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July 29, 2016

James W. Parker, Chair,
Board of Environmental Protection
c/o Ruth Ann Burke
17 State House Station
Augusta, ME 04333-0017

Re: Juniper Ridge Landfill Expansion
DEP # S-020700-WD-BI-N and #L-024251-TG-C-N

Dear Chair Parker:

On behalf of the City of Old Town, I am enclosing 15 copies of the Pre-filed Direct Testimony of the City of Old Town, which consists of: the Pre-filed Testimony of Old Town City Manager William J. Mayo, and the Pre-filed Testimony of expert witness Denis St. Peter, P.E., President of CES, Inc., together with Mr. St. Peter's May 13, 2016 Report and (Old Town 2) and his CV (Old Town 1).

Thank you for your attention to this matter.

Sincerely,

James N. Katsiaficas

enclosures

cc: Service List

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BOARD OF ENVIRONMENTAL PROTECTION

IN THE MATTER OF

STATE OF MAINE	) APPLICATION FOR
BUREAU OF GENERAL SERVICES	) MAINE HAZARDOUS WASTE, SEPTAGE
JUNIPER RIDGE LANDFILL EXPANSION	) AND SOLID WASTE MANAGEMENT ACT, and
City of Old Town, Town of Alton	) NATURAL RESOURCES PROTECTION ACT
Penobscot County, Maine	) PERMITS and
#S-020700-WD-BI-N	) WATER QUALITY CERTIFICATION
#L-024251-TG-C-N	)

PRE-FILED TESTIMONY OF WILLIAM J. MAYO, CITY MANAGER, CITY OF OLD TOWN, MAINE

INTRODUCTION.

My name is William J. Mayo. I am the duly appointed City Manager for the City of Old Town. Among my duties as City Manager is monitoring issues regarding: the operation of the Juniper Ridge Landfill ("JRL"); operator NEWSME Landfill Operations, LLC's ("NEWSME") compliance with municipal ordinances and reporting requirements; and JRL's use of municipal infrastructure, and advising the Old Town City Council on those issues.

CITY OF OLD TOWN CONCERNS REGARDING THE APPLICATION.

The City of Old Town, Maine is the Host Community for the Juniper Ridge Landfill ("JRL"). As the Host Community for JRL, the City primarily is concerned with the health, safety and welfare of its residents and any impacts -- positive or negative -- that JRL and its proposed expansion (the "Expansion") have on its residents. Therefore, the City offers the following comments in the matter of the "Application for Maine Hazardous Waste, Septage and Solid Waste Management Act, and Natural Resources Protection Act Permits and Water Quality Certification" (the "Application") filed by NEWSME and the Maine Bureau of General Services ("BGS," together, the "Applicants").

The Application proposes the addition of a total of 9.35 million cubic yards of solid waste disposal capacity to JRL, which will extend its useful life until approximately 2030. My comments concern the public health, safety and welfare issues that the Expansion and the continued operation of JRL raise and how the Applicants have addressed those issues. The issues raised by the City during the course of this proceeding include:

- Use of and payment for Construction and Demolition Debris (CDD) Fines;
- Use of and payment for Soft Layer Waste;
- Road and traffic impacts; and
- General compliance with solid waste statutes and regulations.

As of the date of filing of this pre-filed testimony, the Applicants have satisfactorily addressed the City's issues and on one issue, the City will take additional steps to help ensure that the Applicants will operate without harm to the public health, safety and welfare.

1. **Use of and payment for Construction and Demolition Debris (CDD) Fines.** Approximately 20% of the projected waste volume for the Expansion consists of CDD fines -- the residue from the processing of CDD waste at the KTI facility in Lewiston now owned by ReEnergy. The City 's Solid Waste Facilities Review Committee and the City Council had raised the concern that Casella Waste Systems. Inc. ("Casella") uses CDD fines as alternate daily cover ("ADC") in the operation of JRL as an alternative to soil that it otherwise must purchase, and yet does not pay the City for disposal of CDD fines under the Host Community Compensation and Facility Oversight Agreement (the "Host Community Agreement").

We have resolved this concern with the Applicants. At a meeting with Casella, we explored this situation. After discussion and review, the City and Casella concluded that under State law and the Host Community Agreement, the use of CDD fines as ADC is permitted and encouraged. State law requires a solid waste processing facility that generates residue for disposal to recycle or process into fuel at least 50% of that waste, and recycling includes use as ADC. Section 3.1(a) of the Host Community Agreement exempts from the per ton fees charged for solid waste disposed of at JRL "other materials that Casella accepts for beneficial use and for a tipping fee (exclusive of transportation costs) of $5.00 per ton or less." Casella's use of CDD fines is for a beneficial use, does not require a written determination of beneficial use from DEP, and Casella represents that it receives $4 per ton for this material. Casella also demonstrated that it uses less CDD fine-ADC (20%) than comparable landfills (at 24%) so that it is not taking undue advantage of free disposal of this material at JRL.

2. **Soft Layer Waste.** The City 's Solid Waste Facilities Review Committee and the City Council also had raised the concern that Casella was not paying the City under the Host Community Agreement for municipal solid waste ("MSW") disposed of at JRL as part of the "soft layer." NEWSME and BGS sought and obtained from DEP a license amendment to permit the use of municipal solid waste (MSW) as a "soft layer" on the bottom of new landfill cells at JRL to protect landfill liners. A concern for the City was whether Casella has been paying the City under the Host Community Agreement for disposal of that soft layer MSW. Casella followed up with me, and provided copies of landfill records and invoices that demonstrate Casella has been paying the City for disposal of this soft layer MSW.

3. **Transportation/Bennoch Road.** The City has concerns regarding the impact of JRL-related truck traffic following the expansion of JRL on the condition of Bennoch Road, State Route 16. These concerns go to the ability of roads in the vicinity to safely and conveniently handle traffic attributable to the solid waste facility as required by Chap. 400 D. 1. and 2 of the Department's Rules.

Although Casella strongly encourages the use of Route 95 to access JRL, there is a tendency for truck drivers to avoid the weigh station on that road when it is open by using Bennoch Road between Exits 193 and 199. Bennoch Road is a State highway – Route 16 – and the southerly

portion of this Road is within the City's urban compact area, and so is maintained by the City; the northern portion is maintained by the Maine Department of Environmental Protection ("MDOT"). The City's concern is that tractor-trailer traffic, particularly swinging empty trailers on vehicles leaving JRL, is causing deterioration of the Bennoch Road. The City is aware that other trucks use Bennoch Road, but dump truck use does not appear to have the same degree of road impact as the landfill-related tractor-trailer use. Although MDOT installed a 1" overlay over part of the road, the overlay is insufficient to repair the State portion, and while the City receives an annual host community payment of $50,000 for several purposes (including roads, emergency response, staff training for monitoring, consultant monitoring, and an offset for City revenue loss due to effects on property values), neither the City's annual host community payment nor the State road maintenance reimbursement is sufficient to finance repairs to the City's portion.

The City asked BGS to discuss with MDOT actions that it can take on the northern part of Bennoch Road to improve it as part of this Expansion. BGS has done so, and tells us that MDOT's work plan for 2016 includes in Alton and Old Town "Preservation Paving" work in the amount of $1,458,000 on Route 16 in the amount of $1,197,500 beginning 3.20 miles south of the Alton - Lagrange town line and extending southeasterly 5.89 miles; and for 2017/18 includes in Old Town "Highway Rehabilitation" work on Route 16 beginning at Interstate 95 NB off ramp and extending southerly 4.63 miles. This does not provide additional monies for the City to use in its repair of the southern portion, but does improve the northern half.

An additional City concern is that once MDOT repairs the northern half of Bennoch Road and the City addresses the southern half, something be done to discourage tractor-trailer use on the road so that the current state of road disrepair does not recur. The City understands that Casella is doing what it reasonably can to discourage such use, and appreciates Casella's efforts. BGS has approached MDOT about this concern, and MDOT has agreed to install two signs in the area of the JRL exit road directing exiting trucks to use Interstate 95 only.

Thus, the City, Applicants, Casella and MDOT have reached agreement as to how to address the truck traffic impacts of the proposed JRL expansion and the City understands that MDOT will implement that agreement.

4. Declaration of Covenants and Restrictions. With their application, NEWSME and BGS are offered a Declaration of Covenants and Restrictions (the "Declaration") as part of the wetlands compensation package. This Declaration places protections on 266 acres of the JRL parcel (the "Protected Property") which effectively is the same as a conservation easement, intended to keep the Protected Property in its natural state. Under that Declaration, the City would be the "Third Party," with third-party rights of administration and enforcement. The City had raised concerns about the potential cost of its administrative and enforcement responsibilities under the Declaration. Subsequently, Casella and the City negotiated an Agreement regarding Allocation of Costs for Implementation of Declaration of Covenants and Restrictions (the "Allocation of Costs Agreement") to address those concerns. On July 28 2016, the City Council approved both the Declaration and the Allocation of Costs Agreement.

