bennoch Road Alton, ME 04468	Unknown
08/104	Tasanee Lolonga 157 Massapaug Avenue N. Easton, MA 02356	Unknown
08/106	Karl Held 2351 Cochran Road Dallas, GA 30132	Unknown
08/107	Harry & Tammy Feero 1118 Southgate Road Argyle, ME 04468	Unknown
08/108 08/109 08/111 08/112	Win & Nancy Chaiyabhat PO Box 1046 Scarborough, ME 04070	Old Stage Coach Road Alton, ME 04468
08/113	Jesse Pekkala PO Box 471 Telluride, CO 81435	Unknown
08/114	Charles Tringale 268 Park Street Medford, MA 02155	250 Old Stage Coach Road Alton, ME 04468
08/116	Anthony & Cindy Madden PO Box 499 Milford, ME 04461	240 Old Stage Coach Road Alton, ME 04468

08/117/01	Town of Alton 3352 Bennoch Road Alton, ME 04468	Unknown
08/118	Kenneth Gray PO Box 357 Old Town, ME 04468	214 Old Stagecoach Road Alton, ME 04468
08/119/00	Kathryn Pelletier 198 Old Stagecoach Road Alton, ME 04468	198 Old Stagecoach Road Alton, ME 04468
08/119/01	Ruth Dalton 206 Old Stagecoach Road Alton, ME 04468	206 Old Stagecoach Road Alton, ME 04468
08/119/02	Shana McLaughlin 181 Moondance Lane Summerville, SC 29483	204 Old Stagecoach Road Alton, ME 04468
08/121/01	Vincent and Mary St. Louis 10 Crosby Ct, Apt 10 Orono, ME 04473	196 Old Stagecoach Road Alton, ME 04468
08/123	Dennis & Mary Theriault 1047 Southgate Road Argyle TWP, ME 04468	158 Stagecoach Road Alton, ME 04468
08/124	Samuel Diaz 156 Old Stagecoach Road Alton, ME 04468	156 Old Stagecoach Road Alton, ME 04468



ALTON / OLD TOWN BOUNDARY

PROPOSED SOLID WASTE EXPANSION BOUNDARY
PERIMETER ACCESS ROADS
PERMITTED LANDFILL SOLID WASTE BOUNDARY
PROPERTY LINE
SCALES AND ADMINISTRATIVE BUILDING
EXISTING SITE ACCESS ROAD

INTERSTATE 95

REST AREA

OLD TOWN		
MAP NO.	LOT NO.	NAME
2	40	Laurent J. & Barbara Beauregard
2	41	Laurent J. & Barbara Beauregard
2	44	Robert W. & Wendy Hall
2	46	Thomas Dunn & Karen Bertolino
2	47	City of Old Town
2	51	New England Waste Services
2	52	Raymond A. Perkins
2	53	Cassandra Goodspeed
2	54	Gregg & Elynn Wallace
2	55	Robyn Emmons
3	1A	University of Maine System
3	1B	SSR, LLC
3	6B	Scott E. Bergquist
3	7	Kevin H. Daniel
3	7A	Angela D. Cyr
3	15	NEWSME Landfill Operations LLC
3	41C	Herbert A. Robertson, Jr
3	45B	SSR, LLC
3	50A	SSR, LLC
3	53	SSR, LLC
3	54B	SSR, LLC
3	58B	SSR, LLC

ALTON		
MAP NO.	LOT NO.	NAME
8	97	Harry & Laura Sanborn
8	98	Second Chance Holdings LLC
8	99	NEWSME Landfill Operations LLC
8	99.01	NEWSME Landfill Operations LLC
8	100	State of Maine
8	101	NEWSME Landfill Operations LLC
8	102	NEWSME Landfill Operations LLC
8	103	ABS Transport
8	104	Tasanee Lolonga
8	106	Karl Held
8	107	Harry & Tammy Feero
8	108	Win & Nancy Chaiyabhat
8	109	Win & Nancy Chaiyabhat
8	111	Win & Nancy Chaiyabhat
8	112	Win & Nancy Chaiyabhat
8	113	Jesse Pekkala
8	114	Charles Tringale III
8	116	Anthony Madden
8	117	Challis Randall
8	117.1	Town of Alton
8	118	Kenneth Gray
8	119	Kathryn Pelletier
8	119.1	Ruth Dalton
8	119.2	Shana McLaughlin
8	121	Anthony & Cynthia Brown
8	121.1	Mary & Vincent St. Louis
8	122	NEWSME Landfill Operations LLC
8	122.1	NEWSME Landfill Operations LLC
8	123	Dennis & Mary Theriault
8	124	Samuel Diaz

