

CITY OF LEWISTON
PLANNING BOARD MEETING
Monday, December 9, 2013 – 5:30 P.M.
City Council Chambers, First Floor
Lewiston City Building
27 Pine Street, Lewiston

AGENDA

I. ROLL CALL

II. ADJUSTMENTS TO THE AGENDA

III. CORRESPONDENCE

IV. PUBLIC HEARINGS:

An application submitted by Walsh Engineering Associates, Inc. on behalf of Casella Recycling, LLC for modifications to the current City of Lewiston Solid Waste Facility located at 424 River Road, including the construction of a 15,000 square foot addition to process recyclable materials.

V. OTHER BUSINESS:

- a) Bates College Student Presentation: Hart Brook and Stormwater
- b) Discussion of Drinking Establishments
- c) Any other business Planning Board Members may have relating to the duties of the Lewiston Planning Board.

VI. OLD BUSINESS:

- d) Update on Riverfront Project
- e) Update on Comprehensive Plan

VII. READING OF THE MINUTES: Motion to adopt the draft minutes from the October 28, 2013.

VIII. ADJOURNMENT



CITY OF LEWISTON



Department of Planning & Code Enforcement

TO: Planning Board
FROM: David Hediger, City Planner
DATE: December 5, 2013
RE: December 9, 2013 Planning Board Agenda Item IV(a)

An application submitted by Walsh Engineering Associates, Inc. on behalf of Casella Recycling, LLC for modifications to the current City of Lewiston Solid Waste Facility located at 424 River Road.

Walsh Engineering Associates, Inc. on behalf of Casella Recycling, LLC has submitted an application for modifications to the City of Lewiston Solid Waste Facility at 424 River Road for the construction and operation of a single-stream recycling facility. Improvements will include:

- Construction of a 15,000 square foot addition to the existing shredder and recycling building to receive and process recyclable materials.
- Additional parking for city landfill staff and the new recycling facility.
- Stormwater improvements associated with new facility.
- Relocation of an existing 1,080 square foot City office building to the existing entrance of the solid waste facility.
- The construction of a 1,800 square foot waste storage building for use by the City.
- A new roof structure over the City's existing recycling drop-off area.

This property of 190 acres is located in the Industrial (I) district in which recycling and reprocessing facilities are allowed as a conditional use. Therefore, the project is subject, but not limited to, the requirements of Article X, Conditional Uses and Article XIII, Development Review and Standards.

Staff has been working closely with the applicant's representative to address concerns and questions. The applicant has since provided revised plans and documentation referencing most of staff comments (see December 4, 2013 letter from Walsh Engineering). Staff notes the following with respect to the proposed development:

- The applicant has referenced all of the applicable sections of the Zoning and Land Use Code including Article X, Conditional Uses and Article XIII, Section 4, Development Review.
- The proposed improvements will result in approximately 32,924 square feet of additional impervious area. Stormwater water improvements proposed will address both quantity and quality standards for the proposed development resulting in an overall improvement in the treatment of stormwater from current conditions. These improvements have been reviewed to the City's satisfaction.
- A traffic analysis has been provided for existing trips into the solid waste facility and proposed trips to the recycling facility. The proposed development and existing site

traffic is expected to generate 57 trips in the peak hour, less than the 100 trip threshold for a traffic movement permit. A traffic pattern plan has been developed for the on-site traffic movement of residents and truck traffic, including the installation of additional signage and striping.

- The applicant has specifically referenced the conditional use criteria of Article X indicating that the proposed improvements will not significantly alter the existing use of the property given the sites current use as a solid waste facility.
- The applicant has requested that the conditional use permit be valid for two years from the date of approval to be consistent with the development review expiration period which provides developments two years to start and five years to complete a project. Staff supports this request.
- Staff has recommended the following requirements be fulfilled prior to the issuance of a certificate of occupancy:
 - A professional engineer must provide a stamped statement indicating all stormwater improvements have been completed in accordance with the approved plan. A note to this effect should be added to the plans.
 - An as-built site plan must be provided by a professional surveyor.The applicant has noted said requirements on Sheet C2.0.
- Public Works is in the process of reviewing the applicant's response to their concerns. An update will be provided at the meeting.

No other concerns have been raised by city staff. Therefore, approval is recommended pursuant to Article X and Article XIII, Section 4 Zoning and Land Use.

ACTIONS NECESSARY

1. Make a motion to consider an application submitted by Walsh Engineering Associates, Inc. on behalf of Casella Recycling, LLC for modifications to the current City of Lewiston Solid Waste Facility located at 424 River Road.
2. Obtain input on the application;
3. Make a determination that the application is complete;
4. Make finding that the application meets all of the necessary criteria contained in the Zoning and Land Use Code, including Article X and Article XIII, Section 4 of the Zoning and Land Use Code and to grant approval as a conditional use to Casella Recycling, LLC for modifications to the current City of Lewiston Solid Waste Facility located at 424 River Road, including the construction of a 15,000 square foot addition to the existing shredder and recycling building to receive and process recyclables. (subject to any concerns raised by the Planning Board or staff).

CITY OF LEWISTON DEVELOPMENT REVIEW APPLICATION

Lewiston Zero-Sort™ Facility
424 River Road, Lewiston, Maine

Prepared for:



Casella Recycling, LLC
24 Bunker Hill Industrial Park
Charlestown, Massachusetts 02129

Prepared by:



Walsh Engineering Associates, Inc.
918 Brighton Avenue
Portland, Maine 04102

December 2013
Project #197

PROJECT DATA

The following information is required where applicable, in order to complete the application

IMPERVIOUS SURFACE AREA/RATIO

Existing Total Impervious Area	<u>1,070,637</u>	sq. ft.
Proposed Total Paved Area	<u>15,455</u>	sq. ft.
Proposed Total Impervious Area	<u>32,924</u>	sq. ft.
Proposed Impervious Net Change	<u>32,122</u>	sq. ft.
Impervious surface ratio existing	<u>12.9</u>	% of lot area
Impervious surface ratio proposed	<u>13.3</u>	% of lot area

BUILDING AREA/LOT

COVERAGE

Existing Building Footprint	<u>27,123</u>	sq. ft.
Proposed Building Footprint	<u>17,880</u>	sq. ft.
Proposed Building Footprint Net change	<u>16,005</u>	sq. ft.
Existing Total Building Floor Area	<u>28,163</u>	sq. ft.
Proposed Total Building Floor Area	<u>17,880</u>	sq. ft.
Proposed Building Floor Area Net Change	<u>8,408</u>	sq. ft.
New Building	<u>Yes</u>	(yes or no)
Building Area/Lot coverage existing	<u>2.5</u>	% of lot area
Building Area/Lot coverage proposed	<u>4.0</u>	% of lot area

ZONING

Existing	<u>Industrial</u>
Proposed, if applicable	<u>Industrial</u>

LAND USE

Existing	<u>Recycling and reprocessing facilities</u>
Proposed	<u>Recycling and reprocessing facilities</u>

RESIDENTIAL, IF APPLICABLE

Existing Number of Residential Units	<u>Not Applicable</u>
Proposed Number of Residential Units	<u>Not Applicable</u>
Subdivision, Proposed Number of Lots	<u>Not Applicable</u>

PARKING SPACES

Existing Number of Parking Spaces	<u>10 ±</u>
Proposed Number of Parking Spaces	<u>55</u>
Required Number of Parking Spaces	<u>48</u>
Number of Handicapped Parking Spaces	<u>3</u>

ESTIMATED COST OF PROJECT

\$2.5 Million ±

DELEGATED REVIEW AUTHORITY CHECKLIST

SITE LOCATION OF DEVELOPMENT AND STORMWATER MANAGEMENT

Existing Impervious Area	<u>1,070,637</u>	sq. ft.
Proposed Disturbed Area	<u>71,910</u>	sq. ft.
Proposed Impervious Area	<u>32,924</u>	sq. ft.

- 1. If the proposed disturbance is greater than one acre, then the applicant shall apply for a Maine Construction General Permit (MCGP) with MDEP.*
- 2. If the proposed impervious area is greater than one acre including any impervious area crated since 11/16/05, then the applicant shall apply for a MDEP Stormwater Management Permit, Chapter 500, with the City.*
- 3. If total impervious area (including structures, pavement, etc) is greater than 3 acres since 1971 but less than 7 acres, then the applicant shall apply for a Site Location of Development Permit with the City. If more than 7 acres then the application shall be made to MDEP unless determined otherwise.*
- 4. If the development is a subdivision of more than 20 acres but less than 100 acres then the applicant shall apply for a Site Location of Development Permit with the City. If more than 100 acres then the application shall be made to MDEP unless determined otherwise.*

TRAFFIC ESTIMATE

Total traffic estimated in the peak hour-existing _____ 17 _____ passenger car equivalents (PCE)
(Since July 1, 1997)

Total traffic estimated in the peak hour-proposed (Since July 1, 1997) _____ 41 _____ passenger car equivalents (PCE)
If the proposed increase in traffic exceeds 100 one-way trips in the peak hour then a traffic movement permit will be required.

Zoning Summary

1. Property is located in the Industrial zoning district.

2. Parcel Area: 190 acres / 8,276,400 square feet(sf).

Regulations	<u>Required/Allowed</u>	<u>Provided</u>
Min Lot Area	<u>40,000 SF</u>	/ <u>8,276,400 SF</u>
Street Frontage	<u>100 ft</u>	/ <u>600 ft</u>
Min Front Yard	<u>25 ft</u>	/ <u>50 ft</u>
Min Rear Yard	<u>10 ft</u>	/ <u>NA</u>
Min Side Yard	<u>10 ft</u>	/ <u>NA</u>
Max. Building Height	<u>100 ft</u>	/ <u>~40 ft</u>
Use Designation	<u>Recycling and reprocessing facility (Conditional)</u>	
Parking Requirement	<u>1 space per 500 sq. ft. of floor area up to 3,000 and 1 per additional 1,000 sq. ft.</u>	
Total Parking:	<u>48</u>	/ <u>55</u>
Overlay zoning districts (if any):	<u>NA</u> / /	
Urban impaired stream watershed?	<u>YES/NO If yes, watershed name NO</u>	

DEVELOPMENT REVIEW APPLICATION SUBMISSION

Submission shall include payment of fee and fifteen (15) complete packets containing the following materials:

1. Full size plans containing the information found in the attached sample plan checklist.
2. Application form that is completed and signed.
3. Cover letter stating the nature of the project.
4. All written submittals including evidence of right, title and interest.
5. Copy of the checklist completed for the proposal listing the material contained in the submitted application.

Refer to the application checklist for a detailed list of submittal requirements.

L/A's development review process and requirements have been made similar for convenience and to encourage development. Each City's ordinances are available online at their prospective websites:

Auburn: www.auburnmaine.org under City Departments/ Planning and Permitting/Land Use Division/Zoning Ordinance

Lewiston: <http://www.ci.lewiston.me.us/clerk/ordinances.htm> Refer to Appendix A of the Code of Ordinances

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, I certify that the City's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

This application is for development review only; a Performance Guarantee, Inspection Fee, Building Permit Application and other associated fees and permits will be required prior to construction.

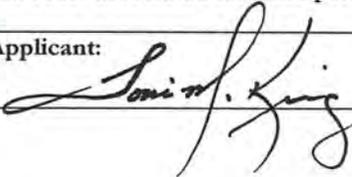
Signature of Applicant: 	Date: <u>17 OCT 13</u>
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C4.1 Site Details

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PROJECT DESCRIPTION

Casella Recycling, LLC (Casella Recycling) has entered into a lease agreement with the City of Lewiston (City) to operate a single-stream or Zero-Sort™ recycling facility (Facility) within a portion of the City of Lewiston (City) Solid Waste Facility property (Site) at 424 River Road (See Exhibit A for lease). The lease area is approximately 3.27 acres, and the total landfill area is 190 acres. The leased area borders River Road to the west and beyond which is a residential property, the City's closed Attenuation Landfill to the south and east, the City's Recycling Area (drop-off) to the north and River Road and beyond which is a residential property (refer to C1.0 Existing Conditions and Removals Plan).

The leased Facility consists of a 3.27 acre (approximate) portion of the 190-acre Site parcel accessed via River Road in Lewiston, Maine. The leased area is improved by a 23,200 square foot building formerly used as a shredding and recycling facility, a 1,080 square foot office building, as well as paved access roads and parking. It is currently utilized by the City for the collection/transfer of solid waste and recyclable material as well as the storage of vehicles and equipment used by the City of Lewiston Department of Public Works. The City of Lewiston Tax Assessor's Office currently identifies the encompassing parcel as Lot 7 on Property Tax Map 156. Existing conditions are presented on Drawing C1.0 (the base information for the plan was taken from a survey recently completed by Jones Associates, Inc.).

Address: 424 River Road

Title, Right and Interest: Refer to lease agreement with the City of Lewiston

Land Use District: Industrial with Conditional Use Permit

Shoreland Zone: No

FEMA Floodplain: No

Wetlands on the property: No, not on leased portion of property

Casella Recycling proposes to utilize the former Shredder Building and Recycling Building in combination with a new 15,000 square foot slab-on-grade structural steel building to receive, process, sort, bale and ship recyclables from the site for further downstream processing into usable goods. Recyclables will be received from residential, commercial and municipal customers throughout Maine. Specific proposed improvements include:

- Construct a new 15,000 square foot slab-on-grade structural steel building on the northern side of the former Shredder Building. The building will house recycling, processing and baling equipment and may also be used for temporary storage of baled material (processed) prior to shipment from the site (refer to Drawing C2.0).
- Install additional asphalt paved areas for Casella Recycling staff parking. The parking area is located west of the former Shredder Building.
- Expand the existing gravel pad east of the former Shredder Building and paved access road for trailer staging.
- An underdrained soil filter (USF) will be installed to meet the Maine Department of Environmental Protection (MEDEP) Chapter 500 regulations for stormwater quantity and quality for new impervious surfaces within the lease boundary. The building addition

includes a flat roof design to direct stormwater through downspouts directly to the USF. The new paved areas west of the former Shredder Building will also be directed to the USF. All other existing impervious areas will continue to drain to the facility retention pond.

- Relocate the existing City of Lewiston office building. The building will be moved from its' current location west of the former Shredder Building and re-installed adjacent to the City's recycling drop-off area and scale house. A paved access and parking area will be constructed adjacent to the relocated office.
- New water and gas service will be installed below ground from River Road to the relocated office. Sewer will be connected to the existing sewer manhole structure east of the relocated office. Electrical service will be accessed from the adjacent utility pole.
- Construct a new slab-on-grade storage building for the City's waste storage needs. Electrical service will be supplied in conjunction with the relocated office building feed.
- Install a new roof structure at the City's recycling drop-off location positioned over the future municipal solid waste drop-off container location.
- Relocate the existing landfill gas monitoring well (GMW-2) closer to the former shredder building.

The project requires an amendment to the facility's existing Maine Department of Environmental Protection (MEDEP) solid waste license. The project amendment application is currently under review by MEDEP.

A. UTILIZATION OF THE SITE

The Site is an existing solid waste and recycling facility. The new facility will provide additional sorting, handling and storage capacity for single-stream recyclables prior to shipment to end users.

There are no environmentally sensitive areas or unique natural features located within the site as it was previously developed with similar usage as the proposed use.

B. TRAFFIC MOVEMENT INTO AND OUT OF THE DEVELOPMENT AREA

A traffic study was completed for this project by William J. Bray, P.E. of Traffic Solutions and is included (see Exhibit E). The report noted that a Maine Department of Transportation Traffic Movement Permit is not required for this project based on site observations and projected site generated traffic. However, some tree clearing and re-grading is required at the southern facility entrance to meet site distance requirements for exiting vehicles (refer to drawing C3.0).

C. ACCESS INTO THE SITE

Access to the site is through two existing gated entrances/exits at River Road (see Drawing C2.0).

D. INTERNAL VEHICLE CIRCULATION

The proposed onsite traffic patterns will be similar existing patterns. Casella Recycling truck traffic will enter and exit the facility at the northern entrance. After passing over the scales trucks will proceed directly to the Zero-Sort building area. The southern facility entrance is intended as a secondary access point for use by facility personnel and visitors. These vehicles will proceed directly to the adjacent parking area.

The Androscoggin Valley Council of Government (AVCOG) Household Hazardous Waste Depot will continue to operate in its' current location. Operations and related traffic is limited to the first and third Saturdays of each month 8 am to 12 pm, May through November.

The proposed improvements include additional traffic signage, striping and barriers for improved vehicle safety. WEA has provided a schematic drawings (refer to Drawing C2.1) indicating traffic movement at the Site.

E. PEDESTRIAN CIRCULATION

Site access is limited to vehicles. Pedestrian access (for staff and visitors) will be consistent with existing onsite patterns.

F. STORMWATER MANAGEMENT

The proposed Site improvements will upgrade the stormwater management at the facility. An underdrained soil filter (USF) will be installed to meet the MEDEP Chapter 500 regulations for stormwater quantity and quality for new impervious surfaces within the Casella Recycling lease boundary. The building addition will be designed to direct stormwater through downspouts directly to the USF. The new paved areas west of the former Shredder Building will also be directed to the USF. All other existing impervious areas will continue to drain to the facility retention pond.

The Stormwater Management Plan Report for the proposed Lewiston Zero-Sort site improvements is included as Exhibit B. For the location of stormwater features, see Sheet C3.0, Grading, Drainage and Erosion Control Plan. For details of stormwater features, see Site Detail sheets C4.0 and C4.1. The pre-development and post-development impact on stormwater flow from the proposed site improvements has been calculated and stormwater BMPs have been designed to meet MEDEP requirements for stormwater management. A Storm Water Pollution Prevention Plan (SWPPP) will be developed and implemented for the Facility.

G. EROSION CONTROL

The proposed site improvements will be completed under a Maine General Permit for Construction and soil erosion control plan consistent with MEDEP Best Management Practices (BMPs). Casella Recycling will take specific measures during the site improvement activities to prevent unreasonable erosion of sediment or soil beyond the project site or into protected natural resources. These erosion and sedimentation control measures will be completed before construction begins and will remain in place throughout the construction process. Inspection and maintenance of the underdrain soil filter be the responsibility of Casella Recycling. Refer to Exhibit F for the project Erosion and Sediment Control Report.

H. WATER SUPPLY,

Casella Recycling will utilize the existing public water service to the former Shredder Building. The site is serviced by an existing 12-inch diameter water line from River Road (refer to Drawing C2.0).

I. SEWAGE DISPOSAL

The Lewiston Zero-Sort operations will utilize the existing facility system and pump station to discharge sanitary wastewater to the Lewiston-Auburn Water Pollution Control Authority. The site is serviced by an existing 6-inch diameter force main.