5. **Regulatory Compliance Issues.** The City has hired the firm of CES, Inc. to review the Application for compliance with State and federal regulations, particularly with regard to the Natural Resources Protection Act, 38 MRS § 480-A thru § 480-JJ; Maine Hazardous Waste, Septage, and Solid Waste Management Act, 38 M.R.S. §§ 1301 - 1310-AA, as applicable; 38 M.R.S. §2101; and DEP Rules Chapters 300, 305, 310, 315, 335.400, 401 and 405 (traffic, odor, noise, air quality, vectors, litter, leachate management, stormwater and groundwater), in order to protect the health, safety and welfare of the City's residents. As to these regulatory compliance concerns, the City is presenting the testimony of Denis St. Peter, P.E., President of CES, Inc. and written materials prepared by him and issued by CES Inc. to the Board as part of this proceeding.

Mr. St. Peter's reports contain two basic recommendations regarding hydrogen sulfide generated by MSW and CDD fines at JRL.

One recommendation is that NEWSME/Casella institute the use of acute exposure action level for concentrations exceeding the 15 and 30 ppb levels, with the Old Town Code Enforcement Officer to be contacted if hydrogen sulfide concentrations exceed the 30 ppb level. The Applicants have agreed to incorporate these action levels and the notification protocol into the Operations Manual Appendix K Odor Control Plan for JRL.

The other recommendation is that because the City remains concerned with the effects of possible chronic exposure to hydrogen sulfide (but the Maine Department of Environmental Protection ("DEP") has yet to adopt a chronic exposure standard), the City may implement its own evaluation protocol on an annual basis. Therefore, the City will use a portion of the Host Community funding supplied to it each year to hire a consultant to evaluate the NEWSME/Casella hydrogen sulfide data to evaluate a chronic exposure (one-year duration) scenario. If analysis determines this data demonstrates the presence of hydrogen sulfide levels that exceed typical health-based guidance levels and so pose a potential health or safety risk to members of the public, including abutters, the City will report those findings to NEWSME/Casella and to DEP.

Conclusion. The City does not object to and does not oppose the Application. Applicants have listened to the City and its concerns and issues, and have satisfactorily addressed those concerns and issues. Applicant NEWSME/Casella has been responsive when issues and questions have arisen regarding landfill operation, and has been a responsible community business contributing to civic organizations and events in Old Town. Applicant BGS has assisted in resolution of the City's road and traffic concerns.

Dated: 7/26/16

By: William J. Mayo
William J. Mayo, City Manager
City of Old Town

STATE OF MAINE
PENOBSCOT, ss.

7-26, 2016

Personally appeared the above-named William J. Mayo and made oath as to the truth of the foregoing statements.

Before me,

Notary Public/~~Attorney at Law~~

Irene E. Pehrson
Notary Public - Maine
My Commission Expires
January 7, 2020

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BOARD OF ENVIRONMENTAL PROTECTION

IN THE MATTER OF

STATE OF MAINE	) APPLICATION FOR
BUREAU OF GENERAL SERVICES	) MAINE HAZARDOUS WASTE, SEPTAGE
JUNIPER RIDGE LANDFILL EXPANSION	) AND SOLID WASTE MANAGEMENT ACT, and
City of Old Town, Town of Alton	) NATURAL RESOURCES PROTECTION ACT
Penobscot County, Maine	) PERMITS and
#S-020700-WD-BI-N	) WATER QUALITY CERTIFICATION
#L-024251-TG-C-N	)

PRE-FILED TESTIMONY OF DENIS ST. PETER, P.E., PRESIDENT, CES, INC.

INTRODUCTION.

My name is Denis St Peter. I am a licensed Professional Engineer in the state of Maine with 26 years of experience in solid waste projects. I am the President of CES, Inc. ("CES"). CES was retained by the City of Old Town ("City") to review the Juniper Ridge Landfill ("JRL") proposed expansion (the "Expansion") "Application for Maine Hazardous Waste, Septage and Solid Waste Management Act, and Natural Resources Protection Act Permits and Water Quality Certification" (the "Application"). The Application was filed by NEWSME and the Maine Bureau of General Services ("BGS," together, the "Applicants"). CES was asked to advise the City on the issues related to compliance with the technical standards outlined in the applicable statutes and regulations.

CITY OF OLD TOWN CONCERNS REGARDING THE APPLICATION.

The City of Old Town, Maine is the Host Community for the JRL. As the Host Community for JRL, the City is primarily concerned with the health, safety and welfare of its residents and any impacts -- positive or negative -- that the Expansion will have on them. Therefore, on behalf of the City, CES offers the following comments in the matter of the Application filed by the Applicants.

The Application proposes the addition of a total of 9.35 million cubic yards of solid waste disposal capacity to JRL, which will extend its useful life until approximately 2030. The Application was reviewed by a team of scientists, geologists, and engineers from CES. Our comments were summarized in our reports. As of the date of filing of this pre-filed testimony, we believe the Applicants have satisfactorily addressed the City's concerns and on one issue, we recommended that the City take additional steps to help ensure that the Applicants operate without harm to public health, safety, and welfare.

The City has hired the firm of CES to review the Application for compliance with State statutes and regulations, particularly with regard to the Natural Resources Protection Act, 38 MRS § 480-A thru § 480-JJ; Maine Hazardous Waste, Septage, and Solid Waste Management Act, 38 M.R.S. §§ 1301 - 1310-AA, as applicable; 38 M.R.S. §2101; and DEP Rules Chapters 300, 305, 310, 315, 335.400, 401 and 405 (traffic, odor, noise, air quality, vectors, litter, leachate management, stormwater, and groundwater), in order to protect the health, safety, and welfare of the City's residents. In general, CES finds the Applicants' Application and responses adequately meet or exceed the referenced State statute and regulations. Of particular note, the proposed Expansion design includes a leak detection and secondary liner system. This design will greatly enhance its performance in containing leachate and minimizing releases to the environment.

Our final two recommendations are related to the off-site monitoring, reporting, and evaluation of the hydrogen sulfide gas concentrations generated by the wastes disposed of at JRL. Due to the type of waste (i.e., CDD fines), the concentration of hydrogen sulfide within the landfill gas (LFG) is elevated. Hydrogen sulfide can be harmful to human health above certain concentrations as well as emit an offensive odor. The Applicants' proposed LFG collection and treatment system, as well as the monitoring equipment, appear to be robust and adequate to prevent human health hazards and nuisance odors as long as implemented, operated, and reported as proposed.

Our first recommendation is that the Applicants institute the use of action levels to coincide with off-site acute exposure and odor prevention. Reporting requirements would be instituted for concentrations exceeding 15 and 30 parts per billion (ppb) and the Old Town Code Enforcement Officer would be contacted if hydrogen sulfide concentrations exceed the 30 ppb level. The Applicants have agreed to incorporate these action levels and notification protocol into the Operations Manual Appendix K Odor Control Plan for JRL.

The other recommendation is based on concerns with the effects of possible chronic exposure to hydrogen sulfide. We have recommended to the City that they implement their own evaluation protocol, on an annual basis, by hiring a qualified consultant to evaluate the NEWSME/Casella hydrogen sulfide data for a chronic exposure (one-year duration) scenario. The evaluation would include (1) reviewing the hydrogen sulfide monitoring data; (2) performing a statistical analysis of the data; (3) establishing proper procedures for analyses of non-detect values; (4) performing a comparison to relevant acute and chronic exposure guidelines; and (5) providing conclusions and recommendations based on the evaluation. If the evaluation determines this data demonstrates the presence of hydrogen sulfide levels that exceed typical health-based guidance levels and so pose a potential health or safety risk to members of the public, including abutters, the City will report those findings to NEWSME/Casella and DEP.

Conclusion. In general, CES finds the Applicants' Application and responses adequately meet or exceed the referenced State statute and regulations. Of particular note, the proposed Expansion design includes a leak detection and secondary liner system. This design will greatly enhance its performance in containing leachate and minimizing releases to the environment. The Applicants' proposed LFG collection, treatment, and monitoring system appear to be robust and adequate to prevent human health hazards and nuisance odors as long as implemented, operated, and reported as proposed. However, due to the type of waste (i.e., CDD fines), the concentration

of hydrogen sulfide within the landfill gas (LFG) is elevated and on-going reporting and evaluations must be conducted by the Applicants, the City, and Maine DEP.