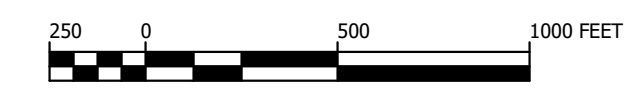
NOTE:

- THIS IS AN INFORMATIONAL FIGURE ONLY AND IS NOT INTENDED TO SERVE AS A BOUNDARY SURVEY MAP. DIMENSIONS, NORTHING AND EASTING INFORMATION PRESENTED ON THIS FIGURE ARE APPROXIMATE AND ARE BASED UPON AVAILABLE SITE INFORMATION FOR THE JUNIPER RIDGE LANDFILL. NO FIELD SURVEY HAS BEEN PERFORMED BY SEVEE AND MAHER ENGINEERS REGARDING THE INFORMATION PRESENTED ON THIS DRAWING.

LEGEND

----- PROPERTY LINE LOCATIONS ARE APPROXIMATE AND ARE BASED UPON A RESULT OF FIELD SURVEY PERFORMED BY HERRICK AND SALSURRY, INC. LAND SURVEYORS, ELLSWORTH, MAINE FOR TRYTON TREE FARM PROJECT, PATTEN CORPORATION-DOWNEAST, OLD TOWN, MAINE, FEBRUARY 23, 1988, REVISED APRIL 7, 1988

○ LOT LOCATIONS ARE APPROXIMATE AND ARE BASED UPON AVAILABLE TAX MAP INFORMATION FOR THE TOWN OF ALTON AND OLD TOWN, MAINE, (2024).



**TAX MAP OF
PROPERTY ABUTTERS
NEWSME LANDFILL OPS LLC
JUNIPER RIDGE LANDFILL**



ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE
4 Blanchard Road, PO Box 85A, Cumberland, Maine 04021
Phone 207.829.5016 • Fax 207.829.5692 • smemaine.com

\\www.sme.com\Clients\JuniperRidge\Drawings\2024\Map\2024_01_24_Map.dwg

Alton



CITY OF OLD TOWN MAINE

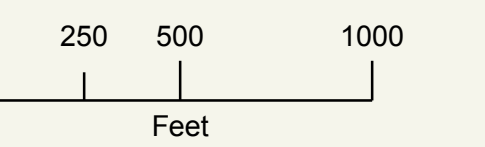
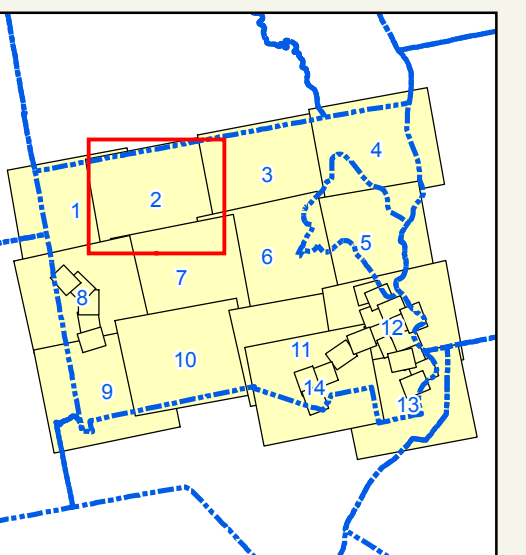
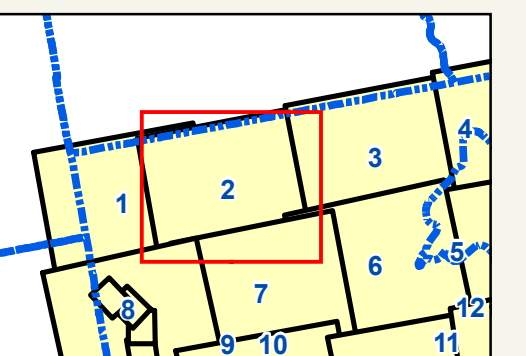


LEGEND

- Parcel
- Easement
- Public Right of Way
- Private Right of Way
- Railroad
- Town Boundary
- Telephone Easement
- Pipeline Easement
- Utility Line
- Stream
- Lake / River
- Parcel Number
- Disjointed Parcel Number
- Street Number
- Dimension

INTENDED FOR ASSESSMENT PURPOSES ONLY. COMPILED FROM TAX MAPS, ORTHOPHOTOGRAPHY AND OTHER PUBLIC RECORDS AND DATA. USERS SHOULD CONSULT THE PUBLIC PRIMARY SOURCE DOCUMENTS FOR VERIFICATION OF THE INFORMATION APPEARING ON THIS MAP.