J. UTILITIES

Casella Recycling has confirmed that the existing overhead Central Maine Power (CMP) electrical service to the northwest corner of the former Shredder Building is adequate to support the proposed materials processing equipment. However, relocation of the overhead service pole is required to maintain required CMP setback (minimum 12.5 feet) from the proposed 15,000 square foot building addition. Refer to Drawing C2.0 for utility layout information.

The former Shredder Building is serviced by a 2-inch diameter natural gas line from River Road. Heating is not planned for the new 15,000 square foot building addition therefore the facility will utilize the existing heating system.

The City's onsite office trailer will be relocated adjacent to the northern facility entrance/exit. The existing utility services including gas service, electrical and sewer line will be reconnected at this location without an increase in demand. Electrical service will be provided to the new waste storage building at the northwest corner of the City's recycling drop off area (refer to Drawing C2.0)

K. NATURAL FEATURES

The Lewiston Zero-Sort Facility is a continuation of current City solid waste recycling operations at the existing permitted facility and is not expected to affect natural features of the Site.

L. GROUNDWATER PROTECTION

Continued operation of the Site as a recycling facility is not anticipated to impact groundwater quality. Please refer to the Stormwater Management Plan Report (Exhibit B) for separation of the underdrain soil filter from groundwater.

M. WATER AND AIR POLLUTION

The facility will be subject to a Multi-Sector General Permit as required by Maine Department of Environmental Protection Maine Pollution Discharge Elimination System (MPDES) program. A Storm Water Pollution Prevention Plan (SWPPP) will be developed and implemented for the Facility that includes best management practices and regular monitoring. These controls and Casella Recycling experience with stormwater compliance will minimize potential impacts to stormwater due to site operations.

No adverse effect on air quality is anticipated based on site operations limited to indoor receipt, processing, storage and shipment of recyclables. The heated areas within the former Shredder Building will utilize the existing natural gas heating system. The proposed 15,000 square foot addition will not be heated. Casella Recycling will control fugitive dust emissions by sweeping paved roadways on an as-needed basis.

N. EXTERIOR LIGHTING

The former Shredder Building and Recycling Building include wall pack lighting (cut-off fixtures) on the western, southern and eastern exterior walls. Additional lighting will be provided for the staff parking area including a wall pack on the southwestern corner of the new Process Building and a pole mounted light at the western edge of the new parking area (refer to Drawing C2.0).

O. WASTE DISPOSAL

Process residue from Zero-Sort processing will be containerized and transported offsite for disposal by Casella Recycling. Facility generated solid waste will be managed in a covered dumpster provided by Pine Tree Waste, Inc., a Casella Waste Services, Inc. entity.

The City will be responsible for waste disposal as a result of landfill and recycling drop off operations conducted on the remaining portion of the Site.

P. LOT LAYOUT

The existing lot layout and lease boundary is provided in Drawings C1.0 and C2.0.

Q. LANDSCAPING

No significant change to the existing site landscaping features is planned for the facility.

R. SHORELAND RELATIONSHIP

This facility does not encroach shoreland zoning.

S. OPEN SPACE

No open space is planned for this leased portion of the City's Solid Waste Facility within an Industrial Zone.

T. TECHNICAL AND FINANCIAL CAPACITY

For over 30 years, Casella Recycling has operated recyclables processing facilities (MRFs) which sort, process, and market recyclable materials including newspapers, corrugated cardboard, office paper, aluminum and steel cans, plastic, glass, and aseptic packaging containers. These materials are then sold to various end users/manufacturers and recycled into new products. Casella Recycling provides quality processing and superior marketing of recovered materials in safe, clean, and neat facilities.

In total, Casella Recycling processes and markets over 500,000 tons per year to which we own, design and operates its facilities utilizing state-of-the-art material process flow technology. Casella Recycling processing philosophy uniquely emphasizes a combination of technology with the proper level of manual sortation to design systems which produce the highest quality materials for sale to end markets. It operates 12 facilities in Massachusetts, Maine, New York and Vermont of which five are Zero-Sort processing.

Casella Recycling has retained Walsh Engineering Associates, Inc. (WEA) of Portland, Maine, to complete permitting and site design services for the Lewiston Zero-Sort facility. WEA is a professional engineering consulting firm that includes three Maine licensed professional engineers and support staff. WEA has provided similar site design and permitting services for Maine solid waste facilities including the Pine Tree Waste Waterville Transfer Station and KTI Bio Fuels, Inc. at 38 Alfred Plourde Parkway in Lewiston.

A Bank of America, N.A. statement of financial capability for Casella Waste Systems, Inc. is provided as Exhibit D.

U. BUFFERING

The Lewiston Zero-Sort Facility currently has a 25-ft front yard setback to the existing office. The proposed 15,000 square foot recycling building will have a front yard of approximately 70 ft. Buffering is not required because the proposed use is consistent with the existing use. However, the Site has significant buffering at River Road including an earthen berm with hedge and tree screening. These existing buffers will be maintained to lessen visual impacts. No additional screening or buffering is planned.

V. COMPLIANCE WITH DISTRICT REGULATIONS

The project has been designed in accordance with the regulations of the Industrial Zone standards. See Standards for Conditional Use Permit for statements offered for supporting the granting of the requested appeals.

W. DESIGN CONSISTENT WITH PERFORMANCE STANDARDS

The project has been designed in accordance with the performance standards set forth in the City of Lewiston Land Use Ordinance.

X. COORDINATION WITH SITE SUBDIVISION LAW

1. The project will not cause undue water or air pollution. See section M above.
2. The project will be provided with a sufficient water supply. See section H above.
3. The project will not cause unreasonable burden on the existing water supply. See section H above.
4. The project will not cause unreasonable soil erosion. See section G above.
5. The project will not cause unreasonable road congestion. See sections B – D above.
6. The project will be provided with adequate sewage disposal. See section I above.
7. The project will not adversely affect the existing sewage collection system. See section I above.
8. The project will not adversely affect the scenic or natural beauty of the area. See section K above.
9. The project is in conformance with the City Land Use Ordinance.
10. The Owner has adequate financial and technical capacity. See section T above.
11. The project is not located within the Shoreland Zone.
12. The project will not adversely affect groundwater conditions. See section L above.
13. The project is not located within a 100-year flood zone.
14. The project will not have an adverse impact on solar access to adjacent parcels as the building style will be similar to the existing buildings in the vicinity.

PROJECT STATEMENT - CONDITIONAL USES

(Appendix A, Article X)

The following statements are offered for supporting the granting of the requested appeal:

1. The Lewiston Zero-Sort facility is currently approved as a conditional use in the Industrial District (the current Conditional Use permit is attached in Exhibit I);
2. The proposed site improvements will not significantly alter the existing use of the property; and
3. The current and proposed use satisfies applicable municipal and state performance standards.

SECTION 3, STANDARD 1: Impact upon surroundings

The City currently has a Conditional Use Permit for the operation of a solid waste facility at this leased location. The Lewiston Zero-Sort operation is consistent with the City's current recyclables receipt, accumulation and shipping activities. The proposed addition and operation is comparable to surrounding uses including over-the-road trucking facility and shipping and warehouse facility to the north, closed landfill to the south and gravel pit to the west of River Road. The site is located within an industrial/commercial setting in the Industrial District.

A traffic study was completed for this project by William J. Bray, P.E. of Traffic Solutions and is included (refer to Exhibit E). The report noted that a Maine Department of Transportation Traffic Movement Permit is not required for this project based on site observations and projected site generated traffic. The type of traffic and required number of parking spaces is expected to be significantly less than adjacent trucking and shipping facilities to the north on River Road.

The Zero-Sort Facility days of operations are as follows:

- Processing (enclosed structure): 6:00 am to 10:00 pm
- Deliveries: Monday through Friday 7:00 am to 5:00 pm and Saturday 8 am to 12 pm

The current City of Lewiston solid waste facility days of operations are as follows:

- Monday through Friday: 7:15 am to 2:45 pm
- Saturday: 8:00 am to 3:00 pm (summer)
- Sunday: Closed

The Androscoggin Valley Council of Government (AVCOG) Household Hazardous Waste Depot will continue to operate in its' current location. Operations and related traffic is limited to the first and third Saturdays of each month 8 am to 12 pm, May through November.

Casella Recycling operations will be designed to maintain 70 dBA hourly sound levels at the property boundary for daytime and nighttime hours. All tipping, processing and loading operations will be within onsite buildings to minimize sound transmission.

No adverse effect on air quality is anticipated based on site operations limited to indoor receipt, processing, storage and shipment of recyclables. Casella Recycling will control of fugitive dust emissions and litter with sweeping paved roadways on an as-needed basis.

The facility will receive and process only recyclable materials. These recyclables are not typically associated with nuisance odors, as is municipal solid waste (MSW). MSW is not accepted at the facility.

No impacts to quality or quantity of groundwater are anticipated as a result of municipal water supply and management of recyclable materials within the onsite buildings. As referenced above, the Zero-Sort Facility is designed and permitted to accept recyclables not municipal solid

waste, universal wastes or hazardous wastes. Please refer to the Stormwater Management Plan Report for separation of the underdrain soil filter from groundwater.

The layout of the facility is not anticipated to adversely impact surrounding properties and is bordered by a closed landfill to the south and east, City solid waste and recycling operations to the north and River Road to the west.

SECTION 3, STANDARD 2: Vehicular access

The proposed onsite traffic patterns will be similar existing patterns. Casella Recycling truck traffic will enter and exit the facility at the northern entrance. After passing over the scales trucks will proceed directly to the Zero-Sort building area. The southern facility entrance is intended as a secondary access point for use by facility personnel and visitors. These vehicles will proceed directly to the adjacent parking area.

The proposed improvements include additional traffic signage, striping and barriers for improved vehicle safety. WEA has provided a schematic drawings (refer to Drawing C2.1) indicating traffic movement at the Site.

The Zero-Sort facility is limited to vehicle access and is not open to pedestrian foot traffic.

SECTION 3, STANDARD 3: Proposed utilities & ability to serve

Casella Recycling will utilize the existing public water service to the former Shredder Building. The Lewiston Zero-Sort operations will also utilize the existing facility system and pump station to discharge sanitary wastewater to the Lewiston-Auburn Water Pollution Control Authority. A letter describing the proposed sewerage and water supply improvements for the facility has been forwarded to the City of Lewiston Department of Public Works. The letter requests confirmation that the systems have adequate capacity to accommodate the proposed site changes (refer to Exhibit G).

The proposed Site improvements will upgrade the stormwater management at the facility. An underdrained soil filter (USF) will be installed to meet the MEDEP Chapter 500 regulations for stormwater quantity and quality for new impervious surfaces within the Casella Recycling lease boundary. The building addition will be designed to direct stormwater through downspouts directly to the USF. The new paved areas west of the former Shredder Building will also be directed to the USF. All other existing impervious areas will continue to drain to the facility retention pond.

The Stormwater Management Plan Report for the proposed Lewiston Zero-Sort site improvements is included as Exhibit B. For the location of stormwater features, see Sheet C3.0, Grading, Drainage and Erosion Control Plan. For details of stormwater features, see Site Detail plans C4.0 and C4.1. The pre-development and post-development impact on stormwater flow from the proposed site improvements has been calculated and stormwater BMPs have been designed to meet MEDEP requirements for stormwater management. A Storm Water Pollution Prevention Plan (SWPPP) will be developed and implemented for the Facility.

Casella Recycling has confirmed that the existing overhead Central Maine Power (CMP) electrical service to the northwest corner of the former Shredder Building is adequate to support the proposed materials processing equipment. However, relocation of the overhead service pole is required to maintain required CMP setback (minimum 12.5 feet) from the proposed 15,000 square foot building addition. Review to Drawing C2.0 for utility layout information.

The City of Lewiston fire department is familiar with the facility. Sufficient access routes into and through the facility are present in the event of an emergency. A fire hydrant is located off the southeast corner of the former Shredder Building and serviced by a 6-inch diameter line extending onsite from River Road.

SECTION 3, STANDARD 4: Soils

In order to confirm the site soils have the capacity to support the 15,000 square foot steel-framed and Processing Building A geotechnical evaluation and foundation design will be completed by a Maine licensed professional engineer prior to construction. A project specific erosion and sediment control plan has been completed for the Zero-Sort improvements (refer to Exhibit F)

SECTION 3, STANDARD 5: Proposed structures compared to surroundings

The steel-framed Processing Building structure with metal siding is of similar scale and architectural treatment of adjacent commercial facilities north of the Site along River Road.

SECTION 5: Limitations on conditional use permits

Casella Recycling, LLC requests a conditional use permit valid for two years from the start of construction. This would make the issued conditional use permit approval expiration consistent with the development review expiration period.

EXHIBIT A

BRANN & ISAACSON

ATTORNEYS AND COUNSELORS AT LAW

GEORGE S. ISAACSON
MARTIN I. EISENSTEIN
MARTHA E. GREENE
DAVID W. BERTONI
PETER D. LOWE
BENJAMIN W. LUND
DANIEL C. STOCKFORD
PETER J. BRANN
KEVIN R. HALEY
DANIEL A. NUZZI

MATTHEW P. SCHAEFER
DAVID SWETNAM-BURLAND
STACY O. SITHAM
LYNN B. GELINAS
BARBARA J. SLOTE
KENLEIGH A. NICOLETTA
ANNE M. TORREGROSSA
NATHANIEL A. BESSEY
MICHAEL S. MALLOY

184 MAIN STREET
P.O. BOX 3070
LEWISTON, MAINE 04243-3070
(207) 786-3566
TELECOPIER (207) 783-9325
WEB PAGE: <http://www.brannlaw.com>

Portland Conference Office
148 MIDDLE STREET
SUITE 502
PORTLAND, MAINE

IRVING ISAACSON, Of Counsel

LOUIS J. BRANN 1948
PETER A. ISAACSON 1980

February 28, 2013

Via UPS Next Day Air

Robert Cappadona
Vice President
Casella Recycling LLC
14/24 Bunker Hill Industrial Park
Charlestown, MA 02129

RE: Lease Agreement between the City of Lewiston and Casella Recycling, LLC

Dear Mr. Cappadona:

Thank you for bringing to my attention the 2012 date of my client on the signature page. I had Mr. Barrett cross out the 2012 date and write in the 2013 date, which he has initialed on each of the counterparts I have in my possession. Also, we have filled in the date on the documents.

I am enclosing a copy for your records.

Very truly yours,

BRANN & ISAACSON


Martin I. Eisenstein

MIE/emv
Enclosures

cc: Shelly Field



**City of Lewiston
Executive Department**

EDWARD A. BARRETT
City Administrator

PHIL NADEAU
Deputy City Administrator



February 21, 2013

Robert Cappadona
Vice President
Casella Recycling, LLC
14/24 Bunker Hill Industrial Park
Charlestown, MA 02129

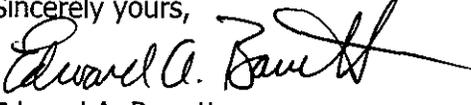
RE: Lease Agreement between the City of Lewiston and Casella Recycling, LLC

Dear Mr. Cappadona:

On February 19, 2013, the Lewiston City Council voted unanimously to authorize the City to enter into a Lease with Casella Recycling, LLC ("Casella") in the form of the attached Exhibit A (the "Lease"), subject to the approval by the City Administrator and the City Attorney of the form of bonds to be provided, as required under Articles 5D and 25 of the Lease. I am prepared to execute the Lease based on the understanding and agreement, as reflected by this letter agreement, that the form of payment and performance bond (attached as Exhibit B) and performance bond (attached as Exhibit C) will be the form of bonds that Casella will provide at the times and in the amounts specified in the Lease, unless otherwise agreed to by Casella and the City. These forms of bonds were discussed and negotiated by counsel for both Casella and the City, and have been approved by Casella and me, as City Administrator, under the understanding that the form of bonds to be provided under the Lease will be as found in Exhibits B and C. Please sign below to signify your agreement that the form of bonds attached as Exhibit B and Exhibit C will be the bonds provided at the times and in the amounts specified in the Lease.

Upon our signature to this Agreement, both you and I will then execute the Lease.

Sincerely yours,


Edward A. Barrett
City Administrator

SEEN, READ AND AGREED TO:

CASELLA RECYCLING, LLC

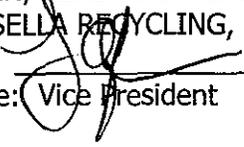
By: 
Title: Vice President

EXHIBIT A

MATERIALS PROCESSING FACILITY LEASE

LEASE
MATERIALS PROCESSING FACILITY

Lease Agreement

This Lease (the "Lease") is made and entered into the 25th day of February, 2013 by and between the CITY OF LEWISTON, a municipal corporation organized by law with a principal place of business in Lewiston, County of Androscoggin, State of Maine (the "CITY") and Casella Recycling, LLC, a Maine limited liability corporation having its principal place of business in the City of Charlestown, County of Suffolk, Commonwealth of Massachusetts ("CASELLA").

WITNESSETH:

In consideration of the mutual promises herein contained and other good and valuable consideration, receipt and sufficiency of which is hereby acknowledged, the parties hereto agree as follows.

ARTICLE 1: LEASED PREMISES

The CITY hereby leases to CASELLA and CASELLA hereby leases from the CITY those premises described in Attachment A, annexed hereto (+3 ACRES), and including the buildings and structures located therein known as the Solid Waste Facility Processing Building (collectively the "Premises"). This Lease specifically excludes areas outside of the Premises shown on Attachment A and, more particularly, the CITY's adjacent recycling area and sanitary landfill, all of which shall remain under the sole control and management of the CITY and not subject to any rights of CASELLA. CASELLA shall use the Premises to construct and operate a Recyclable Materials Processing Facility (the "Facility") for the processing of materials that can be recycled, as more fully described in Attachment B ("Recyclable Materials").

ARTICLE 2: TERM & CONSTRUCTION DATE

- A. Term. This Lease shall extend for a term of twenty (20) years from the Effective Date (hereinafter defined) unless sooner terminated as hereinafter provided. The Lease may be extended for additional terms of five (5) years upon mutually acceptable terms and conditions and agreement of the parties.

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B. Construction Date. CASELLA shall have twelve (12) months from the date of execution of the Lease to satisfy (or waive, in CASELLA's sole judgment), the following conditions precedent (the "Conditions Precedent") to effectiveness of the Lease (The first day of the calendar month immediately following the month in which the Conditions Precedent are satisfied is referred to as the "Construction Date"):

(1) CASELLA shall have received all necessary permits, approvals and authorizations, including all state and local construction and operating permits, approvals and authorizations, for the construction and operation of the Facility by the scheduled Construction Date. Casella shall undertake commercially reasonable efforts to obtain such permits, approval and authorizations in a timely manner.