Thank you for your consideration.

Dated: 7/28/2016

By: _____
Denis St. Peter, P.E.
President, CES, Inc.

STATE OF MAINE
PENOBSCOT, ss.

7/28, 2016

Personally appeared the above-named Denis St. Peter and made oath as to the truth of the foregoing statements.

GAYLE D. RUSSELL NOTARY PUBLIC MY COMMISSION EXPIRES 2/4/2020 STATE OF MAINE

Before me,

_____
Notary Public/Attorney-at-Law

DENIS ST. PETER, PE

President/CEO

Denis St. Peter is the President/CEO of CES, Inc. and divides his time between management of the company and project related duties. Denis has been employed at CES for 16 years and acts as Project Manager and Principal-in-Charge of environmental projects. As a principal, Denis provides technical supervision for environmental projects and ensures appropriate resources are available to meet project goals and objectives. Denis earned a B.S. in Civil Engineering from the University of Maine and has over 26 years of professional experience. Denis has broad environmental engineering experience with State and Federal environmental compliance (CERCLA, CAA, CWA, EPCRA, NEPA, RCRA, TSCA); storm water and waste water management, oil and hazardous substance pollution prevention and contingency planning, air emissions, environmental site assessments, remediation, and solid and hazardous waste management. With the recent growth of CES, Denis has been able to focus his expertise on environmental assessments, feasibility studies, remedial design and remediation of contaminated property as well as assist clients with solid and hazardous waste management.

CORE EXPERTISE

Solid and Hazardous Waste Management

Environmental Due Diligence

Remediation of Contaminated Sites

Professional History

2009 – Present | President | CES, Inc.
2008 – 2009 | Executive Vice President | CES, Inc.
2006 – Present | Principal | CES, Inc.
2000 – 2006 | Project Manager | CES, Inc.
1990 – 2000 | Project Engineer | US Air Force at a Maine Air Force Base

Education

1990 | B.S. Civil Engineering | University of Maine

Training

Remediation of Chlorinated and Recalcitrant Chemicals
Natural Attenuation of Chlorinated Organics in Groundwater
Intrinsic Remediation of Chlorinated Solvents
Bioremediation in Saturated Subsurface
Remedial Action Cost Engineering and Requirements System
Environmental Management, AFIT
Risk and Health Assessment and Communication, ASTDR
Environmental Law in Maine, Pierce Atwood
Regulatory Requirements - ME Hazardous Waste Generators, Nelson & Gramn
Maine Hazardous Waste Management Regulations for Universal Wastes, MDEP
EPA/MDEP Storm Water Requirements for Industrial Activities, MDEP
A/E Principal Bootcamp, PSMJ Resources, Inc.
Legal Issues for ME Design Professionals, Half Moon, LLC

Registrations
Professional Engineer - State of Maine (#9173)

Affiliations
National Society of Professional Engineers, 300178084

Certifications
Standard First Aid and CPR
HAZWOPER 40 Hour

Project Experience

Solid and Hazardous Waste Management
CES is currently retained by a number of municipalities, corporations, and associations to assist with solid and hazardous waste issues. Denis provides facility specific engineering services to each of these entities as needed. The work performed by Denis for these entities includes: conducting annual compliance inspections; preparing engineering plans for waste cell development for the landfills; calculating landfill volume utilized to date and estimating remaining landfill life; updating landfill closure and post closure cost estimates; and assisting with storage, management and handling of Solid Waste, as well as Hazardous and Universal Waste. Other work performed by Denis included permitting assistance, as required by various regulations, and updating facility specific O&M Manuals. Recently, Denis has assisted a number of biomass facilities regulated under 06 096 CMR Chapter 418 with permitting, engineering, fuel quality analysis, fuel handling, ash characterization, and other aspects associated with proper handling and management of fuel used and wastes generated by these facilities in accordance with applicable regulations.

Landfill Operations Consultant Services

Waste Placement and Cell Development
Denis provides expertise on waste cell development engineering plans for 13 solid waste landfill facilities as part of their solid waste annual report required to be submitted to MDEP. These plans take into account proper waste cell sizing based on annual utilization rates, surface water runoff, side slope construction, access road development, compaction, timing and placement of cover material, seeding and mulching, construction of diversion berms, and other landfill specific items that may be necessary. Denis has been involved with these plans for various solid waste clients for the past 14 years. Each year the Cell Development Plans are submitted and approved by MDEP with the facilities Annual Report.

Leachate Management and Placement of Intermediate Cover
Denis is involved in providing expertise on leachate management and intermediate cover approaches at 13 landfill facilities. During the past 14 years, Denis has been the Project Manager and responsible engineer for the leachate collection system improvements at the Presque Isle Landfill. The improvements involved two leachate storage lagoons consisting of 80 mill HDPE liner, a leak detection system, and a pump station. This past year, a redundant leachate collection system was designed and constructed on the east and north sides under the Phased Final Cover System.

Annual Reports and Annual Landfill Compliance Evaluations
Denis is involved in the Annual Landfill Evaluation Compliance Inspections for 13 landfills and transfer stations within the State of Maine and provides input on these facilities' Annual Reports for submission to MDEP. The annual reports and Compliance Inspections are conducted in accordance with the Solid Waste Management Regulations.

Operational Issues Identified by MDEP or Facility Owner
Denis works closely with landfill personnel to address a number of operational issues. One of the more significant issues was related to the lack of a local landfill operator training course in the State of Maine. As part of the Solid Waste Management Regulations, landfill operators are required to attend annual

refresher training and each year many solid waste facilities did not report that their operators were receiving the necessary training. As a result a training course that addressed the appropriate requirements for CDD and MSW landfill operators was prepared. Denis participated in developing the course and worked with MDEP to design a course that would not only meet the requirements of the Solid Waste Regulations, but would be informative and interesting to landfill operators. The course was approved by MDEP and the first course was conducted during the summer of 2005. CES continues to provide the annual landfill refresher training course.

Landfill Gas and Stability of Working Slopes
As a component of a Phased Final Cover System for the Presque Isle Landfill, a LFG collection and venting system was designed through a collaborative effort between CES and SCS Engineers. The system was designed to be expandable to a potential active collection system. In consideration of the Solid Waste Regulations and Regional Greenhouse Gas Initiative (RGGI), an active collection and treatment system is currently being evaluated

CES performed a LFG investigation for the Tri-Community Landfill in 2005/2006 to determine the magnitude and extent of LFG migration in the subsurface. CES used the company owned Geoprobe® to install temporary and permanent LFG probes. The investigation approach allowed the fieldwork to take only one week.

Another component of the Phased Final Cover System was an evaluation of the slope stability. CES performed slope stability calculations, and direct sheer testing to support the design.

Denis recently worked with the City of Presque Isle and MDEP to address concerns that MDEP's Air Bureau had related to the potential need that the City's MSW landfill may need to obtain an Air Emission License. Denis conducted an evaluation of non-methane organic carbon emissions from the landfill and determined that NMOC emissions released from the landfill were below the threshold required for an air emission license. MDEP agreed with the evaluation and as a result an air emission license was not required for the City of Presque Isle's MSW landfill.

Updating Operations and Maintenance Manuals
Denis provides input on several updates to O&M Manuals to address facility specific changes. Updates to each of the O&M Manuals are prepared, submitted to the client for review, and then to MDEP for approval.

Engineering Consultant Services

Design of Current Landfills and Appurtenant Structures
Denis provides engineering services to a number of landfill clients related to the landfill design in accordance with the Solid Waste Regulations.

MDEP Licensing Services
Denis has prepared a wide array of landfill license applications for submittal to MDEP. Denis is intimately familiar with the Solid Waste Regulations and has worked closely with numerous clients and MDEP staff to accurately prepare the necessary licensing documents. Denis has experience in the preparation of full facility license, reduced procedure, permit by rule, amendments, and minor revision documents. Denis has also worked with clients and MDEP staff to prepare landfill applications, transfer station license applications, processing facility license applications, beneficial use license applications, and agronomic utilization license applications.

Water Quality Monitoring and Corrective Action
Denis has a working knowledge of 06 096 CMR Chapter 405 of the Solid Waste Regulations as they relate to Water Quality Monitoring Programs at solid waste facilities and has prepared and revised several Environmental Monitoring Plans (EMPs). Denis is also well versed in analyzing water quality data and has prepared evaluations for clients for submittal to MDEP with water quality monitoring reports. These

evaluations have also formed the basis for corrective action plans for which Denis has prepared and submitted to MDEP.