SHEET INDEX



Date of Revisions:

January 1, 2015

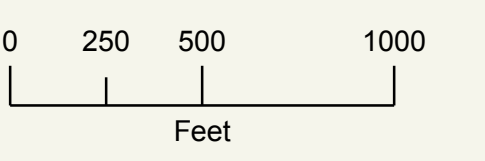
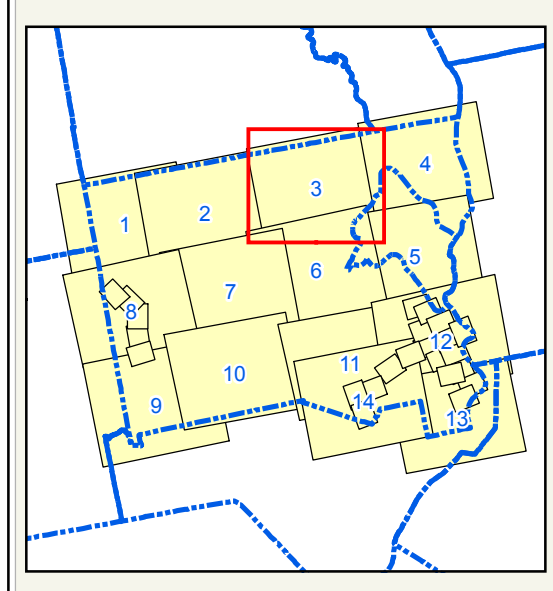
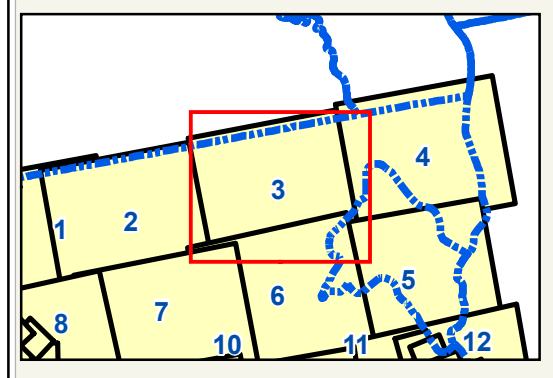


LEGEND

- Parcel
- Easement
- Public Right of Way
- Private Right of Way
- Railroad
- Town Boundary
- Telephone Easement
- Pipeline Easement
- Utility Line
- Stream
- Lake / River
- Parcel Number
- Disjoined Parcel Number
- Street Number
- Dimension

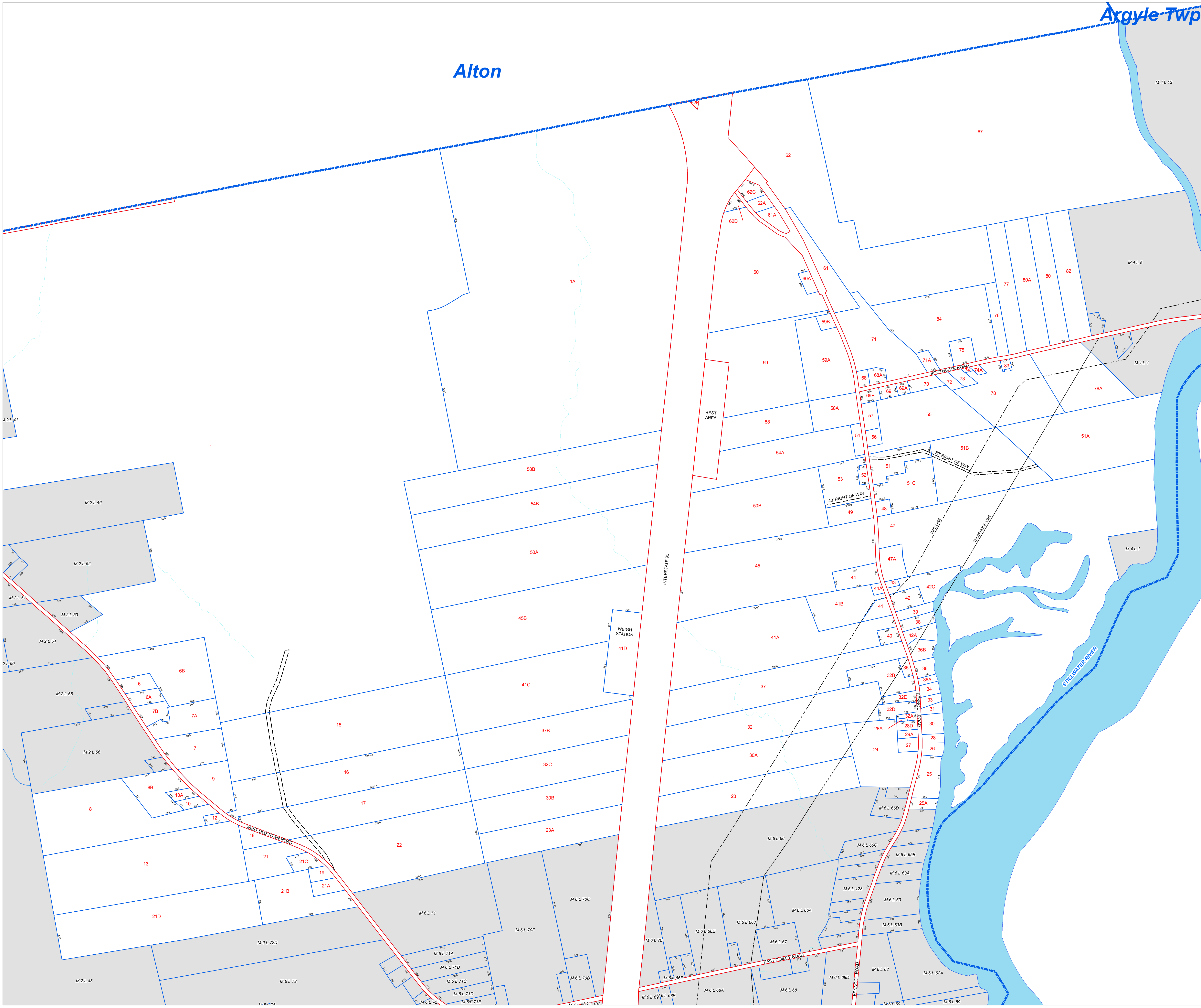
INTENDED FOR ASSESSMENT PURPOSES ONLY. COMPILED FROM TAX MAPS, ORTHOPHOTOGRAPHY AND OTHER PUBLIC RECORDS AND DATA. USERS SHOULD CONSULT THE PUBLIC PRIMARY SOURCE DOCUMENTS FOR VERIFICATION OF THE INFORMATION APPEARING ON THIS MAP.