(2) CASELLA shall have secured necessary equity and/or debt financing, in the exercise of its reasonable judgment, for the construction and operation of the Facility in an economically viable fashion for a period of not less than the initial Term of this Lease (all mortgages and financings to be in accordance with Article 24 hereof).

If the Construction Date has not occurred within twelve (12) months of the date of the execution of this Lease or if the Phase I Termination Rights and Phase II Termination Rights further described in Article 5 (A) are triggered pursuant to the terms of said Article V, either party may terminate this Lease, with no liability to the other party, except as set forth in Section 2(C), upon thirty (30) days written notice served on the other party.

C. Rental Deposit. CASELLA shall make a deposit of Twenty Five Thousand Dollars (\$25,000) to the CITY within thirty (30) days of execution of the Lease (the "Rental Deposit"). The Rental Deposit shall be applied to the rental payments for the first year of the Lease in an amount of Two Thousand Eighty Three Dollars and Thirty Three Cents (\$2,083.33) per month. If the Lease is terminated by CASELLA based on the inability of CASELLA to satisfy Conditions Precedent set forth in Section 2(B) (2) above, the Rental Deposit shall not be returned to CASELLA. If the Lease is terminated by CASELLA based on an inability of CASELLA to satisfy Conditions Precedent set forth in Section 2(B) (1) above, or the Lease is terminated by either

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party pursuant to the Phase I Termination Rights or Phase II Termination Rights further described in Article 5 (A), the Rental Deposit shall be returned to CASELLA within thirty (30) days of the termination of the Lease.

ARTICLE 3: RENTAL & EFFECTIVE DATE

A. Base Rental. In addition to the other obligations imposed herein, CASELLA hereby agrees to pay the CITY, as the base rental (the "Base Rental") during the term hereof, the sum of Five Thousand Six Hundred Thirty Eight Dollars (\$5,638) in advance on the first day of each and every month of said term commencing on the first day of the month following the Effective Date (hereinafter defined). The Effective Date shall be the date of issuance of an occupancy permit to CASELLA for the purpose of operating a Recyclable Materials Processing facility on the Premises or eight (8) months after the Construction Date, whichever occurs first. CASELLA agrees to pay the full annual rental of Sixty-Seven Thousand Six Hundred Fifty-Six Dollars (\$67,656) to the CITY on the first day of the month following the Effective Date in full satisfaction of the Base Rental for the first twelve (12) months of the Lease term ("First Lease Payment").

B. Additional Rental. In addition to the Base Rental, Casella agrees to pay as additional rental a percentage increase, beginning on the anniversary date of the Effective Date, and each anniversary date thereafter, effective on the anniversary of the Effective Date, an amount equal to the percentage increase of the Gross National Product – Implicit Price Deflator (Source – Survey of Current Business – Department of Labor) as compiled for the most recent twelve (12) month period for which such data is available as compared with the comparable figure for the prior twelve (12) month period.

Notwithstanding anything to the contrary, the increase shall not be less than two percent (2%) per year nor greater than five percent (5%) per year.

C. Place of Payment. Unless and until the CITY has otherwise notified CASELLA in writing, all payments of Base Rental and Additional Rental shall be paid to the CITY by CASELLA in care of the City Treasurer, City of Lewiston, 27 Pine Street, Lewiston, Maine 04240.

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MATERIALS PROCESSING FACILITY

- D. Set-Off. CASELLA shall not have the right or option to set off or deduct from either the Base Rental or Additional Rental any charges or obligation of CASELLA.

ARTICLE 4: PERMITTED USES; LESSEE'S WORK

- A. Material Processing Facility. CASELLA shall use the Premises solely as a Recyclable Materials Processing Facility, which shall be licensed as a solid waste transfer facility by the Maine Department of Environmental Protection (the "DEP Solid Waste Permit") and may also be permitted as a junkyard for waste and material storage by the City of Lewiston (the "City Junkyard Permit"), as such licenses and permits may be amended or modified from time to time, provided that at all times CASELLA shall maintain all requisite licenses and permits to operate the Facility as a solid waste transfer facility and as a junkyard, if a junkyard permit is required. Recyclable Materials activities permitted on the Premises shall be limited to accepting, sorting, and shipping Recyclable Materials for appropriate reuse, which include the materials found on Attachment B, and only those similar non-hazardous materials for which a market exists and that the CITY has approved in writing, such approval not to be unreasonably withheld, conditioned or delayed. The Recyclable Materials on Attachment B may be updated by the parties from time to time. Casella shall not dispose of any materials or residue at the adjacent CITY-owned and operated landfill.
- B. In-State Material. CASELLA shall accept only those Recyclable Materials originating within the State of Maine. No out-of-state waste of any type will be accepted for processing or storage at the leased Premises. For purposes of this section, in-state waste shall not include waste originating from out of state sources that is subsequently processed or handled at a facility located within the State of Maine, with the exception of cardboard, plastic, and other acceptable materials as defined in Section 4 (A) above recovered at the KTI Biofuels, Inc. facility located in Lewiston, Maine.
- C. New Construction and Improvements. CASELLA shall undertake such site work and construct such buildings and structures as may be required to support the activities authorized by this Lease. Such work and construction is preliminarily shown on Attachment A. Final approval of such buildings and structures is subject to CASELLA

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submitting a site plan, prepared and stamped by a State of Maine licensed engineer to the CITY and its Planning Board for review and approval, and building plans and specifications. Such finally approved site plan and building plans and specifications shall be attached to the Lease, be deemed part of the Lease, and be referred to as the Site Plan. CASELLA shall at all times during the Term of this Lease and any extension thereto remain in conformance with the Site Plan as may be modified from time to time pursuant to this Section 4 (C). The Site Plan may be modified in the future by CASELLA if proposed changes are approved in advance by the CITY, such approvals to not be unreasonably withheld, conditioned, or delayed. All buildings constructed on the Premises shall be designed and constructed in accordance with all applicable federal, state, and local laws, rules, and regulations, including conditions imposed by the City Planning Board. CASELLA shall submit plans and specifications to the CITY for any structures which are new or which will be relocated on or after the initial commencement date of this Lease.

D. Space Provided to CITY: CASELLA shall provide, at no rent to CITY, adequate space within the Premises for the CITY to accept and process universal and electronic waste, waste oil, and appliances or equipment containing Freon, subject to certain indemnity provisions from CITY to CASELLA to be further described in a sub-lease agreement between the parties attached as Attachment C.

ARTICLE 5: COVENANTS OF CASELLA

A. Acceptance of Premises. CASELLA shall accept delivery of the Premises in an "as is" state, subject to the completion of a Phase I Environmental Assessment to be undertaken by CASELLA by a qualified consulting firm acceptable to the CITY. Should either party deem the results of such assessment to be problematic, either party may terminate this Lease within thirty (30) days of the receipt of the results of the Phase I Assessment with no further obligations to the other ("Phase I Termination Rights"). Alternatively, the parties may agree to undertake a Phase II Environmental Assessment with the cost of such assessment to be divided equally. In the absence of such termination, the parties shall be deemed to have agreed to undertake a Phase II assessment, which CASELLA shall undertake using a qualified consulting firm

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acceptable to the CITY. Should the Phase II assessment indicate a reasonable likelihood of the existence of environmental issues that are likely to require remediation at a cost of twenty-five thousand dollars (\$25,000) or less, CASELLA shall undertake such remediation in a manner, and using contractors, acceptable to the CITY. Should the Phase II assessment indicate a reasonable likelihood of the existence of environmental issues that are likely to require remediation at a cost in excess of twenty-five thousand dollars (\$25,000), the CITY and CASELLA shall each individually, within sixty (60) days of receipt of the results of the assessment, have the right to terminate this Lease ("Phase II Termination Rights"). In the event that either party does not provide notice to the other party of termination within such sixty (60) day period, then the parties shall be deemed to have agreed to continue the Lease in full force and effect and to share equally in those costs of remediation in excess of twenty-five thousand dollars (\$25,000), such remediation efforts to be undertaken by the CITY and made in consultation with CASELLA but without the CITY being bound to follow the CASELLA advice. No representations as to the state of the Premises are made by the CITY.

- B. Business Use. CASELLA agrees that, without prior written consent of the CITY, the Premises shall be occupied by no other person or firm, its agents, employees, contractors, vendors, or suppliers, except in accordance with the provisions hereof with respect to the construction of buildings and facilities and delivery of materials and removal of product and by-products pursuant to the Article 4 permitted activities.
- C. Lawful Use. CASELLA will use and occupy the Premises and appurtenances thereto in a careful, safe, and proper manner and will not commit, suffer, or permit the same to be used for any unlawful purpose and will conform to and abide in all material respects by any and all governmental regulations respecting the Premises and the use and occupancy thereof. Without limiting the generality of the foregoing, CASELLA shall:
1. Obtain and maintain in force at all times all licenses and permits, whether state, federal, or local, necessary for CASELLA to operate its businesses.
 2. Remove all waste material not destined for beneficial reuse to an appropriate place for lawful disposition thereof. Such material will not be accepted or placed in the CITY's adjacent sanitary landfill. CASELLA shall undertake commercially reasonable efforts to dispose of residue from the processing of the Recyclable Materials at the Mid-Maine Waste Action Corporation incinerator

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located in Auburn, Maine unless that facility is unable or unwilling to accept such material.

3. Prevent any leaching of petroleum products or other materials into the ground in accordance with all laws, rules, regulations, and requirements established by or in connection with the Maine Department of Environmental Protection.
4. Cause all conveyors and all machinery, with the exception of mobile processing equipment, to be fully and safely placed within buildings and/or enclosed so as to prevent access by unauthorized persons and to minimize any possible escape of dust and other materials into the atmosphere.
5. Construct its facilities and operate the same in full compliance with all local, state, and federal requirements, specifically including relevant fire prevention codes and environmental laws.
6. Not permanently place, cause to be placed, deposit, or discharge any hazardous waste upon the Premises or upon any other portion of the CITY's adjacent property and further expressly agree that it shall indemnify the CITY from any and all costs, expense, or liability of whatever kind or nature, including reasonable attorneys fees and costs and any penalties and fines, incurred by the CITY in detecting, evaluating, removing, treating, disposing of, or otherwise responding to any hazardous waste placed or deposited in violation of this paragraph. CASELLA agrees that it shall not violate any local, state, or federal regulation, ordinance, or statute pertaining to hazardous waste or hazardous materials and further expressly agrees that it shall indemnify the CITY from any and all costs, expense, or liability, of whatever kind or nature, including reasonable attorneys fees and costs and any penalties and fines, incurred by the CITY for any such violation. Such costs shall be deemed to include, without limitation, the CITY's costs and attorneys fees of defending any suit filed by any person, entity, agency, or governmental authority; paying any fines imposed in connection with such suit; paying any judgments or otherwise settling any damage claims; complying with any order by a court of competent jurisdiction directing the CITY to take any remedial action with respect to such waste; and all associated attorney's fees and costs. For the purpose of this paragraph, the term "hazardous waste" shall be deemed to include every substance now or hereafter designated as a hazardous waste under any provision of state or federal law.

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CASELLA's obligations under this paragraph shall be deemed to survive the expiration or termination of this Lease.

7. Make deliveries to the Premises from 7 a.m. to 5 p.m. on Monday through Friday and from 8 a.m. to 12 p.m. on Saturday, with no Sunday operation, subject to longer daily and/or weekly operation with the CITY's consent. The processing of Recyclable Materials delivered to the Facility will be permitted from 6 a.m. to 10 p.m. to the extent that all processing occurs within an enclosed structure. Notwithstanding the foregoing sentences, CASELLA shall be permitted to perform maintenance and repairs on the plant and equipment at any time.
8. Operate the Premises so as to produce no more than seventy (70) dBa of noise measured at the property line. Transient noise caused by backup alarms on vehicles shall be disregarded for purposes of determining compliance with this requirement.
9. All deliveries of Recyclable Materials shall be deposited and stored within the processing building. Once processed, these materials shall be stored inside a building until transported from the Premises. Staging areas and storage of all materials shall be in accordance with the terms and conditions of the City Junkyard Permit, if required, and DEP Solid Waste Permit as such may be modified, renewed, or amended from time to time.

D. Payment and Performance Bonds. With respect to any construction (labor or materials) contemplated by Article 4 hereof and any repairs to or restoration or reconstruction thereof, and also to any other construction or other work which is lienable under Maine law from time to time in effect, CASELLA shall, prior to commencement thereof, submit a request to the CITY as to whether a bond will be required, and, if requested by the CITY, provide to the CITY a payment and performance bond or bonds naming the CITY as obligee in full contract price for such labor and materials (including, where applicable, any contractual element for profit and/or overhead), all in form and issued by insurers approved by the CITY.

E. Creation of Additional Hazards. Except for the use of the Premises contemplated by this Lease, CASELLA shall neither do, nor permit, any act or thing which may increase the casualty risk, fire hazard, or insurance coverages on the Premises, except with the prior written consent of the CITY and assumption by CASELLA of additional rates arising from such additional potential hazard. If CASELLA should cause an increase in

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the hazard, the CITY reserves the right to require a higher minimum level of insurance. Without limiting the generality of the foregoing, no fuel burning equipment, except vehicles and boilers necessary for providing heat to buildings, will be used on the Premises.

- F. Utilities. CASELLA shall pay all bills for water, sewer, stormwater, trash removal, gas, and electricity, fuel oil, and other utilities which may be assessed or charged against the occupant of the Premises during the term of this Lease.
- G. Taxation. CASELLA agrees that the Premises shall be deemed taxable by the City of Lewiston Tax Assessor during the entire term hereby created. CASELLA shall promptly pay on or before the due date thereof all real estate taxes (land and buildings) and all taxes on its personal property at the Premises, including, without limitation, excise taxes on its mobile equipment predominantly stationed at the Premises, which shall be registered under Maine law at CASELLA's place of business at Lewiston, Maine, it being intended that the City of Lewiston shall benefit from the tax on such mobile equipment.

ARTICLE 6: MAINTENANCE, REPAIR, RELACEMENT, AND RESTORATION

- A. CASELLA's Obligation. CASELLA agrees that, except for reasonable wear and tear and casualty damage, and at its sole cost and expense, it shall make all repairs, alterations, and restorations to the Premises, including foundations, roof, interior and exterior structural components of the buildings, and the non-structural components of the Premises (including all doors, doorframes, glass, window sashes, floor coverings, and including the water and sewer systems and plumbing, heating, air conditioning, electrical and electric systems) (i) as may be necessary to maintain said portions of the Premises in as good repair and condition as the same are on the date of substantial completion of CASELLA's work and execution of the certificate of occupancy; and (ii) which may be required by any laws, ordinances, or regulations of any public authority having jurisdiction, the applicability of which CASELLA shall be entitled to contest in an appropriate form.
- B. Right of Access. The CITY and its designated representatives shall have a right of access to inspect the Premises and to order corrective measures consistent with the terms of this Lease and/or applicable law. In the event CASELLA fails to make repairs to keep the

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Premises and all improvements thereon in a safe and sanitary condition, the CITY shall have the right to enter upon the Premises for purposes of making repairs and to charge the cost of such reasonable repairs to CASELLA, which charges shall be payable within ninety (90) days of demand by the CITY in the form of an invoice for such charges and costs to CASELLA.

- C. Due Diligence. Before making any repairs, alterations, or restorations regarding the Premises or any improvements thereon, CASELLA agrees that it will procure all necessary permits. CASELLA agrees to pay promptly when due the costs of any work caused to be done by it on the Premises so that the Premises shall at all times be free of liens for labor or materials. CASELLA agrees to save harmless and indemnify the CITY from and against any and all injury, loss, claim, or damage to any person or property occasioned by or arising out of the doing of any such work by CASELLA or its employees or agents.
- D. Snow Removal. CASELLA shall be responsible for snow removal within the Premises and shall be responsible to perform all snow and ice removal necessary to its operations at the Premises.
- E. Trash Removal. CASELLA shall be responsible for all waste and trash removal at the Premises.
- F. Pavement Maintenance. CASELLA shall be responsible for maintaining all pavements (including parking areas) throughout the Premises in a manner that allows for the safe passage of vehicles and equipment throughout the Premises and through the Premises to adjacent CITY property.

ARTICLE 7: Insurance.

CASELLA shall purchase and maintain in full force and effect, at all times during the term of this Lease, a policy or policies of commercial general liability and property damage insurance with policy limits of not less than those outlined below. Insurance policies shall be issued on ISO form CG 00 01, or a substitute providing equivalent coverage naming the CITY as an additional insured. Such policies shall be issued with an endorsement on the following forms (or their equivalents): Liability: ISO CG 20 11 01 96 Additional Insured – Managers or Lessors of Premises; and Property: ISO CP 12 19 06 07 Additional Insured - Building Owner, since the CITY will be the owner of the building. The foregoing endorsements shall provide that there is

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no exclusion from coverage for the acts or omissions of the Additional Insured. The insurance shall be endorsed to provide primary and non-contributing liability coverage. It is the specific intent of the parties to this Agreement that all insurance held by the CITY shall be excess, secondary and non-contributory. In addition, such insurance shall have the following endorsements: Waiver of Subrogation: ISO form CG 29 88 10 93 Waiver of Transfer of Rights of Recovery Against Others Endorsement; and ISO form CP 10 30, or equivalent, Waiver of Subrogation by Insurer as to the Landlord. In addition, the insurance shall contain an endorsement, "Deletion of Personal Injury Exclusion to Contractual Liability Coverage" that provides that the personal injury contractual liability exclusion shall be deleted. The following endorsements are prohibited from such insurance:

- (a) Contractual Liability Limitation, CG 21 39 or its equivalent.
- (b) Amendment Of Insured Contract Definition, CG 24 26 or its equivalent.
- (c) Limitation of Coverage to Designated Premises or Project, CG 21 44.
- (d) Any endorsement modifying or deleting the exception to the Employer's Liability exclusion.
- (e) Any "Insured vs. Insured" exclusion
- (f) Any type of punitive, exemplary or multiplied damages exclusion.

All deductibles and/or retentions shall be paid by, assumed by, for the account of, and at the CASELLA's sole risk, except as otherwise provided in the Sublease. CASELLA shall not be reimbursed for same.