The designs for the Presque Isle Landfill have included leachate collection, storage and transmission systems, Phased Final Cover System; storm water detention/sedimentation basin, and an access road to the upper lift. A proposed expansion design is currently underway which includes a composite liner, leachate collection and transmission, LFG collection and treatment, and storm water management.

Landfill Design & CQA

Denis has managed and served as the responsible engineer for several solid waste design projects during the past eight years at CES, Inc. Design projects have included soil and geosynthetic cover/liner systems, leachate collection, transmission and storage systems, landfill gas (LFG) management systems, storm water management systems, corrective action plans, and other related solid waste appurtenances. Clients have included the City of Presque Isle, City of Brewer, Town of Greenville, and Boralex. Prior to employment at CES, Inc., Denis managed the closure designs of three municipal solid/industrial waste landfills at Loring AFB. Due to their status as National Priority List (NPL) sites, the closure need to address both MDEP and EPA design standards. Denis' most recent design project was for the City of Presque Isle Solid Waste facility. This design included a four acre phased final cover system consisting of a LFG collection layer, barrier soil layer, 60 mil geomembrane, bi-planer geocomposite, and cover soils. The design also included storm water terraces and rip rap down spouts; redundant leachate collection system and tie-ins to the existing leachate system; and LFG venting system that will allow for an active collection and treatment system if necessary. Denis is serving as the Construction Quality Assurance (CQA) Project Manager for this construction project. The designs for the Presque Isle Landfill have also included leachate collection, storage and transmission system upgrades; new storm water detention/sedimentation basin; and an access road on the West slope to upper lift of the landfill. A proposed expansion design is currently underway which includes a composite liner system with leak detection; leachate collection and transmission system; LFG collection and treatment; and storm water management.

Compliance and Licensing Issues

Denis currently manages compliance consultation and licensing modifications for more than a dozen landfills within the State of Maine. Denis provides ongoing compliance advice to clients and is experienced in working with MDEP Solid Waste facility personnel to address ongoing issues that arise. Denis has experience in the preparation of new facility license, reduced procedure, permit by rule, amendments, and minor revision documents. Denis has also managed public benefit determination applications, transfer station license applications, processing facility license applications, beneficial use license applications, and agronomic utilization license applications. Denis is the project manager and responsible engineer for the City of Presque Isle license modification and public benefit determination to expand the facility.

CES INC Engineers • Environmental Scientists • Surveyors

May 13, 2016

James N. Katsiaficas, Attorney
PERKINS |THOMPSON
One Canal Plaza
PO Box 426
Portland, ME 04112-0426
207.400.8108 Direct
jkatsiaficas@perkinsthompson.com

Re: Juniper Ridge Landfill (JRL) Expansion Application Review

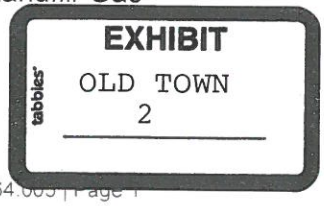
Dear Mr. Katsiaficas:

As requested, CES, Inc. (CES) has completed a review of the Juniper Ridge Landfill (JRL) Expansion Application (Application) submitted by the State of Maine Bureau of General Services (BGS), as the owner, and NEWSME Landfill Operations, LLC (NEWSME), as the Operator. The Application, dated July 2015, was prepared by Sevee & Maher Engineers, Inc. of Cumberland, Maine and is comprised of five volumes.

Volume I contains the completed Application for Landfill Expansion, a summary of the proposed project, Chapter 400 General Licensing Criteria, Chapter 401 General Licensing Requirements, and Chapter 2 Rules Concerning the Processing of Applications.

Volume II contains the Site Assessment Report which includes discussions of the site setting, site investigations, site geologic characteristics, site hydrogeologic characteristics, water quality and future monitoring, and the travel time analysis.

Volume III contains the Design Report which includes the design standards, Engineering Report, Contaminant Transport Analysis, plan and profile view drawings, Quality Assurance Plan, Construction Contract Bid Documents, Water Quality Report and Proposed Monitoring Program, Operations Manual, Landfill Construction Procedures, Construction Specifications, Construction Quality Assurance Manual, HELP Model Data, design calculations, geotechnical data, leachate quality and waste characterization, waste compatibility test results, Landfill Gas Design Report, and Cell 11 Design Drawings.



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Volume IV contains the facility's Operations Manual which includes the development overview, Cell Development Plan, operating procedures, inspection and maintenance procedures, record keeping and training requirements, Complaint Management and Response Plan, Stormwater Management and Erosion Control Plans, Waste Characterization and Acceptance Plan, Environmental Monitoring Plan, Gas Monitoring Operations and Maintenance Manual, Odor Complaint Management and Response Plan, Waste Inspection Plan, Geotechnical Monitoring Plan, and Liner Action Plan.

Volume V contains the Application for Natural Resource Protection Act Permit and Section 404-Clean Water Act.

The proposed Expansion is located to the north of, and is adjacent to, the existing licensed landfill and has a 54 acre footprint. The Expansion is proposed to be developed in six cells with a final elevation of 390 feet above mean sea level, matching the existing landfill's final waste grades, and 3:1 side slopes. This footprint provides an additional capacity of 9.35 million cubic yards which represents 10-12 years of waste acceptance based upon an estimated fill rate of 700,000 tons per year. The proposed landfill design includes both primary and secondary liner systems, leak detection, leachate and gas collection, and an underdrain system beneath 12.7 acres of the proposed area.

CES has reviewed the Application against the requirements of the State of Maine Solid Waste Management Regulations, for concurrence with technical assumptions and conclusions, and for constructability. During our review of the Application, the Maine Department of Environment Protection (MDEP) provided their comments on the Application to the Applicant, in a letter dated January 22, 2016. Following that effort, the Applicant submitted their Response to Comments, on March 7, 2016. CES has reviewed these comments and responses as part of our Application assessment.

In general, the Application was complete and thorough. Each section of the applicable regulations was addressed and we have not identified any issues that would prohibit the construction of the Expansion as it is proposed. Prior to our meeting with the Applicant on March 24th, we had identified four areas that required additional discussion with NEWSME and the State in an effort to better understand the intent of their statements or proposed design prior to finalizing our review comments.

The first of these issues dealt with the potential for groundwater to flow within the deep bedrock toward the homes on Route 43. While the Applicant has met all siting criteria, SME goes further than required and concludes that, *"there is not a direct hydraulic connection under existing conditions between the shallow and deep groundwaters beneath the Expansion and the water supply wells along Route 43"*. However, there does not appear to be any data presented to support the presence of a bedrock groundwater divide to the southwest between the site and

the residential wells. It seems more reasonable that the regional groundwater flow in bedrock in this direction is controlled by the main stem of Pushaw Stream to the southwest (not the small Unnamed Tributary). This is, in fact, the boundary condition used by SME in its groundwater flow model. While we agree that the risk to these wells is low due to distance, and the redundancies designed into the proposed landfill liner system, there is still potential bedrock groundwater flow from the site to the residential wells along Route 43 southwest of the site. Based on our review of the Application, the regulatory standards appear to be met without this stated conclusion; therefore, our concerns about this issue relate more to the potential need to monitor these residential wells in the future should there ever be a catastrophic failure of the designed systems. We do not believe that the conclusion made by SME poses a licensing concern but do caution that it should not be relied upon in the future as a basis to eliminate the need for monitoring if there is ever a significant release from the landfill without additional data to support it.

The second of these issues dealt with the proposed liner design and the ability to respond to leaks identified through the primary liner system. The proposed liner system contains a composite primary liner system containing an 80 mil high density polyethylene (HDPE) geomembrane, a geosynthetic clay liner (GCL), and 12 inches of clay above the leak detection system. While we agree that this design is protective and meets the requirements of the Solid Waste Management Regulations, we offer that, due to the inclusion of the 12-inch clay layer above the leak detection system, any damage to the membrane layer of the liner system will not likely be identified immediately. Due to the low permeable nature of the clay, any leakage through the membrane and the GCL will be slowed by the clay. During this time, waste placement will be ongoing and, therefore, it is probable that a significant amount of waste will be disposed of before the leakage is identified. At that time, it will be more difficult to make any repairs. Since the proposed design does meet the rules and has its own merit due to the level of protection that is offered by a composite system, it was worth a discussion with NEWSME about the design and their plan to respond to identified leaks prior to the completion of our review. During the meeting on March 24th, NEWSME committed to repairing any issues that are identified through flows in the leak detection system.