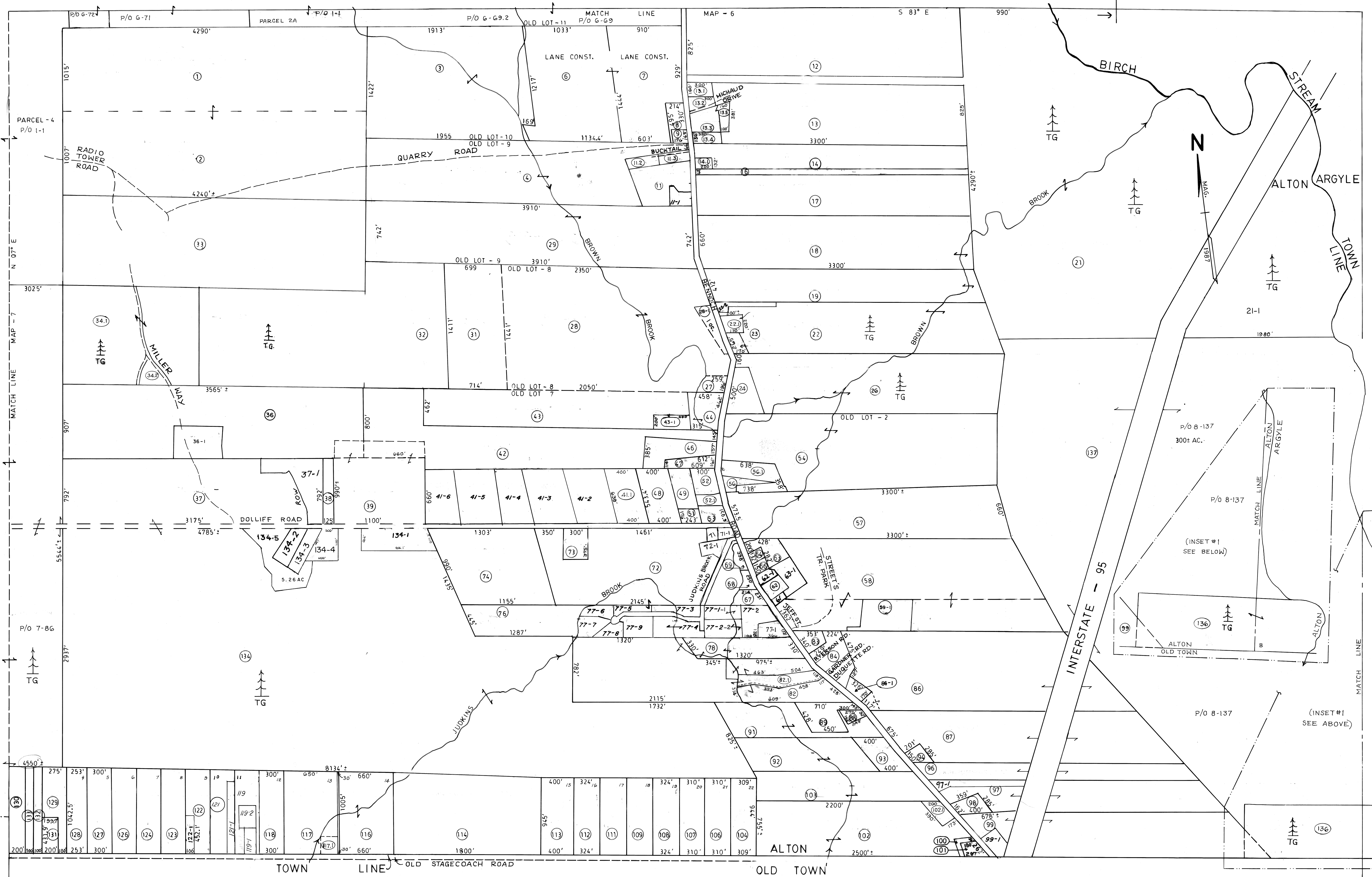
SHEET INDEX



Date of Revisions:

January 1, 2015





For Assessment Purposes Only
Not To Be Used For Conveyances

PREPARED TAX MAPS 1988
Revised by: Donald L. Leavitt - 1997
REVISED BY: H.R. DICKEY, 2002

PROPERTY TAX MAP
TOWN OF ALTON
Penobscot County, Maine
By Forrest Smart, Surveyor
SCALE: 1" = 500'

JUNIPER RIDGE LANDFILL MUNICIPALITY LIST

ALTON

Town of Alton

First Selectman
3352 Bennoch Road
Alton, ME 04468

Town of Alton

Planning Board Chair
3352 Bennoch Road
Alton, ME 04468

PENOBSCOT NATION

Penobscot Nation

12 Wabanaki Way
Indian Island, ME 04468

OLD TOWN

William Mayo

City of Old Town City Manager
265 Main Street
Old Town, ME 04468

David Russell

Code Enforcement Officer
265 Main Street
Old Town, ME 04468

Theodore Shina

Planning Board Chair
265 Main Street
Old Town, ME 04468

JUNIPER RIDGE LANDFILL ADVISORY COMMITTEE

ALTON

Laura Sanborn hlsanborn@aol.com 207-745-8151
2845 Bennoch Road
Alton, ME 04468

Dana Snowman memonetary111183@gmail.com 207-827-7344
120 Old Stagecoach Road
Alton, ME 04468

Penobscot Nation

Josh Paul Josh.Paul@penobscotnation.org 207-817-7340 cell 852-2797
12 Wabanaki Way
Indian Island, ME 04468

OLD TOWN

Charles Leithiser cleithiser21@outlook.com 207-992-3744
394 Fourth Street
Old Town, ME 04468

Ted Shina tedster4468@gmail.com 207-827-5655 cell 745-8186
769 West Old Town Road
Old Town, ME 04468

Peter Dufour jdufour844@gmail.com 207-827-2751 cell 992-3324
230 West Old Town Road
Old Town, ME 04468

Ralph Leonard homeportme@gmail.com 207-852-3280
96 Sargent Drive
Old Town, ME 04468

VACANT

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Brewer, ME 04412

Certified Mail Fee	\$4.40	0021
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<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postmark