CASELLA agrees, at the request of the CITY, but in any event not more often than once every 5 years, to increase the limits of its general liability insurance to such limits as are then customarily carried with respect to premises similar to the Leased Premises within the State of Maine. The designation of insurance policy minimum limits shall not be construed to be, nor operate as, a limitation on the financial liability of CASELLA in respect to the hold harmless provisions of this Lease but only establish a minimum threshold for third-party payment. The amounts of such coverage shall be initially no less than as follows:

<u>Type</u>	<u>Amount</u>
1. Workers' Compensation	\$1 Million combined single limit Statutory Employers Liability Covered by no less than a \$50 Million Umbrella in conjunction with items 2 and 3 below
2. Commercial General Liability to include but not be limited to	\$3 Million per occurrence \$3 Million aggregate

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- | | |
|--|---|
| the following | covered by \$50 Million umbrella |
| a) premises/operations | \$250,000 deductible |
| b) independent contractor | |
| c) personal injury coverage | |
| d) product/completed operations | |
| e) contractual liability | |
|
 | |
| 3. Comprehensive Automobile Liability coverage | \$3 Million per occurrence |
| to include coverage for: | \$3 Million aggregate |
| a) owned/rented automobiles | \$25,000 deductible |
| b) non-owned automobiles | Covered by \$50 Million Umbrella |
| c) hired cars | |
|
 | |
| 4. Standard Form Replacement Value All Risk Insurance Policy except as otherwise provided in the Sublease. | Replacement Value;
\$100,000 deductible |
|
 | |
| 5. Commercial Business Interruption | Equal to 1 year loss of profit |
|
 | |
| 6. Environmental Liability | \$13 million per occurrence
\$13 million aggregate
\$100,000 deductible |

The CITY and CASELLA release each other from any liability or responsibility (to the other or anyone claiming through or under them by way of subrogation or otherwise) for any loss or damage to any building, structure or tangible property, or any resulting loss of income, or losses under any workers' compensation laws and benefits, notwithstanding the fact that such loss or damage shall have been caused by the fault or negligence of the other party, or anyone for whom such party may be responsible. Each party shall include in any insurance policy or policies required by this Lease a provision that any such release shall not adversely affect said policies or prejudice any right to recover under such policies. If the release of either the CITY or CASELLA, as set forth in the first sentence of this Section, shall contravene any law with respect to exculpatory agreements, the liability of the party in question shall be deemed not released, but no action or rights shall be sought or enforced against such party unless and until all rights and remedies against the claimant's insurer are exhausted and the claimant shall be unable to collect such insurance proceeds.

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ARTICLE 8: DAMAGE BY FIRE OR OTHER CASUALTY

If, during the Term hereof, the buildings and improvements on the Premises shall be destroyed or damaged in whole or in part by fire or the elements or by any other cause whatsoever, then CASELLA shall cause the same to be repaired, replaced, or rebuilt as nearly as practicable to the condition existing just prior to such damage or destruction and within a period of time which, under all prevailing circumstances, shall be reasonable. CASELLA shall repair, replace, or rebuild the affected portion of the Premises with due diligence.

Prior to commencing any work necessary to repair, replace, or rebuild the buildings and other improvements, CASELLA shall furnish the CITY with complete plans and specifications for such repairing, replacing, and rebuilding, which plans and specifications shall meet with the reasonable approval of the CITY and with the approval of any governmental board, bureau, or body then exercising jurisdiction with regard to such work. CASELLA shall cause such repairs, replacement, or rebuilding to be performed in accordance with the plans and specifications therefor and any applicable law, statute, ordinance, regulation, or requirement of the federal, state, or municipal governments. CASELLA shall not be entitled to any abatement or reduction in Rent during the period of such restoration or rebuilding.

ARTICLE 9: COVENANT OF THE CITY

The CITY shall warrant and defend CASELLA in the quiet peaceable possession of the Premises during the term hereof so long as CASELLA shall perform any and all of the covenants, agreements, terms, and conditions herein agreed to be kept by CASELLA.

ARTICLE 10: INDEMNITY

- A. General Indemnification - CASELLA shall defend, indemnify, and hold the CITY and its inhabitants, officers, employees, and agents completely harmless from and against any and all liabilities, losses, suits, claims, judgments, fines, or demands arising by reason of injury or death of any person or damage to any property, including all reasonable costs for investigation and defense thereof (including but not limited to attorneys' fees, court costs, and expert witness fees), of any nature whatsoever arising out of or incident to the use, occupancy, conduct, or management of the Premises or the acts or omissions of CASELLA's officers, agents, employees, contractors, subcontractors, licensees, or

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invitees, except to the extent that such injury, death, or damage is caused by the negligence and/or intentional acts or omissions of the CITY and/or its agents or employees utilizing the Premises. CASELLA shall give to the CITY reasonable notice of any such claims or actions.

B. Waiver of Workers' Compensation Immunity - CASELLA hereby expressly agrees that it will defend, indemnify and hold the CITY, its inhabitants, officers, employees and agents completely harmless from any and all claims made or asserted by CASELLA's agents, servants, or employees arising out of CASELLA's activities under this Lease; provided, however, that CASELLA's aforesaid indemnity and hold harmless agreement shall not be applicable to any liability arising from the negligence and/or intentional acts or omissions of the CITY and/or others utilizing the Premises and/or portions thereof as herein provided. For this purpose, CASELLA hereby expressly waives any and all immunity it may have under the Maine Workers Compensation Act in regard to such claims made or asserted by CASELLA's agents, servants, or employees. Subject to the limitations hereinabove set forth, the indemnification provided under this paragraph shall extend to and include any and all costs incurred by the CITY to answer, investigate, defend, and settle all such claims, including but not limited to the CITY's costs for attorneys fees, expert and other witness fees, the cost of investigators, and payment in full of any and all judgments rendered in favor of CASELLA's agents, servants, or employees against the CITY in regard to claims made or asserted by such agents, servants, or employees.

C. CASELLA shall indemnify, defend, and hold harmless the CITY from and against all claims and actions, and all expenses incidental to such claims or actions, based upon or arising out of damage to property or injuries to persons or other tortious acts caused or contributed to by CASELLA or anyone acting under its direction or control or in its behalf in the course of CASELLA's activities under this Lease and/or others utilizing the Premises, provided that CASELLA's aforesaid indemnity and hold harmless agreement shall not be applicable to the extent of any liability arising from the negligence and/or intentional acts or omissions of the CITY or anyone acting under its direction or control or in its behalf under this Lease.

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D. The CITY hereby expressly agrees that it will defend, indemnify, and hold CASELLA harmless from any and all claims made or asserted by the CITY's agents, servants, employees, visitors or customers arising out of the CITY's activities under this Lease; provided however that the CITY's aforesaid indemnity and hold harmless agreement shall not be applicable to the extent of any liability based upon the negligence and/or intentional acts or omissions of CASELLA or anyone acting under its direction or control or in its behalf in the course of CASELLA's activities under this Lease. For this purpose, the CITY hereby expressly waives any and all immunity it may have under Maine's Workers' Compensation Act in regard to such claims made or asserted by the CITY's agents, servants, or employees subject to the limitations hereinabove set forth. The indemnification provided under this paragraph shall extend to and include any and all costs incurred by CASELLA to answer, investigate, defend, and settle all such claims, including but not limited to CASELLA's costs for attorney fees, expert and other witness fees, the cost of investigators, and payment in full of any and all judgments rendered in favor of the CITY's agents, servants, or employees against CASELLA in regard to claims made or asserted by such agents, servants, or employees.

E. The indemnification and hold harmless provisions of the CITY contained in this Lease, notwithstanding anything to the contrary in this Lease, shall not be considered to, and shall not, expand or create liability on the part of the CITY to any person (including the persons so indemnified) for claims from which the CITY is released, exempted, and/or protected by the Maine Tort Claims Act, as it is currently in effect or is in the future from time to time modified or expanded. The obligations and exposure of the CITY under any indemnification obligations contained in this Lease are subject to the foregoing limitations and are further subject to and shall not exceed the amounts payable to any claiming party under any liability insurance or other applicable insurance the CITY is maintaining at the time of such claim, if any, whichever is higher.

F. CASELLA agrees that all personal property of every kind and description that may at any time be in or on the Premises shall be at its sole risk and that the CITY shall not be liable for any damage to said property or for any loss suffered by CASELLA in its business caused by any manner whatsoever. The CITY shall not be liable for any damage to said property or for any loss suffered by CASELLA in its business caused by any manner

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whatsoever, unless arising as a result of the CITY's misconduct or negligence. The CITY shall not be liable for any damage to persons or property resulting from fire, explosion, falling building materials, steam, gas, electricity, rain, water, snow, or leaks in any part of the Premises or from the pipes, appliances, plumbing works, or from the roof, streets, or subsurface, or from any other place.

G. Under no circumstances shall either party ever be liable for special, incidental, exemplary, punitive, indirect or consequential damages.

ARTICLE 11: PASSAGE AND EASEMENT

The parties acknowledge that the Premises is used by CASELLA and other parties and that, in order to accommodate various uses, the CITY in this Lease reserves certain rights and uses related to the Premises to itself and its successors and assigns. The CITY hereby reserves for itself, its residents, and its customers the right to pass through the Premises during the hours in which the City accepts materials at its recycling area or landfill for purposes of accessing other CITY property and operations located in or adjacent to the Premises to include the CITY's sanitary landfill, adjacent CITY-owned property, and the office building used by the CITY and located near the River Road frontage of the Premises. In addition, the CITY's authorized employees shall have this right and easement at all times, whether during or outside of CASELLA's operating hours. These rights shall also extend to those authorized by the CITY to access the CITY's sanitary landfill, the household hazardous waste facility located adjacent to the premises, and other adjacent CITY owned property.

The parties also acknowledge that CASELLA and its authorized agents require access to adjacent portions of CITY-owned and controlled property for purposes of access to the Premises and to fulfill various requirements of this Lease. Therefore, the CITY grants to CASELLA, its agents, and its customers the right to pass through these areas as shown on Attachment A, attached hereto, for these purposes. This right shall not extend to access to the CITY's adjacent sanitary landfill.

ARTICLE 12: TERMINATION OF LEASE

A. Provisions as to Default. The following acts shall constitute acts of default:

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1. If, notwithstanding the lack of notice or demand by the CITY to CASELLA, the rent or any part thereof (including additional rent) shall at any time be in arrears and unpaid for a period of seven (7) calendar days after notice thereof from the CITY to CASELLA, or
2. If CASELLA shall fail to keep and perform any of the covenants, agreements, and conditions of this Lease on its part to be kept and performed within thirty (30) days of notice of such failure to CASELLA, or
3. If CASELLA shall vacate or abandon the Premises for a period of six consecutive months during the term of this Lease or shall make an assignment for the benefit of its creditors without the consent of the CITY or if the interest of CASELLA hereunder shall be sold upon execution or other legal process, or
4. If CASELLA shall have entered against it by any Court having jurisdiction a decree or order for relief in respect of CASELLA in an involuntary case under any applicable bankruptcy, insolvency, or other similar law now or hereafter in effect, or if a receiver, liquidator, assignee, trustee, custodian, or similar official is appointed regarding CASELLA or any substantial part of its property, or if CASELLA fails generally to pay its debts as they come due, or if CASELLA files a voluntary petition in bankruptcy or takes any corporate action in furtherance of any of the foregoing;

B. Notice of Default. With regard to the occurrence of an event of default under subparagraph 12(A)(2), above, the Lease shall terminate if CASELLA has failed to cure such default within thirty (30) days from the date the CITY gives CASELLA written notice of such default. With regard to the occurrence of an event of default under subparagraphs 12(A)(1), (3) or (4) above, the Lease shall terminate upon the City giving notice to CASELLA of termination of the Lease.

C. Real Property and Fixtures Thereto. Upon the termination of this Lease by expiration of the term or because of a default by CASELLA, all buildings, fencing, paving, plumbing, heating, lighting, and similar fixtures not excluded under Article 18 shall become the sole property of the CITY, free from any claim by CASELLA or its successors or assigns.

D. Remedies for Default. The CITY shall have the right to the following remedies which are intended to be cumulative and in addition to any other remedies provided under applicable law for default and its right to terminate under Subsection 12B:

(i) The CITY may terminate the Lease and retake possession of the Premises.

Following such retaking of possession, the CITY shall not be obligated to relet the

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Premises.

(ii) The CITY may make any payment or perform any obligation which CASELLA has failed to perform. The CITY shall be entitled to recover from CASELLA upon demand all amounts so expended plus interest from the date of the expenditure at the rate of one and one-half percent (1½%) per month together with the CITY's reasonable attorneys' fees and costs of collection for failure to pay. Any such payment or performance by the CITY shall not waive CASELLA's default.

(iii) In any action to enforce any terms of the Lease, the City shall be entitled to its reasonable attorneys' fees and costs.

E. Limitation of Rental Obligation Upon Default. In the event of a termination as a result of CASELLA's default, the CITY shall be entitled to actual direct damages in an amount of twenty-four (24) months Base Rental and Additional Rental, which amount is the parties best estimate of the City's damages. The parties agree that such amount constitutes liquidated damages, and not a penalty.

ARTICLE 13: ASSIGNMENT OR SUBLEASE.

Except for an assignment to a lender for collateral security, CASELLA shall not have the right to assign this Lease or sublet the Premises, or any part thereof, without the written consent of the CITY. By giving consent, the CITY agrees to accept the assignee of CASELLA, but such assignment shall not release CASELLA from the performance of any obligations under this Lease unless such release is otherwise specifically provided for in writing between the CITY and CASELLA. In the event the Premises are sublet, said sublease shall be for the full term of this Lease unless this Lease is sooner terminated, as provided herein, in which event such sublease shall be coterminous with this Lease. Notwithstanding anything to the contrary in this section, CASELLA may assign this Lease to any entity controlling, controlled by, or under common control with CASELLA without obtaining the CITY's consent.

ARTICLE 14: NEW CONSTRUCTION AND RECONSTRUCTION.

No material change in the construction or modification of the buildings located on the Premises shown in the Site Plan, after substantial completion of CASELLA's initial improvements, shall be

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made without the prior consent of the CITY, except such construction as may be required as a result of a casualty loss, in which case the building or buildings thus damaged shall be returned to their pre-existing condition.

ARTICLE 15: LIENS

CASELLA will promptly discharge (either by payment or by filing of the necessary bond or otherwise) any mechanics', materialmen's or other liens against the Premises or any buildings, structures or improvements thereon, which liens may arise out of any payment due for labor, services, materials, supplies or equipment which may have been furnished to or for CASELLA or the Premises during the term of the Lease.

ARTICLE 16: TITLE TO BUILDINGS, STRUCTURES, AND IMPROVEMENTS

Title to the buildings, structures, and improvements constructed on the Premises by CASELLA shall pass to the CITY upon their completion, personal property of CASELLA excepted. The CITY shall retain title to all building, structures, improvements, facilities and installations currently located on the Premises.

ARTICLE 17: RIGHT OF ENTRY.

The CITY, or any of its duly authorized agents, may enter upon the Premises at all reasonable times and with reasonable advance notice to CASELLA to examine the condition of the Premises, the state of repair and maintenance being performed by CASELLA, and, for purposes of determining compliance with this Lease, to examine records relating to the origin of Recyclable Materials received at the Facility, the locations to which processed waste and residuals have been shipped, and the pricing structure in place for other CASELLA customers.

ARTICLE 18: SURRENDER.

CASELLA shall surrender and deliver up the Premises at the end of the term in as good order and condition as existed upon substantial completion of CASELLA's work and the execution of the initial certificate of occupancy, reasonable use, normal wear and tear, and damage by casualty excepted. All machinery and equipment installed or used by CASELLA in the operation of its

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business on the Premises, with the exception of any machinery or equipment initially provided by the CITY, whether such equipment and machinery is later replaced, upgraded, or improved, shall, at the termination of the leasehold, be removed from the Premises and the Premises shall be returned to the CITY in broom clean condition. Any such property shall be removed by CASELLA within thirty (30) days following the end of the term hereby created unless the CITY consents in writing to the non-removal thereof, with such property then becoming the property of the CITY. Any damage to the land or the buildings of the CITY caused by CASELLA's removal of any of its property shall be promptly repaired by CASELLA such that the land or buildings of the CITY shall be returned as nearly as possible to its condition at the commencement of the Lease, ordinary wear and tear excepted.

ARTICLE 19: HOLD-OVER.

Rights acquired under this Lease shall not extend beyond the term hereby created, and no holding over or continuing in the occupancy of the Premises shall not cause or be construed to be an extension of this Lease, but, in any and all such cases, CASELLA shall be a tenant at will at the option of the CITY, subject to removal by the CITY by summary process and proceedings. CASELLA hereby agrees to pay for the time CASELLA retains possession of the Premises or any part thereof after the termination of this Lease at the rate of rental provided for herein, including additional rental, plus an additional 50% of total rental and to pay all expenses of the CITY incurred in enforcing the provisions of this Article 19. This Agreement shall not constitute a waiver by the CITY of any right of re-entry.

ARTICLE 20: CITY RECYCLABLES.

CASELLA shall accept Recyclable Materials delivered to the Premises by the CITY or its contractors or agents for processing under terms and conditions that meet or exceed the most favorable financial terms and conditions offered by CASELLA to any other customer utilizing the services of the Facility. The CITY hereby exercises its option under the existing agreement with CASELLA for processing of Recyclable Materials for the additional two (2) year period ending June 30, 2016. CASELLA hereby offers the City options to further extend such existing agreement for two (2) additional five (5) year periods beyond June 30, 2016, which the City may consider and accept in accordance with its normal purchasing policies.

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ARTICLE 21: SCALE; WEIGH FEE

CASELLA agrees to pay for the value of the replacement of one CITY-owned scale in an amount not to exceed Seventy-Five Thousand Dollars (\$75,000), such amount to be paid within thirty (30) days of the date of the Construction Date (the "Pre-Payment"). In addition, CASELLA shall pay to CITY an initial weigh fee of five dollars (\$5) per vehicle entering the PREMISES for the purpose of delivering recyclables for processing (the "Weigh Fee"). The CITY will be responsible for tracking the number of vehicles entering the PREMISES daily, and will provide CASELLA with a monthly report. The Weigh Fee shall be adjusted on every fifth (5th) anniversary of the Effective Date in an amount equal to the percentage increase of the Gross National Product – Implicit Price Deflator over the most recent five (5) year period for which this data is available. Notwithstanding anything to the contrary, each five (5) year increase shall not be less than ten percent (10%) nor greater than twenty-five percent (25%). The Weigh Fee shall not be collected from CASELLA by the CITY until CASELLA has been credited in an amount equal to the amount initially paid by CASELLA for the Pre-Payment. The CITY shall provide CASELLA with a monthly statement showing the Weigh Fee credit. Once this Weigh Fee credit has been satisfied, CITY shall invoice CASELLA monthly for the Weigh Fee.