The third issue related to the Traffic Movement portion of the Application, and a situation that reportedly occurs that does not appear to be evaluated. When the weigh station is operational on I-95, trucks destined for JRL reportedly use Exit 197 and travel on Route 43 and the Bennoch Road (Route 16) instead of staying on the I-95 to avoid weighing. An assessment of this situation was not included in the Application. The relevant Solid Waste Management Regulation standard states, *"The major haul routes must be able to safely accommodate the number, weight and types of vehicles transporting waste to and from the proposed solid waste facility."* We recommended a discussion with the Applicant prior to finalizing our comments. During our meeting, NEWSME staff reviewed the protocol they use to communicate with the drivers concerning their haul routes. They do recommend that waste delivery trucks travel I-95

as much as possible but did confirm that, to save time, drivers will occasionally avoid the weigh station. It was also pointed out that since the weigh station is on the south bound section, these trucks are empty. The City pointed out that the concern lies mostly with the condition of the portion of the road that is maintained by the state and ask if the DECD, as the facility owner, could communicate with DOT to initiate more responsive road repairs. Following the meeting, Mike Barden sent an email to DOT to initiate these discussions.

The last issue related to the solid waste fees paid to the City of Old Town, by NEWSME, and the waste types that are exempt from this fee. It was our understanding, based on discussion with the City, that they do not receive fees on waste accepted at the landfill that is used beneficially during waste placement. The specific wastes that we were asked to evaluate include municipal solid waste, accepted as part of the "soft layer", and construction and demolition debris processing residuals (fines) accepted as daily cover. The specific language in the Host Community Agreement states that, *"materials approved in writing by MDEP for beneficial use at or on the landfill, …., or other materials that Casella accepts for beneficial use and for a tipping or disposal fee of $5.00 per ton or less, shall be exempt from the per ton fee."* CES is unsure whether CDD fines have been approved officially (have a Beneficial Use Permit) by the MDEP for beneficial use at the landfill. We are also not aware of the tipping fee charged for disposal of the fines or the MSW utilized in the soft layer. Since the amount of fines disposed of annually at JRL equals nearly 20% of the total waste stream, and MSW is proposed for continued use in the soft layer of the Expansion cells, we recommended a discussion with the Applicant to clarify this issue prior to finalization of our comments.

During the meeting, NEWSME confirmed that fees are paid to the City for all the MSW accepted at the landfill and offered to have their accounting staff review the figures with the City staff. They also stated that the tipping fee charged for the CDD fines was $4.00 per ton, making them exempt from the fee.

For ease of review, we have organized our comments, below, to follow the licensing criteria and requirements as they are presented in Chapter 400, Chapter 401, Chapter 405 and as they were distributed by the Board prior to the Pre-Hearing Conference in February 2016. Following each of the licensing criteria, we have provided a brief summary of the information that was provided in the Application and our comments as applicable.

Solid Waste Management and Recycling Law, 38 M.R.S. §2101

§2101. Solid Waste Management Hierarchy

BGS and NEWSME propose to meet the standards of the Solid Waste Management Hierarchy through the use of NEWSME's sister companies Casella Organics and Casella Recycling, LLC's Zero Sort facility in Lewiston as well as their waste acceptance criteria. Wastes proposed for

disposal within the JRL Expansion include, but are not limited to, residuals from incinerators, waste processing facilities, and recycling facilities. Many of these wastes are used within the landfill as daily/operational cover. The previously approved Public Benefit Determination (PBD) addressed the Solid Waste Management Hierarchy related to the proposed waste to be accepted. If the Applicant proposes changes to the types of waste accepted, the Applicant would need separate permit approval and may be subject to subsequent PBD process. The MDEP letters dated July 10, 2015 *(Clarification on Public Benefit Determination status)* and September 14, 2012 *(Commissioner's Letter to Juniper Ridge Landfill Operator On Need To Modify Public Benefit Determination)* address this situation.

Solid Waste Management Rules: General Provisions, 06-096 CMR 400 (amended April 6, 2015), as applicable

Chapter 400.4 General Licensing Criteria

A. Title, Right or Interest

A copy of the site deed was included with the Application.

B. Financial Ability

NEWSME uses a surety bond as financial assurance for closure and post-closure care for 30 years, as provided in the Operating Services Agreement with BGS. Cost estimates are updated annually and included in the Annual Report. State owned facilities are not required to provide financial assurance under the Solid Waste Management Regulations.

C. Technical Ability

A list of NEWSME staff, responsible for operation of the JRL, is included with the Application. All staff included have experience with operation of the landfill. NEWSME also proposes to continue to utilize specialty consultants for investigations, design, and operational recommendations of the Expansion. These consultants include: Sevee & Maher Engineers, Inc. (SME) for geology, hydrogeology and landfill design; Sanborn Head & Associates (SHA) for landfill gas design; Gorrill-Palmer (GP) for traffic assessment; SMRT, Inc. for visual assessment, Epsilon Associates for noise impact assessment; Stantec Consulting Services Inc. (Stantec) for wetland and other natural resources assessments; and Pierce Atwood LLP for legal counsel.

D. Provisions for Traffic Movement

The Applicant has identified the primary haul route as I-95 to Exit 199 and west on Route 16 for .1 miles to the JRL access road. Currently, 78 % of haul vehicles follow this route with the remainder using Route 16. It has been determined that trucks associated with the current site represent approximately 2.2% of the traffic on Route 16. JRL's policy is

to advise drivers to use I-95. Based on existing data for peak number of trucks and the proposed tonnages in the Application, it is expected that the peak design hour trips will increase from 28 to 31 in the morning and from 25 to 28 in the afternoon.

The assessment also determined that the current haul route has adequate capacity to handle the increase in truck traffic, that there are no high crash locations in the study area, and that adequate sight distances exist at the entrance to the site access road.

The additional traffic concerns discussed above have been relayed to both NEWSME and the State. Arrangements are being made to add additional signage to the alternate routes encouraging trucks to stay on I-95.

E. Fitting the Solid Waste Facility Harmoniously into the Natural Environment

NEWSME hired Stantec to identify and inventory any wetlands, potential significant wildlife habitats, unusual natural areas, vernal pools, and rare, threatened and endangered (RTE) species at the project site. Stantec did not directly observe State or Federally listed RTE plant or wildlife species on-site. Stantec did identify the forested area on the site as being within the range of the northern long-eared bat (NLEB), which were recently listed as threatened. Stantec did conduct an acoustic survey to determine the presence or absence of the NLEB and did not detect the presence of the NLEB at the site.

Stantec also identified that the site falls within the mapped critical habitat for Atlantic salmon. They evaluated the 780-acre parcel for natural resources and there are no delineated or mapped streams in the 74-acre facility site and the Expansion is not expected to impact any mapped or delineated streams. Therefore, there are no expected impacts to Atlantic salmon due to the Expansion.

There will be filling of just over two acres of freshwater wetlands due to the proposed landfill cells and perimeter berm and .1 acres of clearing impacts due to the relocation of the perimeter fence and electric line. The impact is spread out over four areas and they are not designated as Wetlands of Special Significance.

There were 14 vernal pools identified; one of these met the criteria to be considered a Significant Vernal Pool. The SVP will not be directly impacted but clearing for the electrical line is within the 250-foot critical terrestrial habitat surrounding the pool. This is covered by the Permit-by-Rule standards of NRPA.

Twelve of the vernal pools met the definition of a vernal pool as provided by the Programmatic General Permit (GP) for the Army Corps. Six of the Corps regulated vernal pools will be directly impacted by the Expansion. To address this, a

compensation plan has been established for the project. The plan includes the preservation of 266 acres on-site with approximately 57 acres of wetlands and 25 documented vernal pools.

CES staff commented that, to meet the minimization of impacts standard, the Applicant should have listed or considered co-locating the perimeter fence and utility line with access road. Staff also notes that, the Applicant did not provide a narrative along with the PBR notification form, indicating that the applicable Standards will be met.

F. No Unreasonable Adverse Effect on Existing Uses and Scenic Character

This section of the Application includes an analysis of the existing uses of the area, the required setbacks, and a noise study conducted by Epsilon Associates. The proposed Expansion will not change the existing uses of the area since a licensed landfill already exists at the location. The Applicant was also able to demonstrate that they could meet all of the Siting Criteria in the Solid Waste Management Regulations and that the required buffers are present around the Expansion area.

Epsilon's sound assessment showed that the noise standards in the Regulations would be met for the Expansion areas modeled. During night time hours, when they are operating within 60 feet of the solid waste boundary on the western side of the Expansion, they will be limited to equipment with a combined sound pressure level of 77dBA or less.

Based on discussions with neighbors during the milestone meetings, NEWSME has replaced original backup alarms on landfill operating equipment with broadband backup alarms. These alarms have less abrupt sounds.