Here

Postage	\$0.68	06/05/2024
Total	\$8.73	

Laurent & Barbara Beaugard
273 Washington Street
Brewer, ME 04412

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<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postmark
Here

Postage	\$0.68	06/05/2024
Total	\$8.73	

Karen Bertolino &
Thomas Dunn
579 West Old Town Road
Old Town, ME 04468

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Windham, CT 06280

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<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postmark
Here

Postage	\$0.68	06/05/2024
Total	\$8.73	

Raymond Perkins
55 Old Brooklyn Turnpike
Windham, CT 06280

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Old Town, ME 04468

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<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00	
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<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postmark
Here

Postage	\$0.68	06/05/2024
Total	\$8.73	

Robert Hall
631 West Old Town Road
Old Town, ME 04468

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Old Town, ME 04468

Certified Mail Fee	\$4.40	0021
Extra Services & Fees (check box, add fee as appropriate)	\$7.65	04
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postmark
Here

Postage	\$0.68	06/05/2024
Total	\$8.73	

City of Old Town
265 Main Street
Old Town, ME 04468

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Extra Services & Fees (check box, add fee as appropriate)	\$7.65	04
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postmark
Here

Postage	\$0.68	06/05/2024
Total	\$8.73	

Cassandra Goodspeed
519 West Old Town Road
Old Town, ME 04468

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7022 0410 0001 8626 9622
7022 0410 0001 8626 9646
7022 0410 0001 8626 9660