ARTICLE 22: EXISTING CITY AGREEMENTS

In the event that CITY has agreements to accept Recyclable Materials in effect with other municipalities as of the date this Agreement is executed, CITY shall provide CASELLA with copies of such agreements within thirty (30) days of that date. CASELLA may, at its option, continue to honor such agreements or request that CITY exercise its right to terminate such agreements in accordance with their terms and conditions. At the request of CASELLA, the CITY shall assist CASELLA in meeting with such municipalities regarding continued use of CASELLA services provided on the Premises.

ARTICLE 23: ACCESS TO RECORDS

CASELLA shall provide the CITY with access to inspect all records documenting the origin of all commercial materials received at the Facility for processing and the locations to which processed material and residues are sent for reuse or disposal. All such records shall be

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maintained at the Facility for a minimum of three (3) years from the time of their creation. Such access shall be provided within normal business hours upon reasonable prior written notification to CASELLA. For purposes of this paragraph, "reasonable notification" shall include any actual notification to CASELLA not less than one business day prior to the date of inspection. Any such inspections shall be conducted in a manner which does not unduly interfere with CASELLA's operations on the leased premises.

ARTICLE 24: MISCELLANEOUS

- A. Notice. Any notice to be served by and on behalf of either party to the other under this Lease or in connection with any proceedings or any act growing out of this Lease and the tenancy hereby granted, shall be sufficiently served by forwarding the same by registered or certified mail to such party by the other or by delivery in person or as by service of legal process addressed to the parties as set forth herein.

If to Lessee: Casella Recycling, LLC
 14-24 Bunker Hill Industrial Park
 Charlestown, MA 02129
 Attn: Bob Cappadona, VP

With copy to: Casella Waste Systems, Inc.
 25 Greens Hill Lane
 Rutland, VT 05701
 Attn: Office of General Counsel

And with a further copy to a bank (mortgagee) to be designated from time to time by Lessee.

If to the Lessor: City of Lewiston
 27 Pine Street
 Lewiston, ME 04240
 ATTN: City Administrator

With copy to: City Clerk
 City of Lewiston
 27 Pine Street
 Lewiston, ME 04240

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All such notices shall be effective from the date of delivery of the same to the United States Postal Service or from the date of receipt if delivery in person or by service of legal process. All notices and consents required by the provisions of this Lease shall be in writing.

- B. Memorandum of Lease. The CITY and CASELLA agree to execute a Memorandum of Lease, which CASELLA, at its expense, shall record with the Registry of Deeds of Androscoggin County, Maine.
- C. Employees. To the extent permitted by federal and Maine law, CASELLA agrees to use commercially reasonable efforts to employ individuals who reside in Lewiston, Auburn, or any other municipality bordering upon Lewiston and Auburn for its operations at the Premises, including management personnel.
- D. Permits. All federal, state, and local permits necessary for the accomplishment of the construction of buildings, improvement of land, and operation of the facilities on the Premises shall be at the sole expense of CASELLA.
- E. Binding Effect. The terms of this Lease shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns.
- F. Governing Law. This Lease shall be construed in accordance with the provisions of the laws of the State of Maine.
- G. Entire Agreement. The parties hereto agree that this Lease contains the entire agreement between the parties hereto with respect to the matters set forth herein and supersede any prior understandings between them.
- H. Amendment. This Lease may be amended only by a document making specific reference to this Lease and executed on behalf of the CITY and CASELLA.

ARTICLE 25: SECURITY

CASELLA shall furnish to the CITY a bond issued by a bonding company approved by the CITY in order to assure the availability of funds to remedy any default hereunder, including, without limitation, any failure to comply with environmental requirements, and to provide for abatement of nuisances, removal of materials stored other than as herein limited, and to provide for restoration and clearing of the Premises upon the termination of this Lease, whether by expiration of the term hereby created or by any

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default by CASELLA or the Surety, as defined below. The initial bond shall initially be in the amount of Five Hundred Thousand Dollars (\$500,000) ("Initial Amount"), to be provided within ten (10) days after site plan approval by the City of the proposed materials processing facility, and dated as of the date of the site plan approval ("Site Plan Approval Date"). Within forty five (45) days prior to the each anniversary date of the Site Plan Approval Date, CASELLA shall provide to the City a bond in the amount of the Initial Amount, except that the amount may be reduced on the third anniversary of its issuance to Two Hundred Twenty Five Thousand Dollars (\$225,000), which amount shall be adjusted annually thereafter in accordance with the formula provided with respect to Additional Rental in Article 3, Section B, above. In the event CASELLA (or the Surety as defined below) shall fail to provide a bond as required herein, a default shall occur, such that the face amount of the existing bond shall be paid to the City by the issuer of such existing bond (the "Surety"). Because the amount of damages to the City for failure to provide a bond as required herein is difficult to determine, the face amount of the bond is the parties' best estimate of the damages to the City for failure to provide a bond. The parties agree that the face amount of the bond constitutes liquidated damages, and not a penalty. If the surety makes payment of the face amount of the bond within thirty (30) days of notice from the City to CASELLA and the Surety of failure to provide the bond as required herein, the Surety shall be entitled to assume all of CASELLA's rights and obligations under the Lease, provided that the Surety provides a bond, in the amount of the bond in the amount as specified herein, within thirty (30) days of such payment. If the Surety assumes CASELLA's rights and obligations under the Lease, the Surety shall continue to provide to the City a bond in the amount as specified herein within forty five (45) days prior to each anniversary date of the Site Plan Approval Date.

ARTICLE 26: FINANCING: MORTGAGE RIGHTS

- A. Financing. CASELLA shall be entitled to mortgage, assign, or transfer its leasehold interest in the Premises to a bank or other financial institution ("Mortgagee") for the

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purpose of obtaining construction and long-term financing for CASELLA's Project during the term of this Lease, provided that:

- a. The term of any debt secured by any such mortgage assignment or transfer (in either case, a "mortgage") shall not exceed the term of this Lease; and
 - b. CASELLA shall give notice to the CITY of the existence of any mortgage, together with the name and address of the mortgagee and a copy of any Mortgage that is a matter of public record. Upon such notice, such mortgagee is deemed a Mortgagee for purposes of Article 24.
- B. Cure of CASELLA's Default. In the event that the CITY sends CASELLA written notice of an act of default by CASELLA under any of the terms of the Lease, the CITY agrees to also simultaneously send a copy of such notice (the "Default Notice") to any Mortgagee of which it has written notice. The Mortgagee shall have a period of thirty (30) days after receipt of a Default Notice to cure any such act of default, provided that where an act of default by its nature takes longer than thirty (30) days to cure, the Mortgagee shall have an additional thirty (30) days to cure such default. The CITY agrees that so long as any Mortgage is in effect, no material change, modification, or amendment to this Lease shall be effective without the prior written consent of the Mortgagee and no termination or surrender of this Lease shall be effective without the CITY providing Mortgagee with prior written notice.
- C. Foreclosure by the Mortgagee. If any Mortgagee shall become the owner of CASELLA's interest under this Lease pursuant to a foreclosure of any Mortgage, or if any Mortgagee shall enter into possession of the Premises under the rights granted in its Mortgage, the Mortgagee shall have the right to take possession of the Premises and to become the legal owner and holder of the leasehold estate created under this Lease, provided Mortgagee has provided notice to the City of the same, and shall hold such estate upon the same terms and conditions as held by CASELLA. However, in such event, the Mortgagee shall only be liable under the terms and conditions of this Lease during the period of time the Mortgagee holds such estate, and not thereafter, nor shall the Mortgagee be liable for any default under the terms or conditions hereof which arose before said estate became vested in the Mortgagee, provided, however, that (i) the CITY shall have the right to terminate this Lease in the event that rentals accruing before said estate became vested in the Mortgagee are not paid in full within thirty (30) days after possession by Mortgagee, or (ii) if the Mortgagee shall obtain CASELLA's leasehold interest in the Premises, the

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Mortgagee shall have the right to assign this Lease in accordance with the requirements of Article 13.

- D. Continuing Liability of CASELLA. The existence of any Mortgage or any foreclosure by a Mortgagee shall not relieve CASELLA from any liability or responsibility for its obligations under this Lease.

ARTICLE 27: CUMULATIVE NATURE OF CITY'S RIGHTS.

Except as may be specifically limited by Article 25, all rights and remedies of the CITY under this Lease shall be cumulative and none shall be exclusive of any other right or remedy allowed by law, nor as a waiver of its authority to assert such rights in the future. The waiver of any one right by the CITY shall not be construed to be a waiver of any other right.

ARTICLE 28: EXCLUSIVE JURISDICTION/DISPUTE RESOLUTION.

- A. The parties agree and consent that the exclusive jurisdictions for purposes of any claim arising from or related to this Amended Agreement as to which a party seeks injunctive relief shall be the state and federal courts of the State of Maine. For all other disputes, claims or controversies arising out of or relating to this Lease or the breach, termination, enforcement, interpretation or validity thereof, including the determination of the scope or applicability of the parties' agreement to arbitrate set forth herein, whether based on contract, tort, common law, equity, statute, regulation, order or otherwise ("Other Disputes"), the Parties agree to pursue the dispute resolution procedures set forth in Section 26B.
- B. Either party may elect to institute dispute resolution procedures before JAMS, as follows, for all Other Disputes:
1. By providing to JAMS office in Boston, MA and the other party a written request for mediation, setting forth the subject of the Dispute and the relief requested. Such mediation shall be conducted by JAMS pursuant to its mediation procedures. The parties will cooperate with JAMS and with each

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other in selecting a mediator from the JAMS panel of neutrals and in scheduling the mediation proceedings. The parties agree that they will participate in the mediation in good faith and that they will share equally in its costs. Such mediation shall take place in Lewiston Maine, unless the parties mutually agree to conduct the mediation at another location. If mediation does not resolve the Dispute, then the parties shall arbitrate the Dispute as set forth in subsection (B)(2) below.

2. The arbitration shall be in accordance with the following procedures:
 - a. The arbitration shall be conducted in Lewiston, Maine before a single arbitrator. The arbitration shall be administered by JAMS, Boston MA office, pursuant to its Comprehensive Arbitration Rules and Procedures and in accordance with the Expedited Procedures in those Rules, or pursuant to JAMS' Streamlined Arbitration Rules and Procedures, as provided for pursuant to such Rules. Judgment on the Award may be entered in any court having jurisdiction. This clause shall not preclude parties from seeking provisional remedies in aid of arbitration from a court of appropriate jurisdiction.
 - b. In any arbitration arising out of or related to this Lease, the arbitrator is not empowered to award punitive or exemplary damages, or consequential or special damages, and the parties waive any right to recover any such damages.

ARTICLE 29: NONDISCRIMINATION

CASELLA for itself, its personal representatives, successors in interest and assigns, and as part of the considerations hereof, does hereby covenant and agree as a covenant running with the land that (1) no person or group of persons shall be excluded on the grounds of race, color, religion, sexual orientation, or national origin from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use or occupancy of said Premises and (2) in the construction of all improvements, buildings, structures, on, over or under such land and the furnishing of services thereon, no person or group of persons shall be excluded on the grounds of race, color, religion, sexual orientation, or national origin from participation in, denied the benefits of, or be otherwise subjected to unlawful discrimination.

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ARTICLE 30: FORCE MAJEURE

- A. "Force Majeure" means shall mean any act, event or condition materially and adversely affecting the ability of a party to perform or comply with any material obligation, duty or agreement required under this Agreement, if such act, event, or condition is beyond the reasonable control of the nonperforming party or its agents relying thereon, is not the result of the willful or negligent action, inaction or fault of the party relying thereon, and the nonperforming party has been unable to avoid or overcome the act, event or condition by the exercise of due diligence, including, without limitation: (i) an act of God, epidemic, landslide, lightning, earthquake, fire, explosion, storm, flood or similar occurrence; (ii) an act of public enemy, war, blockage, insurrection, riot, general unrest or restraint of government and people, civil disturbance or disobedience, sabotage, act of terrorism or similar occurrence; (iii) a strike, work slowdown, or similar industrial or labor action; (iv) an order or judgment (including without limitation a temporary restraining order, temporary injunction, preliminary injunction, permanent injunction, or cease and desist order) or other act of any federal, state, county or local court, administrative agency or governmental office or body which prevents a party's obligations as contemplated by this Agreement; or (v) adoption or change (including a change in interpretation or enforcement) of any federal, state or local law after the Effective Date of this Agreement, preventing performance of or compliance with the obligations hereunder.
- B. Neither party shall be liable to the other for damages without limitation (including liquidated damages) if such party's performance is delayed or prevented due to an event of Force Majeure. In such event, the affected party shall promptly notify the other of the event of Force Majeure and its likely duration. During the continuation of the Force Majeure Event, the nonperforming party shall (i) exercise commercially reasonable efforts to mitigate or limit damages to the performing party; (ii) exercise commercially reasonable due diligence to overcome the Force Majeure event; (iii) to the extent it is able, continue to perform its obligations under this Agreement; and (iv) cause the suspension of performance to be of no greater scope and no longer duration than the Force Majeure event requires.

LEASE
MATERIALS PROCESSING FACILITY

C. In the event of a delay in either party's performance of its obligation hereunder for more than sixty (60) days due to a Force Majeure, the other party may, at any time thereafter, terminate this Agreement.

IN WITNESS WHEREOF, the parties hereto have caused this Lease to be executed in their respective names and on their respective behalves by their duly authorized officers this 25th day of February, A.D., 2013, at Lewiston, Maine.

LESSOR, CITY OF LEWISTON.

BY: Edward C. Bauld

LESSEE, CASELLA RECYCLING, LLC

BY: [Signature]

**LEASE
MATERIALS PROCESSING FACILITY**

ATTACHMENT A

DESCRIPTION OF PREMISES



Easement Access for Casella
Traffic and use of scales

New 15,000 sq ft
addition

City
Office/Breakroom
will remain with
Lewiston

Proposed property line
for which Casella will be
leasing from the City of
Lewiston

AVCOG Haz-Mat
Area will remain
with Lewiston

Google earth

Eye alt 1419 ft

© 2012 Google

44°02'59.03" N 70°11'03.67" W elev. 217 ft

LEASE
MATERIALS PROCESSING FACILITY

ATTACHMENT B

**Acceptable Material Single Stream Residential Commingled Containers and Residential
Fiber:**

Aluminum food and beverage containers

aluminum soda and beer cans, cat food cans, etc.

Glass food and beverage containers

Flint (clear)

Amber (brown)

Emerald (green)

Ferrous Cans

soup, coffee cans, etc.

P.E.T. plastic containers with the symbol #1

no microwave trays

H.D.P.E. natural plastic containers with the symbol #2

milk jugs and water jugs containers only (narrow neck containers)

H.D.P.E. pigmented plastic containers with the symbol #2

detergent, shampoo, bleach bottles without caps (narrow neck containers)

Plastics labeled 3 thru 7.

Mixed Rigid Plastics

(5 gallon buckets, plastic toys, plastic pools)

Old Newspaper (ONP)

Sunday inserts are acceptable paper.

Kraft Paper Bags

Old Corrugated Containers (OCC)

no wax coated.

Magazines (OMG)

Coated magazines, catalogues and similar printed materials, junk mail, and soft cover books.

LEASE
MATERIALS PROCESSING FACILITY

ATTACHMENT C

Sub-Lease Agreement for Space Provided for City Use on the Premises

COMMERCIAL SUB-LEASE

This Commercial Sub-Lease ("Sub-Lease" or "Agreement") is entered into this ___ day of _____, 2013, by and between Casella Recycling, LLC ("Landlord"), and the City of Lewiston, Maine ("Tenant").

1. LEASED PREMISES

1.1 The "Leased Property" shall consist of the real property located at _____, currently leased by Landlord, pursuant to that certain Lease Agreement dated _____, 2013, between the parties, for the Solid Waste Facility Processing Building owned by the City of Lewiston and for the Facility to be built by Landlord (the "Master Lease Agreement"), including, without limitation all rights of ingress and egress to the Leased Property. The "Sub-Leased Premises" shall consist of the portion of the Leased Property as determined by the parties based on the building plans and specifications described in the Master Lease and all rights of ingress and egress thereto.

2. TERM AND RENT

2.1 The term of this Sub-Lease shall run in conjunction with the term (including any early termination or extensions thereof) of the Master Lease Agreement.

2.2 The Tenant shall pay to the Landlord rent at the rate of one dollar (\$1.00) annually for use of the Leased Premises.

3. USE OF LEASED PREMISES

3.1 The Tenant shall use the Sub-Leased Premises as an area to accept and process universal and electronic waste, waste oil, and appliances or equipment containing freon, pursuant to Maine Department of Environmental Protection regulations.

3.2 Tenant agrees to use the Sub-Leased Premises in accordance with applicable laws, including local, state and federal environmental laws, and to maintain the Sub-Leased Premises in good condition, reasonable wear and tear, damage by fire and other casualty excepted. Landlord shall provide free and unobstructed access to the Sub-Leased Premises by Tenant, its employees and agents.

3.3 Tenant agrees to abide by all safety regulations of Landlord in effect at the Facility.

4. INSURANCE

4.1 Tenant's Insurance. Tenant shall be responsible, at its expense, for maintaining general liability insurance for maintaining fire and extended coverage insurance on all contents belonging to Tenant, including, but not limited to, personal property and removable trade fixtures located in the Sub-Leased Premises for the duration of the Agreement, in the amount of such limits as currently provided for on the City's insurance policies. Tenant shall be responsible for the deductible under Landlord's property insurance in the amount of one hundred thousand dollars

(\$100,000) if a loss at the Leased Property is due solely to the negligence or misconduct of the Tenant. Tenant shall have Landlord named as an additional insured on the insurance policies.

4.2 Insurance. Landlord shall maintain insurance as more further described in Article 7 of the Master Lease Agreement.

5. MISCELLANEOUS

5.1 Indemnification. The indemnification provisions of the Master Lease Agreement shall govern.

5.2 Assignment/Subletting. Tenant shall not assign or sublease this Sub-Lease without the Landlord's prior written consent.

5.3 Improvements. All renovations or improvements to the Sub-Leased Premises must be approved by Landlord and completed to the satisfaction of the Landlord.

5.4 Landlord Access. The Landlord or agents of the Landlord may, at reasonable times and upon reasonable prior notice, enter to view the Sub-Leased Premises and make such repairs and alterations as the Landlord may elect to do.