G. No Unreasonable Adverse Effect on Air Quality

A gas management operations and monitoring plan was submitted with the Application. The plan includes the installation of horizontal and vertical extraction wells during waste placement with regular well tuning. There is also an on-site gas treatment facility for removal of hydrogen sulfide from the collected gas prior to gas destruction in the flare to meet the facility's air permitting requirements.

Continuous ambient air monitoring for hydrogen sulfide is conducted at four off-site locations for comparison to the State of Maine Ambient Air Guidelines.

NEWSME also has an Odor Complaint Management and Response Plan that discusses odor control measures and procedures for responding to odor complaints from the public.

During the March 24th meeting, we expressed concerns regarding the differing rates of hydrogen sulfide and methane production. The intent of this discussion was to ensure that enough methane would be present to enable the capture and destruction of the hydrogen sulfide gas as it is being produced. Additional information, including a study presented by Russell Anderson of SCS Engineers at the 2009 SWANA Landfill Gas Symposium and actual gas production numbers measured at the Pine Tree Landfill, was provided by NEWSME. These studies demonstrate that hydrogen sulfide production is accelerated compared to methane production and that the sulfide source is consumed prior to the peak production of the methane. This demonstrates that sufficient methane will be present to capture and destroy the hydrogen sulfide that is produced for the life of the landfill.

During and following the meeting, we were provided with the 2014 and 2015 Annual Air Monitoring Evaluation Reports for the Juniper Ridge Landfill. These reports present the data gathered from the four Single Point Monitors located around the landfill. During our initial review of the data, we identified an area of concern involving the methodology utilized by NEWSME for handling non-detect values, which account for more than 80% of the readings annually, when calculating averages. These averages are currently used by the MDEP to compare with the Ambient Air Guideline for H2S established by the Maine Department of Health and Human Services Center for Disease Control. We requested additional information from NEWSME to support the methodology used in calculating annual averages and suggested alternate analysis methods. Our discussions with NEWSME staff led to the use of an alternate method for calculating exposure, based on the site data, wind direction, and published background levels of naturally occurring H2S. This revised analysis was provided to us and confirmed that based on the monitoring conducted around the landfill, levels of H2S do not exceed the acute or chronic exposure guidelines established for H2S.

To ensure that the facility continues to perform this analysis in this manner, and demonstrate continued compliance with Maine Solid Waste Management Rules, Chapter 400 Section 3.D. which states, "that the solid waste facility will not contaminate any water of the State, contaminate the ambient air, constitute a hazard to health or welfare, or create a nuisance", we recommend that this analysis be a condition of the solid waste license for annual comparison to the AAGs.

H. No Unreasonable Adverse Effect on Surface Water Quality

The landfill Expansion has been designed with adequate leachate management capacity to collect all liquid that falls within the waste placement areas. Operational practices also include placement of intermediate cover on a regular basis to divert clean stormwater away from the operational areas. All impacted surface water is collected and treated and the quantity is limited by appropriate cover usage.

A portion of the proposed waste will be placed over the northern edge of the existing landfill footprint above the completed 3:1 slopes. The existing landfill and historic leachate pond have underdrain systems that are monitored and discharge without a Waste Discharge License (WDL). The facility does have a Multisector General Permit (MSGP) and a current site Stormwater Pollution Prevention Plan (SWPPP). In accordance with their SWPPP, uncontaminated groundwater is an allowable non-stormwater discharge.

I. No Unreasonable Adverse Effect on Other Natural Resources

This item was addressed under item E above.

J. Soil Types That Are Suitable and Will Not Cause Unreasonable Erosion

An Erosion and Sedimentation Control Plan was included with the Application that includes the stabilization practices required for disturbed site soils in order to minimize potential erosion. All measures will be in place prior to soil disturbance.

K. No Unreasonable Risk That a Discharge to a Significant Ground Water Aquifer Will Occur

To meet this criterion, the Applicant must demonstrate that the site does not pose an unreasonable risk of discharge to a significant groundwater aquifer. This is shown by demonstrating that it does not overlie a significant sand and gravel aquifer, does not pose a threat to the quality of a sand and gravel aquifer, and does not pose a threat to the quality of an underlying fractured bedrock aquifer.

The closest mapped sand and gravel aquifer is a mile to the east of the site and there are no stratified sand and gravel deposits mapped within the site so the Expansion does not overlie, or fall within 300 feet of, a significant sand and gravel aquifer. The potential for the Expansion to pose an unreasonable threat to an on-site stratified sand and off-site bedrock was evaluated through the time of travel and contaminant transport analysis. These demonstrate that, due to the design of the landfill liner system and imported base soils, the facility does not pose an unreasonable risk of discharge to a significant groundwater aquifer.

L. Adequate Provision for Utilities and No Unreasonable Adverse Effect on Existing or Proposed Utilities

The Applicant proposes to continue to utilize on-site sanitary wastewater systems for landfill personnel and water supply needs will be met by existing sources. A new well and disposal system will be designed and constructed when the scale and office building are relocated.

The leachate generated in the Expansion will continue to be treated at the Expera Specialty Solution Mill in Old Town or the City of Brewer wastewater treatment plant. Leachate disposal contracts were included with the Application.

M. Not Unreasonably Cause or Increase Flooding

A Stormwater Management Plan was included with the Application that included stormwater modelling calculations to ensure the appropriate sizing of all stormwater management infrastructure to prevent an increase in flows leaving the site as it is developed.

Chapter 400.6. Recycling

As was discussed above many of the wastes proposed for disposal in the Expansion are residuals from other waste processing facilities or are utilized within the landfill for daily cover.

Chapter 400.7. Host Community Agreements and Municipal Intervenor Grants

A. Host Community Agreements

Copies of the Host Community Agreements with the Town of Alton and the City of Old Town were included in the Application.

NEWSME's Host Community Agreement with the City of Old Town discusses, among other things, the fees that are to be paid to the City for the approved wastes disposed of in the landfill. It also discusses which waste types are currently exempt from this payment. Those wastes include materials that are approved by the MDEP for beneficial use and other materials that are accepted at the landfill for beneficial and for a tipping fee of less than $5.00 per ton.

B. Municipal Intervenor Grants

Notification of the Application was sent to Old Town and Alton. Old Town was also sent a description of their rights to apply for intervenor status and receive grant monies to assist them in their review of the Application. Alton has previously agreed that they are not a host municipality so they are eligible to be granted intervenor status

Chapter 400.9. Hazardous and Special Waste Handling and Exclusion Plan

A Hazardous and Special Waste Handling and Exclusion Plan was included in the Operations Manual.

Chapter 400.10. Liability Insurance

A current certificate of insurance, maintained by NEWSME, for the JRL facility was included as Appendix P of the Application.

Chapter 400.11. Financial Assurance for Solid Waste Disposal Facility Closure and Post-Closure Care and Corrective Action

A. Financial Assurance for Closure and Post-Closure Care

NEWSME uses a surety bond as financial assurance for closure and post-closure care for 30 years, as provided in the Operating Services Agreement with BGS. Cost estimates are updated annually and included in the Annual Report. State owned facilities are not required to provide financial assurance under the Solid Waste Management Regulations. A detailed cost estimate for closure and post-closure was not included in the Application.

CES recommends that a detailed cost estimate be reviewed to ensure that potential costs associated with corrective actions or remediation during the post-closure period are included.

Chapter 400.12. Criminal or Civil Record

A. Full Disclosure

BGS and NEWSME provided the required disclosure statements.

Chapter 400.13. Variances

A. Variances Affecting Site Standards, Facility Design, and Construction

In this Application, NEWSME is requesting a variance to construction practices for placement of barrier and base soils. Current Rules require that these soils be placed with a *"maximum allowable compacted lift thickness of 9 inches"*; the Applicant is requesting a variance to allow these materials to be placed in a compacted lift thickness of 12 inches. This practice has been used at JRL for the construction of Cells 7, 8, and 9, approved through the use of construction change orders, and proven to meet the required performance criteria through test pad programs. Testing of the soils will be performed to demonstrate that the performance criteria will be met, during Expansion

construction, following similar test pad programs. We agree that this is a reasonable approach given current construction equipment capabilities.

B. Variances Affecting Operation

No operational variances are being sought.

Solid Waste Management Rules: Landfill Siting, Design and Operation, 06-096 CMR 401 (amended April 12, 2015), as applicable Chapter 401.2. Application Requirements

A. General Information

NEWSME included figures containing the following information within the Application:

- Site location map,
- Shoreland resource protection and 100-year floodplain zones,
- Site watersheds,
- Freshwater wetlands,
- Surficial geology,
- Medium intensity soil types,
- Earthquake epicenters,
- Significant sand and gravel aquifers,
- Site investigation map, and
- Wetland delineation.