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\$	\$3.65	04
Extra Services & Fees (check box, add fee as appropriate)		
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<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postage \$0.68
Total Postage \$8.73

Greg & Evlynn Wallace
526 West Old Town Road
Old Town, ME 04468

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Bangor, ME 04401

Certified Mail Fee	\$4.40	0021
\$	\$3.65	04
Extra Services & Fees (check box, add fee as appropriate)		
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<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postage \$0.68
Total Postage \$8.73

University of Maine System
107 Maine Avenue
Bangor, ME 04401

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\$	\$3.65	04
Extra Services & Fees (check box, add fee as appropriate)		
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<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postage \$0.68
Total Postage \$8.73

Scott Bergquist
497 West Old Town Road
Old Town, ME 04468

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\$	\$3.65	04
Extra Services & Fees (check box, add fee as appropriate)		
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<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postage \$0.68
Total Postage \$8.73

Robyn Emmons
488 West Old Town Road
Old Town, ME 04468

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Stillwater, ME 04489

Certified Mail Fee	\$4.40	0021
\$	\$3.65	04
Extra Services & Fees (check box, add fee as appropriate)		
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<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postage \$0.68
Total Postage \$8.73

SSR LLC
PO Box 435
Stillwater, ME 04489-0435

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<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postage \$0.68
Total Postage \$8.73

Kevin & Sandilynn Daniel
439 West Old Town Road
Old Town, ME 04468

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Certified Mail Fee	\$4.40	0021
Extra Services & Fees (check box, add fee as appropriate)	\$3.65	04
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<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postage \$0.68

Total \$8.73

Sent To
Street
City, S

Angela Cyr
449 West Old Town Road
Old Town, ME 04468

Postmark Here
06/05/2024

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North Easton, MA 02356

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<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postage \$0.68

Total \$8.73

Sent To
Street
City,

Tasanee Lolonga
157 Massapaug Avenue
N. Easton, MA 02356

Postmark Here
06/05/2024

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Old Town, ME 04468

Certified Mail Fee	\$4.40	0021
Extra Services & Fees (check box, add fee as appropriate)	\$3.65	04
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<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postage \$0.68

Total \$8.73

Sent To
Street
City, State, ZIP+4

Harry & Tammy Feero
1118 Southgate Road
Argyle, ME 04468

Postmark Here
06/05/2024

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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Eddington, ME 04428

Certified Mail Fee	\$4.40	0021
Extra Services & Fees (check box, add fee as appropriate)	\$3.65	04
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<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postage \$0.68

Total \$8.73

Sent To
Street
City,

Herbert Robertson Jr
163 Clewleyville Road
Eddington, ME 04428

Postmark Here
06/05/2024

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Dallas, GA 30132

Certified Mail Fee	\$4.40	0021
Extra Services & Fees (check box, add fee as appropriate)	\$3.65	04
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postage \$0.68

Total \$8.73

Sent To
Street
City,

Karl Held
2351 Cochran Road
Dallas, GA 30132

Postmark Here
06/05/2024

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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Scarborough, ME 04070

Certified Mail Fee	\$4.40	0021
Extra Services & Fees (check box, add fee as appropriate)	\$3.65	04
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postage \$0.68

Total \$8.73

Sent To
Street
City,

Win & Nancy Chaiyabhat
PO Box 1046
Scarborough, ME 04070

Postmark Here
06/05/2024

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Telluride, CO 81435

Certified Mail Fee	\$4.40	0021
Extra Services & Fees (check box, add fee as appropriate)	\$7.35	04
<input type="checkbox"/> Return Receipt (hardcopy)	\$10.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$10.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postage \$0.68
Total \$8.73

Sent To
Jesse Pekkala
PO Box 471
Telluride, CO 81435

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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Milford, ME 04461

Certified Mail Fee	\$4.40	0021
Extra Services & Fees (check box, add fee as appropriate)	\$7.35	04
<input type="checkbox"/> Return Receipt (hardcopy)	\$10.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$10.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postage \$0.68
Total \$8.73

Sent To
Anthony & Cindy Madden
PO Box 499
Milford, ME 04461

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Holden, ME 04429

Certified Mail Fee	\$4.40	0021
Extra Services & Fees (check box, add fee as appropriate)	\$7.35	04
<input type="checkbox"/> Return Receipt (hardcopy)	\$10.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$10.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postage \$0.68
Total Post \$8.73

Sent To
Second Chance Holdings, LLC
74 Upper Dedham Road
Holden, ME 04429

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Medford, MA 02155

Certified Mail Fee	\$4.40	0021
Extra Services & Fees (check box, add fee as appropriate)	\$7.35	04
<input type="checkbox"/> Return Receipt (hardcopy)	\$10.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$10.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postage \$0.68
Total \$8.73