5.5 Limitation of Liability. Neither party shall be liable to the other for special, incidental, exemplary, punitive or consequential damages including without limitation loss of use, loss of profits or revenues, or cost of substitute or re-performed services, suffered, asserted or alleged by either party or any third party arising from or relating to this Agreement, regardless of whether those damages are claimed under contract, warranty, indemnity, tort or any other theory at law or in equity.

5.6 Disclaimer of Joint Venture, Partnership, and Agency. This Agreement shall not be interpreted or construed to create an association, joint venture, or partnership between the parties or to impose any partnership obligation or liability upon either party. Neither party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent of representative of, or to otherwise bind, the other party.

5.7 Governing Law. This Agreement and any issues arising hereunder or relating hereto shall be governed by and construed in accordance with the laws of the State of Maine.

5.8 Representations and Warranties of Authority. Each party represents and warrants to the other that:

a. it is duly qualified to do business and is in good standing in every jurisdiction in which this Agreement requires its performance;

b. it has full power and authority to execute, deliver and perform its obligations under this Agreement;

c. the execution, delivery and performance of this Agreement have been duly and validly authorized by all necessary action by such party; and

d. the execution and delivery of this Agreement by such party and the performance of the terms, covenants and conditions contained herein will not violate the articles of incorporation or by-laws of such party, or any order of a court or arbitrator, and will not conflict with and will not constitute a material breach of, or default under, the provisions of any material contract by which either party is bound.

These warranties shall survive the expiration or termination of this Agreement.

5.9 Termination. This Agreement may be terminated:

a. at any time by both parties upon mutual written agreement; or

b. immediately upon notice by either party in the event that any of the representations and warranties contained in this Agreement are shown to be untrue; or

c. by either party in the event of a failure by the other party to perform a material obligation (a "Default") as follows: if the Default has not been cured by the defaulting party within thirty (30) days from receipt of notice from the non-defaulting party, the non-defaulting party may (i) terminate this Agreement immediately upon notice, or (ii) agree in writing that the defaulting party is diligently pursuing a cure, and extend the cure period at its sole discretion, subject to immediate termination upon notice.

5.10 Entire Agreement. Except as otherwise set forth in the Master Lease Agreement, it is understood and agreed that all understandings and agreements heretofore had between and parties thereto are merged in this Agreement, which alone fully and completely expresses their agreement and contains all of the terms agreed upon between the parties with respect to the subject matter of this Agreement, and that this Agreement is entered into after full investigation, neither party relying upon any statement or representation, not embodied in this Agreement, made by the other. All exhibits, schedules and other attachments, as well as the Master Lease Agreement, are a part of this Agreement and the contents thereof are incorporated herein by reference.

5.11 Amendment. This Agreement may not be amended, modified or supplemented, except in writing and signed by the parties.

5.12 Non-Waiver. No waiver by any party to this Agreement of any failure or refusal by the other party to comply with its obligations shall be deemed a waiver of any other or subsequent failure or refusal to so comply. No waiver by either Party of any right or remedy hereunder shall be valid unless the same shall be in writing and signed by the Party giving such waiver. No waiver by either Party with respect to any default, misrepresentation, or breach of warranty or covenant hereunder shall be deemed to extend to any prior or subsequent default, misrepresentation, or breach of warranty or covenant hereunder or affect in any way any rights arising by virtue of any prior or subsequent such occurrence.

5.13 Severability; Modification Required By Law. If any term or provision of this Agreement shall be found by a court of competent jurisdiction to be invalid, illegal or otherwise unenforceable, the same shall not affect the other terms or provisions thereof or hereof or the whole of this Agreement, but such term or provision shall be deemed modified to the extent necessary in the court's opinion to render such term or provision enforceable, and the rights and obligations of the parties shall be construed and enforced accordingly, preserving to the fullest permissible extent the intent and agreement of the parties herein set forth.

5.14 No Third Party Beneficiaries. Nothing in this Agreement, express or implied, is intended to confer upon any third party any rights, remedies, obligations, or liabilities under or by reason of this Agreement, except as expressly provided in this Agreement.

5.15 No Brokers. The parties agree that they have entered into this Agreement without the benefit or assistance of any brokers, and each party agrees to indemnify, defend and hold the other harmless from any and all costs, expenses, losses or liabilities arising out of any claim by any person or entity that such person or entity acted as or was retained by the indemnifying party as a finder or broker with respect to the transaction described in this Agreement.

5.16 Further Acts. Each party agrees to perform any further acts and to execute, acknowledge, and deliver any documents which may be reasonably necessary to carry out the provisions of this Agreement.

5.17 Successors and Assigns. This Agreement and all of the provisions thereof and hereof shall be binding upon and inure to the benefit of the parties and their respective successors and permitted assigns.

5.18 Counterparts. This Agreement may be executed in one or more counterparts, each of which will be deemed an original, but which together will constitute one and the same instrument.

5.19 Disputes. Article 28 of the Master Lease Agreement shall govern for purposes of any claim arising out of this Agreement or its performance.

IN WITNESS WHEREOF, the parties hereto have executed this Commercial Sub-Lease as of the Effective Date.

CITY OF LEWISTON

CASELLA RECYCLING, LLC

By: Edward A. Barrett

By: [Signature]

Name: Edward A. Barrett

Name: RODO CAPPADONA

Title: City Administrator

Title: VICE PRESIDENT

Date: 2-21-2012 2013

Date: 2-25-2013

[Signature]

EXHIBIT B

FORM OF PAYMENT AND PERFORMANCE BOND

Bond No.: _____

Payment and Performance Bond

KNOW ALL MEN BY THESE PRESENTS that we _____
the Principal and _____, the Surety, are hereby bound unto _____
_____, the Oblige, in the penal sum of _____

Dollars (\$ _____) for the payment of which we bind ourselves, our heirs, administrators, executors, successors, and assigns, jointly and severally, by these presents.

WHEREAS, the Principal has entered into a certain written Lease Agreement with the Oblige, dated the _____
day of _____, (year) _____ (the "Contract"), covering _____

_____ which Contract is hereby incorporated herein
as if fully rewritten:

NOW, THEREFORE, the condition of this obligation is such that if the Principal shall promptly and faithfully perform its obligations (the "Construction Obligations") to construct the Facility (as defined under said Contract) pursuant to Article 4 of said Contract and shall pay all lawful claims of such subcontractors and suppliers who provide labor and/or materials used in the construction of the Facility for the purpose of performing the Construction Obligations (including discharging any liens associated therewith), then this obligation shall be void; otherwise, it shall remain in full force and effect, subject to the following conditions:

1. This Bond is for the term beginning _____ and ending upon the date of the issuance of the occupancy permit for the Facility.
2. If there is no breach or default on the part of the Oblige, then Surety's performance obligation under the bond shall arise after:
 - a. The Oblige has notified the Principal and the Surety in writing at their respective addresses of the alleged breach or the failure of the Principal to pay any subcontractors and suppliers who provided labor and/or materials for the construction of the Facility, and has requested and attempted 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, and has made available during the notice period all books, records, and accounts relevant to the Contract which may be requested by the Principal or Surety. If the Oblige, Principal and Surety agree, the Principal shall be allowed a reasonable time to perform the Contract; but such an agreement shall not waive the Oblige's right, if any, subsequently to declare the Principal in default;
 - b. The Oblige has declared the Principal in default of the Construction Obligations and formally terminated the Principal's right to complete the construction of buildings required by the Contract, provided, however, that such default shall not be declared earlier than twenty (20) days after the Principal and the Surety have received the notice as provided in "a" above; and
 - c. The Oblige has agreed that the Surety shall have, at Surety's option, the right to assume all of Principal's rights and obligations under the Contract upon satisfaction of this Bond.
3. The Oblige shall notify the Surety immediately of any change orders approved by the Oblige, any changes to the scope of work or to the duration of the Contract, or any increases to the Contract price.
4. The Oblige shall immediately notify the Surety of any liens, levies, attested accounts, or other claims against the Principal of which the Oblige has actual or constructive notice.
5. No claim, action, suit or proceeding, except as hereinafter set forth, shall be had or maintained against the Surety of this instrument unless same be brought or instituted and process served upon the Surety within six months after the expiration of this Bond. The parties hereto expressly acknowledge and agree that no liquidated damages shall be claimed, due or payable by Surety pursuant to this Bond.
6. This Bond may be extended for additional terms at the option of the Surety, by Continuation Certificate executed by the Surety.
7. In no event shall the liability of the Surety hereunder exceed the penal sum hereof.

Signed, sealed and executed, this _____ day of _____, (year) _____

Principal

Surety

By: _____
Title

By: _____
Attorney-in-fact

Witness: _____

Witness: _____

EXHIBIT C
PERFORMANCE BOND

Performance Bond

Bond No:

KNOW ALL MEN BY THESE PRESENTS, that _____, the Principal, and _____, the Surety, are held and firmly bound unto the _____ as Obligee, in the penal sum of _____ (\$), 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 Lease Agreement with the above mentioned Obligee dated the day of _____ ("Contract") whereby the Principal has agreed to lease the Premise (as defined in Contract) and operate the Facility (as defined in the Contract), which Contract is hereby incorporated herein as if fully rewritten. Notwithstanding, any terms and provisions specifically modified herein shall have the meaning given in this bond.

NOW, THEREFORE, the condition of the above obligation is such that if the Principal shall promptly and faithfully perform its obligations under the Contract (other than its obligations to construct the Facility), then the Surety's obligation shall be null and void; subject, however, to the following conditions:

1. This bond is for the term beginning _____ and ending _____.
2. If there is no material breach or default on the part of the Obligee for which the Principal has provided notice, then the Surety's performance obligation under this bond, at the Surety's option, to either (i) perform the Principal's obligations under the Contract should the Principal fail to perform or (ii) pay the losses, including liquidated damages specified in the Contract, incurred by the Obligee up to the penal sum, shall arise after:
 - a. The Obligee has notified the Principal and the Surety in writing at their respective addresses of an alleged breach, or in the alternative the Obligee has notified the Principal and the Surety in writing at their respective addresses of a failure to provide a bond as required under Article 25 of the Contract, and has requested and attempted 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 or providing the bond, as the case may be; and has made available during notice period all books, records, and accounts relevant to the Contract which may be requested by the Principal or Surety. If the Obligee, Principal and Surety agree, the Principal shall be allowed a reasonable time to perform the Contract; but such an agreement shall not waive the Obligee's right, if any subsequently to declare the Principal in default; and
 - b. The Obligee has declared the Principal in default and formally terminated the Principal's right to complete the Contract, provided, however, that such default shall not be declared earlier than twenty (20) days after the Principal and the Surety have received the notice as provided in "a" above.
3. The Obligee has agreed that the Surety shall have, at the Surety's option, the right to assume all of the Principal's rights and obligations under the Contract upon satisfaction of this Bond, including but not limited to satisfy the requirements of Article 25 of the Contract.
4. The Obligee has agreed that (i) upon notice by the Obligee of the Principal's failure to provide the bond as required under Article 25 of the Contract, (ii) the Obligee's compliance with Section 2 and (iii) the Surety has determined that a valid claim has been made on this bond by the Obligee, for failure of the Principal to provide the bond required under Article 25, the Surety, at its option, can either perform the Principal's obligations under Article 25 by posting a new bond in accordance with Article 25 or pay the Obligee the penal sum of this bond.
5. As required by Section 2(a) above, the Obligee shall notify the Surety of each instance (each a "Infraction") whereby the Principal has failed to comply with its obligations under Article 4(B) of the Contract, through the

actions of an entity other than Principal or any of Principal's affiliates, by the delivery of out of state waste to the Leased Premises or Principal's recycling transfer facilities located in Westbrook and Scarborough, Maine, respectively. Upon the failure of the Principal to pay the liquidated damages amount agreed by the Principal and the Obligees for each such Infraction (which is set forth below), the Surety and the Obligees have agreed that the Obligees can make a claim on this bond for (and receive payment upon a valid claim of) such liquidated damages amount upon the Principal's failure to perform as described in this Section 5; provided, that the Obligees has complied with Section 2 and the Surety's obligation under this bond is limited to payment of the liquidated damages amounts set forth below and the aggregate liability under this bond shall not exceed the penal sum hereof.

Infraction	Liquidated Damages Amount
Infraction No. 1	\$10,000
Infraction No. 2	\$20,000
Infraction No. 3	\$30,000
Infraction No. 4	\$40,000
Each infraction thereafter	\$50,000 per infraction

6. As required by Section 2(a) above, the Obligees shall notify the Surety when the Principal has failed to comply with its obligations under Article 5(C)(2) of the Contract, or has failed to comply with its obligations under Article 4(B) of the Contract, except as otherwise provided in Section 5 of this bond. Upon the failure of the Principal to pay the liquidated damages amount agreed by the Principal and the Obligees for each such failure (which is set forth below), the Surety and the Obligees have agreed that the Obligees can make a claim on this bond for (and receive payment upon a valid claim of) such liquidated damages upon the Principal's failure to perform as described in this Section 6; provided, that the Obligees has complied with Section 2 of this bond and the Surety's obligation under this bond is limited to payment of the liquidated damages amounts set forth below and the aggregate liability under this bond shall not exceed the penal sum hereof.

Infraction	Liquidated Damages Amount
Infraction No. 1	\$10,000
Infraction No. 2	Penal sum of this bond reduced by any losses already claimed under this bond

7. No claim, action, suit or proceeding, except as hereinafter set forth, shall be had or maintained against the Surety of this instrument unless same be brought or instituted and process served upon the Surety within six months after the expiration of this Bond.
8. This Bond may be extended for additional terms at the option of the Surety, by Continuation Certificate executed by the Surety.
9. In no event shall the liability of the Surety hereunder exceed the penal sum hereof.

Signed, sealed and executed this _____ day of _____ 2013.

Principal

Evergreen National Indemnity Company
Surety

By: _____
Title

(Corporate Seal)

By: _____
Attorney-In-Fact

(Corporate Seal)

Witness: _____

Witness: _____

Obligee

By: _____
Title

Witness: _____

EXHIBIT B



918 Brighton Ave | Portland, ME 04102

STORMWATER MANAGEMENT REPORT

**Lewiston Zero-Sort® Facility
424 River Road
Lewiston, Maine
October 2013**

Introduction

Walsh Engineering Associates, Inc. (WEA) was retained to assist Casella Recycling, LLC (Casella) in the design and permitting of a 15,000± square foot addition (footprint) to the existing waste processing building owned by the City of Lewiston (the City) at 424 River Road. Casella intends to lease the building and a portion of the property for use as a Zero-Sort recycling facility. The proposed project includes the building addition, relocation of an existing office trailer, construction of a new waste storage building with a 1,800 square foot footprint, construction of additional parking areas, and the installation of a new stormwater filtration basin. The proposed site improvements will result in a net increase of approximately 32,924 square feet of impervious area.

This Stormwater Management Report assesses both pre-development and post-development peak runoff rates to establish appropriate control of stormwater runoff to reduce and minimize significant impact on the local environs in accordance with the City Zoning Ordinance and Maine DEP solid waste and stormwater laws.

Methodology

The stormwater runoff analysis has been undertaken utilizing the HydroCAD Stormwater Modeling System software (Version 9.10) developed by the Applied Microcomputer Systems of Chocorua, New Hampshire. The program is based upon the TR-20 computer program and the TR-55 tabular method, both of which are based upon techniques developed by the USDA Soil Conservation Service. The analysis was undertaken for the 2, 10, and 25-year 24-hour frequency storm events for Androscoggin County (3.0, 4.6, and 5.4 inches, respectively) with Type III distribution.

All storm drainage piping and detention basins have been sized for the 25-year, 24-hour storm utilizing the HydroCAD program.

Pre-Development Conditions

The parcel consists of a total of approximately 190 acres, which is currently developed as the City transfer station, waste processing facility, and multiple landfills. The majority of the site is occupied by landfills and undeveloped area. The northwestern portion of the site contains the transfer station and existing waste processing facility. This report concentrates on drainage

characteristics of the northwestern portion of the site as the proposed development will be contained in this area. Stormwater runoff from the northwestern portion of the site, a portion of the adjacent capped landfill, and a portion of the abutting property across River Road drains via overland flow and a catch basin system to an existing stormwater detention pond (D1) northeast of the transfer facility. A 15-inch diameter pipe enters the pond from the north, however, the current survey and historical plans indicate that this pipe has been capped on the upgradient end; therefore, no runoff from the north side of the road enters the pond. The stormwater pond discharges via an 18-inch diameter pipe to a 5-foot deep channel adjacent to the landfill access road. An additional 8-inch diameter capped pipe appears to be a former outlet that is no longer in service. Analysis indicates that a total of approximately 12.041 acres currently drains to the existing stormwater pond, of which approximately 188,517 square feet is impervious area.

Slopes are generally moderate within the transfer facility with the exception of steep slopes associated with a landscaped screening berm along River Road and the capped landfill. As taken from the website of the “*Natural Resources Conservation Service, United States Department of Agriculture, Web Soil Survey,*” soils at the site consists of Belgrade very fine sandy loam (BgB), which is classified as Hydrologic Soil Group (HSG) C. Dune Land (Du), which is classified as HSG A, Hartland very fine sandy loam (HfC2 & HfD2), which is classified as HSG B, and Suffield silt loam (SuD2), which is classified as HSG C. Landfill areas, which area capped with soil and vegetation, have been assumed to be HSG C. The soil boundaries are shown on drawings D1.0 Pre-development Drainage Plan, and D2.0 Post-development Drainage Plan (See Appendix D).

Runoff from the site was analyzed at one analysis point (AP1), which is located at the outlet of the existing stormwater pond. Pre-development peak flow rates at each of the analysis points are summarized in Table 1 for the 2, 10, and 25-year storm events.

Pre-development HydroCAD calculations can be found in Appendix A.

Post-Development Conditions

The proposed project includes the building addition, relocation of an existing office trailer, construction of a new waste storage building, construction of additional parking areas, and the installation of a new stormwater filtration basin. New impervious area will be created and portions of the existing impervious areas will be removed and/or replaced as part of the site work. The net increase in impervious area will be approximately 32,924 square feet. There will be no increase in developed area, as the project consists entirely of redevelopment of a previously developed area.