B. Site-Specific Investigation

Site specific investigations performed to support the siting and design of the JRL Expansion include:

- Soil borings,
- Test pits,
- Geophysical surveys,
- Groundwater observation wells,
- Piezometers,
- Pumping tests,
- Groundwater velocity testing,
- Physical testing of soils and bedrock,
- Collection of groundwater levels, and
- Groundwater age-dating.

The results of the investigations were compiled to form a complete hydrogeological description of the Expansion site. The investigations showed that the Expansion area is underlain by a dense glacial till deposit that varies in thickness and is underlain by competent bedrock.

As required for an Application for Expansion, a summary of the ground and surface water quality data, to date, was included.

C. Site Assessment Report

As discussed above, the required maps and figures were included in the Application.

As required, Time of Travel Calculations were performed to show that the site meets the required six years for groundwater to travel from the bottom of the landfill liner system to the identified sensitive receptors. NEWSME utilized the allowed offset credits, for liner system and base soil design, as well as calculated times of travel through the existing site soils and bedrock. With the inclusion of the uniform low permeability soil below the liner system and the leak detection system, NEWSME is allowed a credit of five years. When added to the existing site travel times, the total travel times ranged from 6.2 years to 53.7 years.

D. Design Standards for Landfills

The construction for the Expansion will require both excavation and fill of the native soils in order to provide the necessary base grades. Any excavation in areas with less than five feet to bedrock will be limited to removal of the organic and vegetative soils only. Areas with less than 10 feet to bedrock will be constructed with an additional layer of low permeable soil. The depth of soils to bedrock is from 2 to 62 feet with an average depth of 25 feet. A one-foot layer of low permeability clay (less than $1X10^{-7}$ cm/sec) will be placed over the entire footprint below the secondary liner.

An underdrain sand layer will be placed under 12.7 acres of the Expansion footprint where water levels are above base grades. Average soil depths in these areas average 36 feet. Discharge from the underdrain system will be monitored annually for compliance with the Facility's detection monitoring program, and monthly for specific conductance and flow.

Liner System Requirements

The liner system is proposed to consist of a composite primary liner, a leak detection system, and a secondary liner.

The primary liner will consist of;

- An 80 mil high-density polyethylene (HDPE) textured geomembrane,
- A geosynthetic clay liner (GCL), and
- A 12-inch clay layer (hydraulic conductivity less than $1X10^{-7}$cm/sec).

The leak detection system will consist of;

- A 12-inch layer of sand,
- 6-inch diameter perforated HDPE piping, and
- A geocomposite drainage net.

The secondary liner will consist of;

- A 60 mil HDPE textured geomembrane,
- A GCL (in areas where there is less than 10 feet to bedrock), and
- A 12-inch clay layer with a hydraulic conductivity less than $1X10^{-7}$cm/sec (in areas with less than 10 feet to bedrock).

Improvement Allowance System

The Applicant proposes to utilize the Improvement Allowance Table to meet the required intent of the six year groundwater time of travel performance standard. The addition of a leak detection system underlain by an HDPE liner provides a two year offset that was utilized for areas of the landfill will greater than 10 feet to bedrock. The addition of a leak detection system underlain by a composite liner system provides a three year offset that was utilized for areas with less than 10 feet to bedrock.

Base Preparation below the Liner System

The Applicant proposes to meet all of the standards for base soils and, as described above, has requested a variance from the requirement for placement of minimum 9-inch lifts. They are proposing placement in 12-inch lifts.

Leachate Conveyance System and Storage Structure Standards

NEWSME has designed the Expansion so that each proposed cell will drain to a collection sump at that cell's low point. Cells 11, 12, 14, and 15 are designed with temporary sumps. Cells 13 and 16, the northern most cells on the east and west sides of the Expansion were designed with permanent sumps. This design allows for the Expansion to be constructed without any penetrations which have an increased chance of leakage. As landfill construction progresses to the north, leachate piping from the previous cell will tie into the new cell's collection system. The leachate collection system was sized to limit the head on the liner system to less than 1-foot, and will be monitored with pressure transducers. The leachate collection system in each cell consists of:

- HDPE collection piping (6 to 8 inch diameter),
- One foot of drainage sand, Filter stone and drainage stone (around the piping), and
- Geocomposite drainage net.

Once leachate is pumped from the cells, it will be carried in a dual-walled forcemain around the perimeter of the landfill footprint to the facility's existing 921,000-gallon leachate holding tank.

All cells within the Expansion area are designed with a leak detection system. The system is designed to detect leaks from the primary liner within 30 days. The leak detection system consists of:

- One foot of drainage sand,
- Crushed stone,
- Perforated HDPE pipe, and
- Geonet drainage composite.

During the initial operation of the landfill the leak detection system will also carry consolidation water that will come from the primary liner's clay layer as well as water that may have fallen on the detection system during construction, prior to liner placement above. A liner leakage plan has been proposed for monitoring the flows in the system.

E. Alternative Design Process

NEWSME has not proposed any alternatives to the minimum design standards and requirements.

F. Engineering Report for Landfills

An Engineering Design Report was included with the Application. The Report included;

- A discussion of the design standards,
- Geotechnical evaluation,
- Water balance,
- Action Leakage Rate/ Response Action Plan,
- Gas Management,
- Cell Development,
- Waste Characterization,
- Surface water controls,
- Contaminant Transport Analysis,
- Quality Assurance Plan,
- Construction Contract Bid Documents,
- Water Quality Report and Proposed Monitoring Program,
- Operations Manual, and
- Landfill Construction.

The geotechnical evaluation for the Expansion included the stability and settlement assessments required. The assessments were performed using actual data from site investigations and previous cell construction at JRL. The slope stability assessment included an analysis of both static and seismic conditions during construction, operation, and post-closure. All calculated factors of safety exceeded the minimum requirements. The settlement assessment evaluated the proposed wastes and foundation soils. Based on the calculations, settlement is not expected to pose a risk to the liner or cover systems. A geotechnical monitoring plan, including pressure transducers within the cells and visual inspections of the liner, waste and cover systems, has been prepared to evaluate the systems during construction, operation and post-closure to confirm the findings of the calculations.

The water balance performed for the Expansion included modeling performed using EPA's Hydrologic Evaluation of Landfill Performance (HELP) Model to simulate leachate production. Analyses were performed for three conditions including; an open active filling condition with 10 feet of waste, 90 feet of waste with soil intermediate cover, and post closure with a final cover system. The calculations performed showed that the estimated yearly flows from the entire facility ranged from 13.8 million gallons per year during Cell 15 operation to 22.9 million gallons per year during Cell 12 operation which has the largest operational area. These flows were used to size the leachate collection system.

Action Leakage Rates (ALR) were developed for the site based on calculated flow rates through predicted holes in the primary liner with an assumed value of one foot of head on the liner system. Using the values specified, ALRs of 4.6 gpad (ALR-I) and 92 gpad (ALR-II) were proposed for the Expansion cells. These ALR values were proposed as the minimum rates that would trigger interaction with the MDEP to determine appropriate responses. Leak detection flows that exceed ALR-I will trigger additional weekly measurements. If these follow-up readings confirm the initial reading, the MDEP will be contacted and additional monitoring will be required. Leak detection flows that exceed ALR-II will indicate a potential leak in the primary liner system and additional investigations will be developed and the MDEP will be contacted immediately.

The waste types proposed for disposal in the Expansion are the same materials which are currently being disposed of in the existing cells at JRL. The design assumed a disposal rate of 700,000 tons per year broken down as follows:

- WWTP and miscellaneous sludge (10%);
- Front-End Process Residuals (FEPR) (7.7%);
- Contaminated Soils (4.3%);
- Municipal solid waste ash (8.3%);
- Biomass and fossil fuel ash (5%);
- Municipal solid waste by-pass from incinerators and soft layer (3.6%),

- Construction/demolition debris (27.9%);
- Oversized bulky waste (8.6%);
- C&D process fines (used for daily cover) (19.7%); and
- Miscellaneous waste (oversized bulky waste, fines, contaminated soil, spoiled food, etc.) (4.9%).

Since there are no proposed changes to the waste, there will be no significant changes to the physical or chemical characteristics of the waste stream.

A Sedimentation and Erosion Control Plan as well as a Stormwater Management Plan were submitted with the Application. All stormwater structures were sized using HydroCAD modeling software.