Sent To
Charles Tringale
268 Park Street
Medford, MA 02155

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Old Town, ME 04468

Certified Mail Fee	\$4.40	0021
Extra Services & Fees (check box, add fee as appropriate)	\$7.35	04
<input type="checkbox"/> Return Receipt (hardcopy)	\$10.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$10.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postage \$0.68
Total \$8.73

Sent To
Harry and Laura Sanborn
2845 Bennoch Road
Alton, ME 04468

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Old Town, ME 04468

Certified Mail Fee	\$4.40	0021
Extra Services & Fees (check box, add fee as appropriate)	\$7.35	04
<input type="checkbox"/> Return Receipt (hardcopy)	\$10.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$10.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	

Postage \$0.68
Total Post \$8.73

Sent To
ABS Transport LLC
2894 Bennoch Road
Alton, ME 04468

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Old Town, ME 04468

Certified Mail Fee	\$4.40
Extra Services & Fees (check box, add fee as appropriate)	\$7.65
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

0021 04

Postmark Here

Postage \$0.68
Total \$8.73

06/05/2024

Town of Alton
3352 Bennoch Road
Alton, ME 04468

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Old Town, ME 04468

Certified Mail Fee	\$4.40
Extra Services & Fees (check box, add fee as appropriate)	\$7.65
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

0021 04

Postmark Here

Postage \$0.68
Total \$8.73

06/05/2024

Kathryn Pelletier
198 Old Stagecoach Road
Alton, ME 04468

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Summerville, SC 29483

Certified Mail Fee	\$4.40
Extra Services & Fees (check box, add fee as appropriate)	\$7.65
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

0021 04

Postmark Here

Postage \$0.68
Total \$8.73

06/05/2024

Shana McLaughlin
181 Moondance Lane
Summerville, SC 29483

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Old Town, ME 04468

Certified Mail Fee	\$4.40
Extra Services & Fees (check box, add fee as appropriate)	\$7.65
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

0021 04

Postmark Here

Postage \$0.68
Total \$8.73

06/05/2024

Kenneth Gray
PO Box 357
Old Town, ME 04468

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Old Town, ME 04468

Certified Mail Fee	\$4.40
Extra Services & Fees (check box, add fee as appropriate)	\$7.65
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

0021 04

Postmark Here

Postage \$0.68
Total \$8.73

06/05/2024

Ruth Dalton
206 Old Stagecoach Road
Alton, ME 04468

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Orono, ME 04473

Certified Mail Fee	\$4.40
Extra Services & Fees (check box, add fee as appropriate)	\$7.65
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

0021 04

Postmark Here

Postage \$0.68
Total \$8.73

06/05/2024

Vincent and Mary St. Louis
10 Crosby Ct, Apt 10
Orono, ME 04473

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7022 0410 0001 8626 9882

7022 0410 0001 8626 9905

7022 0410 0001 8626 9929

7022 0410 0001 8626 9882

7022 0410 0001 8626 9905

7022 0410 0001 8626 9929

7022 0410 0001 8626 9936

7022 0410 0001 8626 9950

7022 0410 0001 8626 9974

7022 0410 0001 8626 9981

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Old Town, ME 04468

Certified Mail Fee	\$4.40
Extra Services & Fees (check box, add fee as appropriate)	\$3.65
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

0021 04
Postmark Here
06/05/2024

Postage \$0.68
Total P \$8.73

Sent To
Dennis & Mary Theriault
1047 Southgate Road
Argyle TWP, ME 04468

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Old Town, ME 04468

Certified Mail Fee	\$4.40
Extra Services & Fees (check box, add fee as appropriate)	\$3.65
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

0021 04
Postmark Here
06/05/2024

Postage \$0.68
Total P \$8.73

Sent To
Bill Mayo
City Manager
265 Main Street
Old Town, ME 04468

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Old Town, ME 04468

Certified Mail Fee	\$4.40
Extra Services & Fees (check box, add fee as appropriate)	\$3.65
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

0021 04
Postmark Here
06/05/2024

Postage \$0.68
Total P \$8.73

Sent To
Laura Sanborn
2845 Bennoch Road
Alton, Me 04468

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Old Town, ME 04468

Certified Mail Fee	\$4.40
Extra Services & Fees (check box, add fee as appropriate)	\$3.65
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

0021 04
Postmark Here
06/05/2024

Postage \$0.68
Total P \$8.73

Sent To
Samuel Diaz
156 Old Stagecoach Road
Alton, ME 04468

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Old Town, ME 04468

Certified Mail Fee	\$4.40
Extra Services & Fees (check box, add fee as appropriate)	\$3.65
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