Stormwater Quantity

Drainage patterns will remain generally the same from pre to post development conditions with all runoff ultimately discharging to the channel east of the existing stormwater pond (D1). A new grassed underdrained soil filter (T1) will be constructed at the west side of the proposed addition. Pond T1 will collect, treat, and detain runoff from the new addition and the new parking lot on the west side of the existing waste processing building (subcatchments 3.1 and 3.2). Controlled discharge from Pond T1 will bypass the existing stormwater pond D1 and outlet

directly to the channel east of Pond D1 so that Pond D1 will not experience an increase in stormwater volume from its existing condition. An outlet control structure with a 2.5-inch diameter orifice and an overflow weir will control discharge from Pond T1 to maintain post development peak flow rates below existing flow rates at AP1 for the 2, 10, and 25 year storm events. The outlet control structure has been designed with an overflow weir that will independently convey the 25-year storm event while maintaining 1-foot of freeboard to the pond crest and the 100-year storm event without overtopping the pond crest (See Appendix B).

Post development HydroCAD calculations can be found in Appendix A. Post-development peak flow rates at each of the analysis points are summarized in Table 1, for the 2, 10, and 25-year storm events.

Table 1 – Comparison of Pre and Post -Development Runoff Rates for 2, 10, and 25-Year Storm Events
Runoff rates in cubic feet per second (c.f.s.)

Table 1			
Peak Flow Rate Comparison at AP1			
Development Condition	Storm Event		
	2 Year	10 Year	25 Year
Runoff Rate (c.f.s)			
Pre-Development	5.0	9.8	16.2
Post-Development	5.0	9.8	16.0

As shown in the Table 1, the peak runoff rates at analysis point AP1 in the post development condition are equal to or below the pre-development conditions for the 2, 10, and 25-year storm events. Based on this analysis, we do not anticipate any impact on downgradient drainage systems due to the proposed development.

Stormwater Quality

The total impervious area draining to Pond D1 will increase by approximately 621 square feet; however, by re-routing the runoff from a portion of the Site through Pond T1 and bypassing Pond D1, the total area draining to Pond D1 is reduced by approximately 46,720 square feet. Analysis indicates that, due to the reduction in contributing area, the runoff volume passing through Pond D1 is reduced by approximately 871 cubic feet during the 2-year storm and 6,450 cubic feet during the 25-year storm. Due to the significant reduction in stormwater volume directed to Pond D1, it is WEA’s opinion that the pond will continue to provide stormwater treatment to the contributing area.

Filtration Pond T1 has been over-sized to treat 100% of the contributing impervious area (32,303 square feet) and landscaped area (14,417 square feet) from subcatchments 3.1 and 3.2 and to provide the appropriate detention volume to maintain peak flow rates below the existing condition at AP1. As a result, Ponds D1 and T1 will cumulatively provide treatment of 100% of the contributing impervious and developed areas.

See Appendix B for Stormwater Treatment Calculations.

Erosion Control

BMPs such as silt fence and/or filter berms of erosion control mix, temporary catch basin inlet protection, mulch, and permanent seeding will be used to prevent erosion and downstream migration of sediment during construction. The locations of temporary and permanent erosion control measures are shown on Drawing C3.0 Grading and Drainage Plan.

Inspection & Maintenance

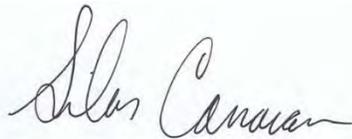
Casella will be responsible for maintaining treatment pond T1 and the associated drainage conduits to the outlet at AP1. An Inspection and Maintenance Plan is included as Appendix C.

The City will maintain responsibility for the maintenance of the existing stormwater detention pond D1 as required in accordance with the City's existing Solid Waste Permit for the Site.

Conclusions

The stormwater management for this project includes stormwater filtration and detention to control both the quantity and quality of stormwater runoff. The HydroCAD calculations show that the peak runoff rates at the analysis point under post-development conditions are estimated to be equal to or less than the peak pre-development runoff rates for the 2, 10, and 25-year storm events. This information indicates that the design meets the stormwater quantity and quality requirements of the Maine DEP and the City of Lewiston ordinance.

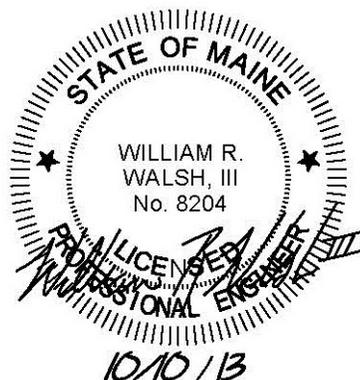
Respectfully,



Silas Canavan, PE
Walsh Engineering Associates, Inc.



William R. Walsh, III, PE
Walsh Engineering Associates, Inc.

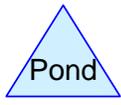
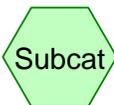
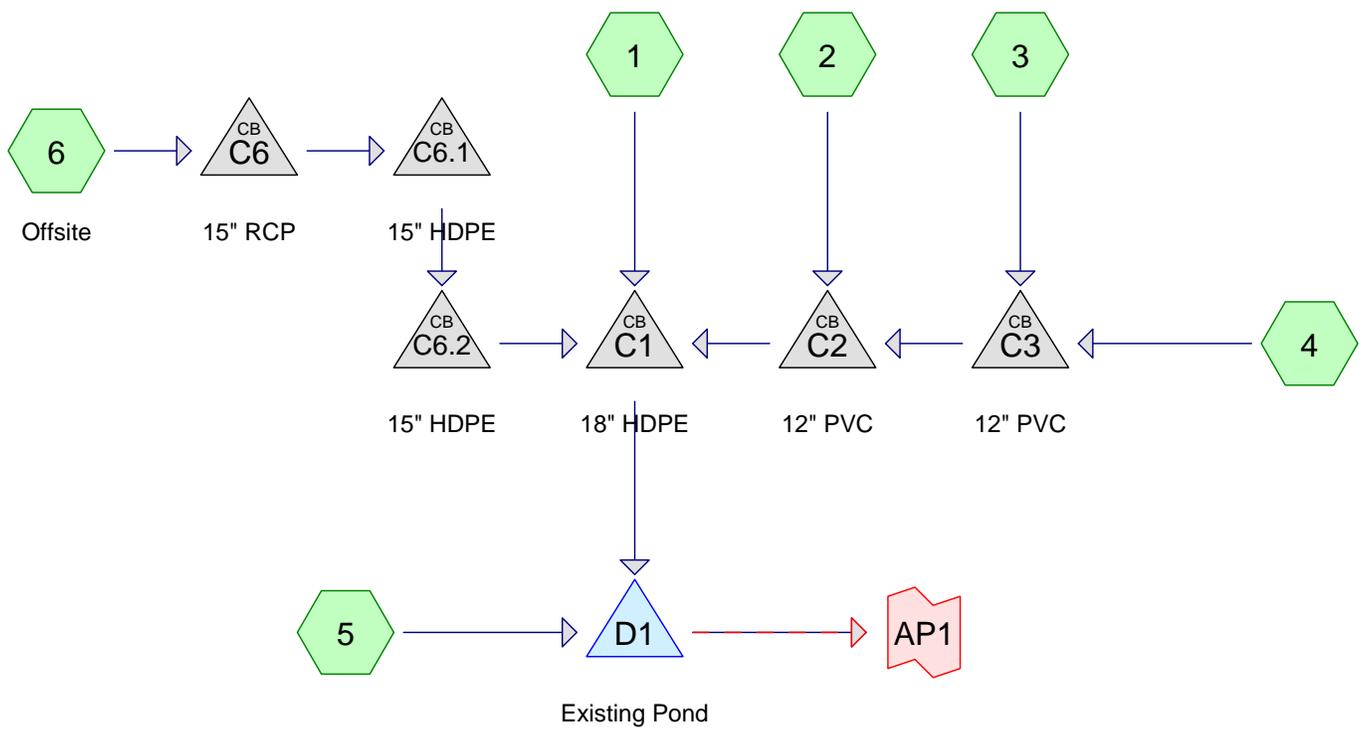


SUPPORTING DATA AND CALCULATIONS

The following material presents calculations and copies of source material used during the analysis for this study.

- Appendix A: Pre and Post Development HydroCAD Calculations
- Appendix B: Stormwater BMP Calculations
- Appendix C: Inspection & Maintenance Plan
- Appendix D: Drainage Plans:
 - D1.0 - Pre Development Drainage Plan
 - D2.0 – Post Development Drainage Plan

Appendix A:
Pre and Post Development HydroCAD Calculations



Drainage Diagram for 197 - Pre Development
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Type III 24-hr 2-year Rainfall=3.00"

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Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 points
 Runoff by SCS TR-20 method, UH=SCS
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=95,918 sf 37.99% Impervious Runoff Depth=0.96"
 Flow Length=600' Tc=17.6 min CN=75 Runoff=1.65 cfs 0.176 af

Subcatchment 2: Runoff Area=20,198 sf 82.33% Impervious Runoff Depth=2.07"
 Tc=5.0 min CN=91 Runoff=1.14 cfs 0.080 af

Subcatchment 3: Runoff Area=56,065 sf 33.61% Impervious Runoff Depth=0.91"
 Flow Length=430' Tc=12.8 min CN=74 Runoff=1.01 cfs 0.097 af

Subcatchment 4: Runoff Area=17,054 sf 100.00% Impervious Runoff Depth=2.77"
 Tc=5.0 min CN=98 Runoff=1.16 cfs 0.090 af

Subcatchment 5: Runoff Area=212,600 sf 37.00% Impervious Runoff Depth=0.96"
 Flow Length=1,000' Tc=24.7 min CN=75 Runoff=3.18 cfs 0.391 af

Subcatchment 6: Offsite Runoff Area=122,676 sf 13.64% Impervious Runoff Depth=0.58"
 Flow Length=325' Tc=15.1 min CN=67 Runoff=1.14 cfs 0.137 af

Pond C1: 18" HDPE Peak Elev=207.65' Inflow=4.80 cfs 0.581 af
 18.0" Round Culvert n=0.013 L=114.0' S=0.0056 '/' Outflow=4.80 cfs 0.581 af

Pond C2: 12" PVC Peak Elev=212.56' Inflow=2.95 cfs 0.268 af
 12.0" Round Culvert n=0.010 L=175.0' S=0.0286 '/' Outflow=2.95 cfs 0.268 af

Pond C3: 12" PVC Peak Elev=216.42' Inflow=1.83 cfs 0.188 af
 12.0" Round Culvert n=0.010 L=80.0' S=0.0529 '/' Outflow=1.83 cfs 0.188 af

Pond C6: 15" RCP Peak Elev=225.73' Inflow=1.14 cfs 0.137 af
 15.0" Round Culvert n=0.011 L=141.0' S=0.0100 '/' Outflow=1.14 cfs 0.137 af

Pond C6.1: 15" HDPE Peak Elev=223.32' Inflow=1.14 cfs 0.137 af
 15.0" Round Culvert n=0.013 L=70.0' S=0.0169 '/' Outflow=1.14 cfs 0.137 af

Pond C6.2: 15" HDPE Peak Elev=222.05' Inflow=1.14 cfs 0.137 af
 15.0" Round Culvert n=0.013 L=210.0' S=0.0079 '/' Outflow=1.14 cfs 0.137 af

Pond D1: Existing Pond Peak Elev=205.17' Storage=8,669 cf Inflow=7.47 cfs 0.972 af
 Primary=5.01 cfs 0.972 af Secondary=0.00 cfs 0.000 af Outflow=5.01 cfs 0.972 af

Link AP1: Inflow=5.01 cfs 0.972 af
 Primary=5.01 cfs 0.972 af

Total Runoff Area = 12.041 ac Runoff Volume = 0.972 af Average Runoff Depth = 0.97"
64.85% Pervious = 7.809 ac 35.15% Impervious = 4.232 ac

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Type III 24-hr 2-year Rainfall=3.00"

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Summary for Subcatchment 1:

Runoff = 1.65 cfs @ 12.26 hrs, Volume= 0.176 af, Depth= 0.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
59,480	61	>75% Grass cover, Good, HSG B
* 36,438	98	Paved parking
95,918	75	Weighted Average
59,480		62.01% Pervious Area
36,438		37.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	50	0.0530	0.10		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.00"
2.3	20	0.2220	0.14		Sheet Flow, BC Woods: Light underbrush n= 0.400 P2= 3.00"
6.7	530	0.0360	1.33		Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps
17.6	600	Total			

Summary for Subcatchment 2:

Runoff = 1.14 cfs @ 12.08 hrs, Volume= 0.080 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
3,569	61	>75% Grass cover, Good, HSG B
* 16,629	98	Paved parking
20,198	91	Weighted Average
3,569		17.67% Pervious Area
16,629		82.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 3:

Runoff = 1.01 cfs @ 12.19 hrs, Volume= 0.097 af, Depth= 0.91"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 2-year Rainfall=3.00"

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Area (sf)	CN	Description
35,739	61	>75% Grass cover, Good, HSG B
* 1,483	90	Gravel
* 18,843	98	Paved parking
56,065	74	Weighted Average
37,222		66.39% Pervious Area
18,843		33.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.88		Sheet Flow, AB Smooth surfaces n= 0.011 P2= 3.00"
6.4	40	0.0100	0.10		Sheet Flow, 4 Grass: Short n= 0.150 P2= 3.00"
5.5	340	0.0220	1.04		Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps
12.8	430	Total			

Summary for Subcatchment 4:

Runoff = 1.16 cfs @ 12.07 hrs, Volume= 0.090 af, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
* 17,054	98	Paved parking
17,054		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 5:

Runoff = 3.18 cfs @ 12.37 hrs, Volume= 0.391 af, Depth= 0.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
44,501	39	>75% Grass cover, Good, HSG A
21,330	61	>75% Grass cover, Good, HSG B
58,991	74	>75% Grass cover, Good, HSG C
* 9,121	90	Gravel
* 72,219	98	Paved parking
* 6,438	98	Water Surface
212,600	75	Weighted Average
133,943		63.00% Pervious Area
78,657		37.00% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	120	0.0150	0.15		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.00"
8.1	285	0.0070	0.59		Shallow Concentrated Flow, BC Short Grass Pasture Kv= 7.0 fps
1.3	295	0.0340	3.74		Shallow Concentrated Flow, CD Paved Kv= 20.3 fps
1.9	130	0.0270	1.15		Shallow Concentrated Flow, DE Short Grass Pasture Kv= 7.0 fps
0.1	60	0.2170	13.17	219.49	Parabolic Channel, EF W=25.00' D=1.00' Area=16.7 sf Perim=25.1' n= 0.040 Earth, cobble bottom, clean sides
0.2	110		9.83		Lake or Reservoir, FG Mean Depth= 3.00'
24.7	1,000	Total			

Summary for Subcatchment 6: Offsite

Runoff = 1.14 cfs @ 12.25 hrs, Volume= 0.137 af, Depth= 0.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
29,872	61	>75% Grass cover, Good, HSG B
43,636	58	Meadow, non-grazed, HSG B
32,438	67	Brush, Poor, HSG B
* 16,730	98	Paved parking
122,676	67	Weighted Average
105,946		86.36% Pervious Area
16,730		13.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0690	0.20		Sheet Flow, AB Grass: Dense n= 0.240 P2= 3.00"
2.7	175	0.0230	1.06		Shallow Concentrated Flow, BC Short Grass Pasture Kv= 7.0 fps
15.1	325	Total			

Summary for Pond C1: 18" HDPE

Inflow Area = 7.160 ac, 33.89% Impervious, Inflow Depth = 0.97" for 2-year event
 Inflow = 4.80 cfs @ 12.21 hrs, Volume= 0.581 af
 Outflow = 4.80 cfs @ 12.21 hrs, Volume= 0.581 af, Atten= 0%, Lag= 0.0 min
 Primary = 4.80 cfs @ 12.21 hrs, Volume= 0.581 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
 Peak Elev= 207.65' @ 12.21 hrs
 Flood Elev= 215.04'

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Type III 24-hr 2-year Rainfall=3.00"

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Device	Routing	Invert	Outlet Devices
#1	Primary	206.44'	18.0" Round Culvert L= 114.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.44' / 205.80' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=4.79 cfs @ 12.21 hrs HW=207.65' TW=204.73' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 4.79 cfs @ 4.29 fps)

Summary for Pond C2: 12" PVC

Inflow Area = 2.142 ac, 56.29% Impervious, Inflow Depth = 1.50" for 2-year event
 Inflow = 2.95 cfs @ 12.09 hrs, Volume= 0.268 af
 Outflow = 2.95 cfs @ 12.09 hrs, Volume= 0.268 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.95 cfs @ 12.09 hrs, Volume= 0.268 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
 Peak Elev= 212.56' @ 12.09 hrs
 Flood Elev= 218.53'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.45'	12.0" Round Culvert L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.45' / 206.44' S= 0.0286 '/' Cc= 0.900 n= 0.010 PVC, smooth interior

Primary OutFlow Max=2.91 cfs @ 12.09 hrs HW=212.54' TW=207.57' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 2.91 cfs @ 3.70 fps)

Summary for Pond C3: 12" PVC

Inflow Area = 1.679 ac, 49.09% Impervious, Inflow Depth = 1.34" for 2-year event
 Inflow = 1.83 cfs @ 12.11 hrs, Volume= 0.188 af
 Outflow = 1.83 cfs @ 12.11 hrs, Volume= 0.188 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.83 cfs @ 12.11 hrs, Volume= 0.188 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
 Peak Elev= 216.42' @ 12.11 hrs
 Flood Elev= 224.38'

Device	Routing	Invert	Outlet Devices
#1	Primary	215.68'	12.0" Round Culvert L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 215.68' / 211.45' S= 0.0529 '/' Cc= 0.900 n= 0.010 PVC, smooth interior

Primary OutFlow Max=1.82 cfs @ 12.11 hrs HW=216.42' TW=212.52' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 1.82 cfs @ 2.92 fps)

Summary for Pond C6: 15" RCP

Inflow Area = 2.816 ac, 13.64% Impervious, Inflow Depth = 0.58" for 2-year event
 Inflow = 1.14 cfs @ 12.25 hrs, Volume= 0.137 af
 Outflow = 1.14 cfs @ 12.25 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.14 cfs @ 12.25 hrs, Volume= 0.137 af

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
 Peak Elev= 225.73' @ 12.25 hrs
 Flood Elev= 229.32'

Device	Routing	Invert	Outlet Devices
#1	Primary	225.22'	15.0" Round Culvert L= 141.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 225.22' / 223.81' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=1.14 cfs @ 12.25 hrs HW=225.73' TW=223.32' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 1.14 cfs @ 2.43 fps)

Summary for Pond C6.1: 15" HDPE

Inflow Area = 2.816 ac, 13.64% Impervious, Inflow Depth = 0.58" for 2-year event
 Inflow = 1.14 cfs @ 12.25 hrs, Volume= 0.137 af
 Outflow = 1.14 cfs @ 12.25 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.14 cfs @ 12.25 hrs, Volume= 0.137 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
 Peak Elev= 223.32' @ 12.25 hrs
 Flood Elev= 228.41'