Landfill gas generation rates were calculated using USEPA's Landfill Gas Emissions Model (LandGEM). LandGEM calculated gas production rates using disposal rates and the percentage of degradable waste but assumes a gas consisting of 50% methane. Gas collection infrastructure was then sized for landfill gas collected at 40% methane. This lower methane percentage predicts a higher flow rate but is supported by the facility's current practices of gas management for odor mitigation. Based on the model, the peak collection rate will occur in 2031, when the Expansion reaches capacity. Hydrogen sulfide (H2S) is a gas produced at the landfill that, is not modelled for, but is collected with the methane and sent to the Facility's flare. Treatment of the gas for H2S is required by the Facility's Air Permit so the gas is sent through a Thiopaq treatment system prior to destruction in the flare.

Prior to the March meeting, CES staff noted that geomembrane puncture calculations and geomembrane anchor trench calculations to evaluate pull-out or rupture control modes were not performed. Calculations were provided following the meeting.

CES staff notes that the lower level Action Leakage Rate that was calculated for the Expansion leak detection system is highly conservative. Due to the low level of flow that triggers a response, and the amount of liquid that is expected in the system due to consolidation water from the clay above, the Applicant proposes to use a combination of flow rate and specific conductance to differentiate between leachate and consolidation or construction water. This monitoring plan is robust and is an appropriate approach to monitoring.

G. Contaminant Transport Analysis

The Contaminant Transport Analysis was performed with three hypothetical scenarios which considered worst case failures of the engineered systems. These scenarios include:

- Complete failure of the liner system;
- Leaky landfill base; and
- Leaky leachate force main.

An analysis of the leachate holding tank was performed with the Application for vertical increase.

In the case of a complete failure of the liner system, it was assumed that the primary and secondary liner systems did not exist and leachate was allowed to drain directly into the underlying soils. Using a leakage rate of approximately 92 gallons per acre per day (gpad) it was calculated that the concentrations at the receptors did not exceed applicable groundwater or surface water quality criteria after six years.

In the case of a leaky landfill liner, it was assumed that the primary liner was not present. Using the leakage rates calculated for the first case, leakage through the secondary liner was calculated to be at a rate of 4.6 gpad. Based on this analysis, the concentrations at the receptors at six years were non-detect.

For a leak in the force main, it was assumed that the leak would be detected within one week. This is when leachate would be observed at the ground surface at the trench location. The standard for a leak from a leachate line is that concentrations not exceed water criteria at receptors a time of three years. The analysis showed that concentrations are not exceeded in three years.

H. Plan View and Profile View Drawings

All plan and profile view drawings were included with the Application.

I. Quality Assurance Plan

A Quality Assurance Plan was prepared for the Expansion and includes:

- Construction Quality Assurance (CQA) measures to be implemented,
- Relationship between the Quality Assurance Plan, construction quality control, and contract bid documents,
- Responsibility, authority, roles and responsibilities of all parties involved,
- CQA personnel qualifications,
- Inspections and testing requirements,
- Sampling requirements,
- Recordkeeping and reporting requirements, and

- A list of descriptions of all items requiring CQA certifications.

J. Construction Contract Bid Documents
Bid documents are included in the Application.

K. Water Quality Report and Proposed Monitoring Program
A copy of the JRL 2013 Annual Water Quality Report and an updated Environmental Monitoring Plan were included with the Application.

L. Operations Manual
NEWSME submitted a revised Operations Manual to address waste placement and operations in the Expansion footprint.

Chapter 401.3. Landfill Construction

NEWSME agrees to follow all regulatory requirements during construction of Expansion Cells.

A. Pre-Construction Conference
A Pre-construction conference will be held prior to construction. The MDEP will be given at least 7-day notice prior to the conference.

B. Quality Assurance Plan
A Quality Assurance Plan has been developed to monitor all construction and is included in the Application as discussed above.

C. Liner Installation
Prior to installing any liner, NEWSME will evaluate the installation procedures to ensure the integrity of the installed liner.

D. Changes from Approved Plans and Specifications
NEWSME agrees to receive approval from MDEP for any proposed changes to the approved plans and specifications. Any changes that are necessary during construction will be handled as a change request to the MDEP which will be considered approved if a response is not received within five working days.

E. Weekly Inspection Reports
Weekly reports will be prepared by the quality assurance team responsible for construction and provided to the MDEP within one week of the completion of the construction week.

F. Photographic Documentation

Photographs will be taken during the construction project and included in the Final Construction Report.

G. Record Drawings

Record drawings will be prepared and sealed by a State of Maine Professional Engineer. The drawings will be submitted to the MDEP within 45 days of completion of the construction.

H. Final Construction Report and Commencement of Operations

A final construction report will be completed to address all requirements of the Solid Waste Regulations and submitted to the MDEP within 45 days of completion of the construction.

Chapter 401.4. Landfill Operations

A. Operations Manual

NEWSME submitted a revised Operations Manual that included the following:

- Site history,
- Requirement for certified copies and annual review,
- Requirement for operator training and certification program,
- JRL organizational structure,
- JRL development including cell construction, intermediate cover, final cover, and stormwater/erosion control systems,
- Cell development plans,
- Acceptable wastes,
- Hours of operation,
- Compaction requirements,
- Daily cover requirements,
- Leachate management,
- Landfill gas management,
- Inspections,
- Equipment requirements,
- Hazardous and Special Waste Handling and Exclusion Plan,
- Litter control,
- Environmental Monitoring Plan,
- Geotechnical Monitoring Plan,
- Record retention,
- Odor control,
- Complaint Management and Response Plan,

- Gas system operations, and
- Annual reporting requirements.

Solid Waste Management Rules: Water Quality Monitoring, Leachate Monitoring, and Waste Characterization, 06-096 CMR 405 (amended April 12, 2015), as applicable

Chapter 405.1. General

Water quality monitoring has been conducted on this site since 1990. NEWSME has submitted a revised Environmental Monitoring Plan to detail the proposed monitoring for the Expansion area.

Chapter 405.2. Water Quality Monitoring

A. Standards for Ground Water Monitoring

The Expansion will include 43 monitoring locations including; background and downgradient piezometers and wells, additional surface water sampling points, and leak detection and underdrain monitoring points. The Applicant is proposing to install the monitoring locations as the Expansion construction progresses.

An underdrain is also proposed under 12.7 acres of Cells 12 and 13. This system will also be monitored.

Twenty-three new monitoring wells will be installed to monitor the Expansion area and will be screened according to the site's local geology. The proposed well locations were chosen based on groundwater flow directions, potential site sensitive receptors, and the location of major site leachate pumping stations.

Protocol for sampling of groundwater monitoring wells has been established.

CES staff comments that monitoring wells should be installed early enough to obtain background information at each location prior to construction and waste placement.

B. Standards for Surface Water Monitoring

Two additional surface water locations are proposed to monitor runoff impacts to nearby streams and wetlands. One location is proposed to be northeast of the Expansion footprint, the other is proposed to the northwest of the Expansion footprint. The final locations will be chosen with the assistance of the MDEP.

Protocol for sampling of surface water has been established.

Chapter 405.3. Standards for Ground and Surface Water Data Evaluation and Reporting

An annual statistical analysis is performed of the site water quality data. This analysis is submitted to the MDEP in the facility's Environmental Monitoring Report. Laboratory data is submitted to the MDEP electronically following each sampling round.

Chapter 405.4. Leachate, Leachate Collection, Leachate Detection System And Leachate Treatment

Residue Monitoring

Flows from each cell are pumped to the leachate storage tank. Site leachate will be sampled three times per year to characterize the quality and provide information to be used when reviewing other site data. The discharge from the independent pump stations can be monitored separately if necessary.

Each cell will have an individual leak detection sump and will be sampled separately. The discharge will be monitored for flow and quality. These locations will be monitored monthly and compared to the levels established in the liner action plan.

Chapter 405.5. Standards for the Installation, Construction and Maintenance of Wells and Piezometers, and for the Advancement of Borings

Protocol is established at the time of installation and plans are submitted to the MDEP.

Chapter 405.6. Solid Waste Characterization Program

A. Applicability

JRL's Special Waste Characterization Program is included in the facility's Operations Manual.

B. General Program Requirements

JRL's Program describes the requirements for waste characterization for first time and ongoing waste disposal. It includes analytical requirements as well as frequency of testing.

The Program also includes a reference list of wastes that are acceptable and unacceptable for disposal within the landfill.

C. **Specific Analytical Requirements for the Disposal or Beneficial Use of Solid Waste**
As discussed above, the Program includes all analytical requirements as well as the frequency of testing.

Should you have any questions or require further explanation of the information presented, please contact us.

Sincerely,
CES, Inc.

Denis St. Peter, PE
Project Manager / President

DSP/gdr