0021 04
Postmark Here
06/05/2024

Postage \$0.68
Total P \$8.73

Sent To
David Russell
Code Enforcement Officer
265 Main Street
Old Town, ME 04468

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Old Town, ME 04468

Certified Mail Fee	\$4.40
Extra Services & Fees (check box, add fee as appropriate)	\$3.65
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

0021 04
Postmark Here
06/05/2024

Postage \$0.68
Total P \$8.73

Sent To
Dana Snowman
120 Old Stagecoach Road
Alton, ME 04468

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7022 0410 0001 8626 9998

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Old Town, ME 04468

Certified Mail Fee	\$4.40
Extra Services & Fees (check box, add fee as appropriate)	\$3.65
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$0.68

Total Price \$8.73

Sent To

Street

City, State

Josh Paul
12 Wabanaki Way
Indian Island, ME 04468

06/05/2024

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7022 0410 0001 8626 6515

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Old Town, ME 04468

Certified Mail Fee	\$4.40
Extra Services & Fees (check box, add fee as appropriate)	\$3.65
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$0.68

Total Price \$8.73

Sent To

Street

City, State

Ted Shina
769 West Old Town Road
Old Town, ME 04468

06/05/2024

Postmark Here

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7022 0410 0001 8627 0000

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Old Town, ME 04468

Certified Mail Fee	\$4.40
Extra Services & Fees (check box, add fee as appropriate)	\$3.65
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$0.68

Total Price \$8.73

Sent To

Street

City, State

Charles Leithiser
394 Fourth Street
Old Town, ME 04468

06/05/2024

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Old Town, ME 04468

Certified Mail Fee	\$4.40
Extra Services & Fees (check box, add fee as appropriate)	\$7.65
<input type="checkbox"/> Return Receipt (hardcopy)	\$10.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$0.68

Total P \$8.73

Sent To

Street

City, State

Theodore Shina

Planning Board Chair

265 Main Street

Old Town, ME 04468

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Old Town, ME 04468

Certified Mail Fee	\$4.40
Extra Services & Fees (check box, add fee as appropriate)	\$7.65
<input type="checkbox"/> Return Receipt (hardcopy)	\$10.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$0.68

Total P \$8.73

Sent To

Street

City, State

Penobscot Nation

12 Wabanaki Way

Indian Island, ME 04468

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Old Town, ME 04468

Certified Mail Fee	\$4.40
Extra Services & Fees (check box, add fee as appropriate)	\$7.65
<input type="checkbox"/> Return Receipt (hardcopy)	\$10.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$0.68

Total P \$8.73

Sent To

Street

City, State

Town of Alton

Planning Board Chair

3352 Bennoch Road

Alton, ME 04468

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Old Town, ME 04468

Certified Mail Fee	\$4.40
Extra Services & Fees (check box, add fee as appropriate)	\$7.65
<input type="checkbox"/> Return Receipt (hardcopy)	\$10.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$0.68

Total P \$8.73

Sent To

Street and /

City, State

Town of Alton

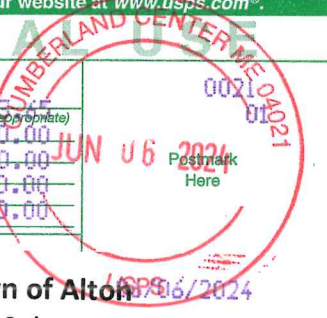
First Selectman

3352 Bennoch Road

Alton, ME 04468

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Old Town, ME 04468

Certified Mail Fee	\$4.40
Extra Services & Fees (check box, add fee as appropriate)	\$7.65
<input type="checkbox"/> Return Receipt (hardcopy)	\$10.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$0.68

Total P \$8.73

Sent To

Street

City, State

Ralph Leonard

96 Sargent Drive

Old Town, ME 04468

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Old Town, ME 04468

Certified Mail Fee	\$4.40
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<input type="checkbox"/> Return Receipt (hardcopy)	\$10.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$0.68

Total P \$8.73

Sent To

Street

City, State

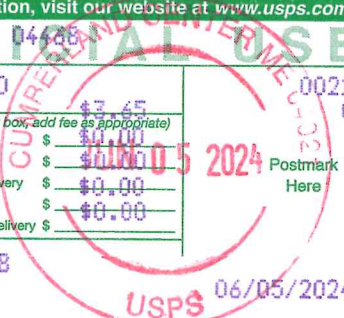
Peter Dufour

230 West Old Town Road

Old Town, ME 04468

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9608 9606 8626 0001 0410 7022

9585 9299 8626 0001 0410 7022

6522 6236 8626 0001 0410 7022