Device	Routing	Invert	Outlet Devices
#1	Primary	222.81'	15.0" Round Culvert L= 70.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 222.81' / 221.63' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=1.14 cfs @ 12.25 hrs HW=223.32' TW=222.05' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 1.14 cfs @ 2.43 fps)

Summary for Pond C6.2: 15" HDPE

Inflow Area = 2.816 ac, 13.64% Impervious, Inflow Depth = 0.58" for 2-year event
 Inflow = 1.14 cfs @ 12.25 hrs, Volume= 0.137 af
 Outflow = 1.14 cfs @ 12.25 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.14 cfs @ 12.25 hrs, Volume= 0.137 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
 Peak Elev= 222.05' @ 12.25 hrs
 Flood Elev= 228.41'

Device	Routing	Invert	Outlet Devices
#1	Primary	221.53'	15.0" Round Culvert L= 210.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.53' / 219.88' S= 0.0079 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=1.14 cfs @ 12.25 hrs HW=222.05' TW=207.63' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 1.14 cfs @ 3.50 fps)

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Type III 24-hr 2-year Rainfall=3.00"

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Summary for Pond D1: Existing Pond

Inflow Area = 12.041 ac, 35.15% Impervious, Inflow Depth = 0.97" for 2-year event
 Inflow = 7.47 cfs @ 12.28 hrs, Volume= 0.972 af
 Outflow = 5.01 cfs @ 12.57 hrs, Volume= 0.972 af, Atten= 33%, Lag= 17.0 min
 Primary = 5.01 cfs @ 12.57 hrs, Volume= 0.972 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
 Peak Elev= 205.17' @ 12.57 hrs Surf.Area= 7,290 sf Storage= 8,669 cf

Plug-Flow detention time= 53.5 min calculated for 0.972 af (100% of inflow)
 Center-of-Mass det. time= 53.5 min (917.0 - 863.5)

Volume	Invert	Avail.Storage	Storage Description		
#1	203.90'	53,405 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
203.90	6,339	321.0	0	0	6,339
204.00	6,404	322.0	637	637	6,399
205.00	7,155	337.0	6,776	7,413	7,252
206.00	7,950	352.0	7,549	14,962	8,144
207.00	8,746	367.0	8,345	23,307	9,074
208.00	9,684	387.0	9,211	32,518	10,332
209.00	10,470	399.0	10,074	42,592	11,180
210.00	11,159	410.0	10,813	53,405	11,995

Device	Routing	Invert	Outlet Devices
#1	Primary	203.87'	18.0" Round Culvert L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 203.87' / 202.26' S= 0.0383 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	206.75'	5.0' long x 35.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=5.00 cfs @ 12.57 hrs HW=205.17' TW=0.00' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 5.00 cfs @ 3.07 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=203.90' TW=0.00' (Dynamic Tailwater)
 ↑**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Link AP1:

Inflow Area = 12.041 ac, 35.15% Impervious, Inflow Depth > 0.97" for 2-year event
 Inflow = 5.01 cfs @ 12.57 hrs, Volume= 0.972 af
 Primary = 5.01 cfs @ 12.57 hrs, Volume= 0.972 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

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Type III 24-hr 10-year Rainfall=4.60"

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Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 points
 Runoff by SCS TR-20 method, UH=SCS
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=95,918 sf 37.99% Impervious Runoff Depth=2.13"
 Flow Length=600' Tc=17.6 min CN=75 Runoff=3.86 cfs 0.391 af

Subcatchment 2: Runoff Area=20,198 sf 82.33% Impervious Runoff Depth=3.59"
 Tc=5.0 min CN=91 Runoff=1.92 cfs 0.139 af

Subcatchment 3: Runoff Area=56,065 sf 33.61% Impervious Runoff Depth=2.05"
 Flow Length=430' Tc=12.8 min CN=74 Runoff=2.44 cfs 0.220 af

Subcatchment 4: Runoff Area=17,054 sf 100.00% Impervious Runoff Depth=4.36"
 Tc=5.0 min CN=98 Runoff=1.80 cfs 0.142 af

Subcatchment 5: Runoff Area=212,600 sf 37.00% Impervious Runoff Depth=2.13"
 Flow Length=1,000' Tc=24.7 min CN=75 Runoff=7.43 cfs 0.866 af

Subcatchment 6: Offsite Runoff Area=122,676 sf 13.64% Impervious Runoff Depth=1.53"
 Flow Length=325' Tc=15.1 min CN=67 Runoff=3.58 cfs 0.359 af

Pond C1: 18" HDPE Peak Elev=209.67' Inflow=11.53 cfs 1.251 af
 18.0" Round Culvert n=0.013 L=114.0' S=0.0056 '/' Outflow=11.53 cfs 1.251 af

Pond C2: 12" PVC Peak Elev=214.03' Inflow=5.45 cfs 0.501 af
 12.0" Round Culvert n=0.010 L=175.0' S=0.0286 '/' Outflow=5.45 cfs 0.501 af

Pond C3: 12" PVC Peak Elev=217.11' Inflow=3.65 cfs 0.362 af
 12.0" Round Culvert n=0.010 L=80.0' S=0.0529 '/' Outflow=3.65 cfs 0.362 af

Pond C6: 15" RCP Peak Elev=226.22' Inflow=3.58 cfs 0.359 af
 15.0" Round Culvert n=0.011 L=141.0' S=0.0100 '/' Outflow=3.58 cfs 0.359 af

Pond C6.1: 15" HDPE Peak Elev=223.81' Inflow=3.58 cfs 0.359 af
 15.0" Round Culvert n=0.013 L=70.0' S=0.0169 '/' Outflow=3.58 cfs 0.359 af

Pond C6.2: 15" HDPE Peak Elev=222.54' Inflow=3.58 cfs 0.359 af
 15.0" Round Culvert n=0.013 L=210.0' S=0.0079 '/' Outflow=3.58 cfs 0.359 af

Pond D1: Existing Pond Peak Elev=206.73' Storage=21,005 cf Inflow=17.82 cfs 2.117 af
 Primary=9.77 cfs 2.117 af Secondary=0.00 cfs 0.000 af Outflow=9.77 cfs 2.117 af

Link AP1: Inflow=9.77 cfs 2.117 af
 Primary=9.77 cfs 2.117 af

Total Runoff Area = 12.041 ac Runoff Volume = 2.117 af Average Runoff Depth = 2.11"
64.85% Pervious = 7.809 ac 35.15% Impervious = 4.232 ac

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Type III 24-hr 10-year Rainfall=4.60"

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Summary for Subcatchment 1:

Runoff = 3.86 cfs @ 12.25 hrs, Volume= 0.391 af, Depth= 2.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
59,480	61	>75% Grass cover, Good, HSG B
* 36,438	98	Paved parking
95,918	75	Weighted Average
59,480		62.01% Pervious Area
36,438		37.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	50	0.0530	0.10		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.00"
2.3	20	0.2220	0.14		Sheet Flow, BC Woods: Light underbrush n= 0.400 P2= 3.00"
6.7	530	0.0360	1.33		Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps
17.6	600	Total			

Summary for Subcatchment 2:

Runoff = 1.92 cfs @ 12.07 hrs, Volume= 0.139 af, Depth= 3.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
3,569	61	>75% Grass cover, Good, HSG B
* 16,629	98	Paved parking
20,198	91	Weighted Average
3,569		17.67% Pervious Area
16,629		82.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 3:

Runoff = 2.44 cfs @ 12.18 hrs, Volume= 0.220 af, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-year Rainfall=4.60"

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Type III 24-hr 10-year Rainfall=4.60"

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Area (sf)	CN	Description
35,739	61	>75% Grass cover, Good, HSG B
* 1,483	90	Gravel
* 18,843	98	Paved parking
56,065	74	Weighted Average
37,222		66.39% Pervious Area
18,843		33.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.88		Sheet Flow, AB Smooth surfaces n= 0.011 P2= 3.00"
6.4	40	0.0100	0.10		Sheet Flow, 4 Grass: Short n= 0.150 P2= 3.00"
5.5	340	0.0220	1.04		Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps
12.8	430	Total			

Summary for Subcatchment 4:

Runoff = 1.80 cfs @ 12.07 hrs, Volume= 0.142 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
* 17,054	98	Paved parking
17,054		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 5:

Runoff = 7.43 cfs @ 12.35 hrs, Volume= 0.866 af, Depth= 2.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
44,501	39	>75% Grass cover, Good, HSG A
21,330	61	>75% Grass cover, Good, HSG B
58,991	74	>75% Grass cover, Good, HSG C
* 9,121	90	Gravel
* 72,219	98	Paved parking
* 6,438	98	Water Surface
212,600	75	Weighted Average
133,943		63.00% Pervious Area
78,657		37.00% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	120	0.0150	0.15		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.00"
8.1	285	0.0070	0.59		Shallow Concentrated Flow, BC Short Grass Pasture Kv= 7.0 fps
1.3	295	0.0340	3.74		Shallow Concentrated Flow, CD Paved Kv= 20.3 fps
1.9	130	0.0270	1.15		Shallow Concentrated Flow, DE Short Grass Pasture Kv= 7.0 fps
0.1	60	0.2170	13.17	219.49	Parabolic Channel, EF W=25.00' D=1.00' Area=16.7 sf Perim=25.1' n= 0.040 Earth, cobble bottom, clean sides
0.2	110		9.83		Lake or Reservoir, FG Mean Depth= 3.00'
24.7	1,000	Total			

Summary for Subcatchment 6: Offsite

Runoff = 3.58 cfs @ 12.22 hrs, Volume= 0.359 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
29,872	61	>75% Grass cover, Good, HSG B
43,636	58	Meadow, non-grazed, HSG B
32,438	67	Brush, Poor, HSG B
* 16,730	98	Paved parking
122,676	67	Weighted Average
105,946		86.36% Pervious Area
16,730		13.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0690	0.20		Sheet Flow, AB Grass: Dense n= 0.240 P2= 3.00"
2.7	175	0.0230	1.06		Shallow Concentrated Flow, BC Short Grass Pasture Kv= 7.0 fps
15.1	325	Total			

Summary for Pond C1: 18" HDPE

Inflow Area = 7.160 ac, 33.89% Impervious, Inflow Depth = 2.10" for 10-year event
 Inflow = 11.53 cfs @ 12.20 hrs, Volume= 1.251 af
 Outflow = 11.53 cfs @ 12.20 hrs, Volume= 1.251 af, Atten= 0%, Lag= 0.0 min
 Primary = 11.53 cfs @ 12.20 hrs, Volume= 1.251 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
 Peak Elev= 209.67' @ 12.20 hrs
 Flood Elev= 215.04'

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Type III 24-hr 10-year Rainfall=4.60"

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Device	Routing	Invert	Outlet Devices
#1	Primary	206.44'	18.0" Round Culvert L= 114.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.44' / 205.80' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=11.53 cfs @ 12.20 hrs HW=209.67' TW=205.65' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 11.53 cfs @ 6.53 fps)

Summary for Pond C2: 12" PVC

Inflow Area = 2.142 ac, 56.29% Impervious, Inflow Depth = 2.81" for 10-year event
 Inflow = 5.45 cfs @ 12.09 hrs, Volume= 0.501 af
 Outflow = 5.45 cfs @ 12.09 hrs, Volume= 0.501 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.45 cfs @ 12.09 hrs, Volume= 0.501 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
 Peak Elev= 214.03' @ 12.09 hrs
 Flood Elev= 218.53'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.45'	12.0" Round Culvert L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.45' / 206.44' S= 0.0286 '/' Cc= 0.900 n= 0.010 PVC, smooth interior

Primary OutFlow Max=5.36 cfs @ 12.09 hrs HW=213.96' TW=209.08' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 5.36 cfs @ 6.83 fps)

Summary for Pond C3: 12" PVC

Inflow Area = 1.679 ac, 49.09% Impervious, Inflow Depth = 2.59" for 10-year event
 Inflow = 3.65 cfs @ 12.12 hrs, Volume= 0.362 af
 Outflow = 3.65 cfs @ 12.12 hrs, Volume= 0.362 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.65 cfs @ 12.12 hrs, Volume= 0.362 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
 Peak Elev= 217.11' @ 12.12 hrs
 Flood Elev= 224.38'

Device	Routing	Invert	Outlet Devices
#1	Primary	215.68'	12.0" Round Culvert L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 215.68' / 211.45' S= 0.0529 '/' Cc= 0.900 n= 0.010 PVC, smooth interior

Primary OutFlow Max=3.64 cfs @ 12.12 hrs HW=217.10' TW=213.87' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 3.64 cfs @ 4.63 fps)

Summary for Pond C6: 15" RCP

Inflow Area = 2.816 ac, 13.64% Impervious, Inflow Depth = 1.53" for 10-year event
 Inflow = 3.58 cfs @ 12.22 hrs, Volume= 0.359 af
 Outflow = 3.58 cfs @ 12.22 hrs, Volume= 0.359 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.58 cfs @ 12.22 hrs, Volume= 0.359 af

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Type III 24-hr 10-year Rainfall=4.60"

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Peak Elev= 226.22' @ 12.22 hrs

Flood Elev= 229.32'

Device	Routing	Invert	Outlet Devices
#1	Primary	225.22'	15.0" Round Culvert L= 141.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 225.22' / 223.81' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=3.56 cfs @ 12.22 hrs HW=226.22' TW=223.81' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 3.56 cfs @ 3.40 fps)

Summary for Pond C6.1: 15" HDPE

Inflow Area = 2.816 ac, 13.64% Impervious, Inflow Depth = 1.53" for 10-year event
 Inflow = 3.58 cfs @ 12.22 hrs, Volume= 0.359 af
 Outflow = 3.58 cfs @ 12.22 hrs, Volume= 0.359 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.58 cfs @ 12.22 hrs, Volume= 0.359 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Peak Elev= 223.81' @ 12.22 hrs

Flood Elev= 228.41'

Device	Routing	Invert	Outlet Devices
#1	Primary	222.81'	15.0" Round Culvert L= 70.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 222.81' / 221.63' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=3.56 cfs @ 12.22 hrs HW=223.81' TW=222.53' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 3.56 cfs @ 3.40 fps)

Summary for Pond C6.2: 15" HDPE

Inflow Area = 2.816 ac, 13.64% Impervious, Inflow Depth = 1.53" for 10-year event
 Inflow = 3.58 cfs @ 12.22 hrs, Volume= 0.359 af
 Outflow = 3.58 cfs @ 12.22 hrs, Volume= 0.359 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.58 cfs @ 12.22 hrs, Volume= 0.359 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Peak Elev= 222.54' @ 12.22 hrs

Flood Elev= 228.41'

Device	Routing	Invert	Outlet Devices
#1	Primary	221.53'	15.0" Round Culvert L= 210.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.53' / 219.88' S= 0.0079 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=3.56 cfs @ 12.22 hrs HW=222.53' TW=209.61' (Dynamic Tailwater)

↑**1=Culvert** (Barrel Controls 3.56 cfs @ 4.61 fps)

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Type III 24-hr 10-year Rainfall=4.60"

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Summary for Pond D1: Existing Pond

Inflow Area = 12.041 ac, 35.15% Impervious, Inflow Depth = 2.11" for 10-year event
 Inflow = 17.82 cfs @ 12.26 hrs, Volume= 2.117 af
 Outflow = 9.77 cfs @ 12.61 hrs, Volume= 2.117 af, Atten= 45%, Lag= 21.1 min
 Primary = 9.77 cfs @ 12.61 hrs, Volume= 2.117 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
 Peak Elev= 206.73' @ 12.61 hrs Surf.Area= 8,530 sf Storage= 21,005 cf

Plug-Flow detention time= 43.3 min calculated for 2.117 af (100% of inflow)
 Center-of-Mass det. time= 43.2 min (887.9 - 844.7)

Volume	Invert	Avail.Storage	Storage Description		
#1	203.90'	53,405 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
203.90	6,339	321.0	0	0	6,339
204.00	6,404	322.0	637	637	6,399
205.00	7,155	337.0	6,776	7,413	7,252
206.00	7,950	352.0	7,549	14,962	8,144
207.00	8,746	367.0	8,345	23,307	9,074
208.00	9,684	387.0	9,211	32,518	10,332
209.00	10,470	399.0	10,074	42,592	11,180
210.00	11,159	410.0	10,813	53,405	11,995

Device	Routing	Invert	Outlet Devices
#1	Primary	203.87'	18.0" Round Culvert L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 203.87' / 202.26' S= 0.0383 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	206.75'	5.0' long x 35.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=9.76 cfs @ 12.61 hrs HW=206.73' TW=0.00' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 9.76 cfs @ 5.52 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=203.90' TW=0.00' (Dynamic Tailwater)
 ↑**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Link AP1:

Inflow Area = 12.041 ac, 35.15% Impervious, Inflow Depth > 2.11" for 10-year event
 Inflow = 9.77 cfs @ 12.61 hrs, Volume= 2.117 af
 Primary = 9.77 cfs @ 12.61 hrs, Volume= 2.117 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

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Type III 24-hr 25-year Rainfall=5.40"

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Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=95,918 sf 37.99% Impervious Runoff Depth=2.78"
Flow Length=600' Tc=17.6 min CN=75 Runoff=5.07 cfs 0.510 af

Subcatchment 2: Runoff Area=20,198 sf 82.33% Impervious Runoff Depth=4.37"
Tc=5.0 min CN=91 Runoff=2.31 cfs 0.169 af

Subcatchment 3: Runoff Area=56,065 sf 33.61% Impervious Runoff Depth=2.69"
Flow Length=430' Tc=12.8 min CN=74 Runoff=3.22 cfs 0.288 af

Subcatchment 4: Runoff Area=17,054 sf 100.00% Impervious Runoff Depth=5.16"
Tc=5.0 min CN=98 Runoff=2.11 cfs 0.168 af

Subcatchment 5: Runoff Area=212,600 sf 37.00% Impervious Runoff Depth=2.78"
Flow Length=1,000' Tc=24.7 min CN=75 Runoff=9.76 cfs 1.130 af

Subcatchment 6: Offsite Runoff Area=122,676 sf 13.64% Impervious Runoff Depth=2.09"
Flow Length=325' Tc=15.1 min CN=67 Runoff=5.03 cfs 0.490 af

Pond C1: 18" HDPE Peak Elev=211.46' Inflow=15.28 cfs 1.625 af
18.0" Round Culvert n=0.013 L=114.0' S=0.0056 '/' Outflow=15.28 cfs 1.625 af

Pond C2: 12" PVC Peak Elev=215.32' Inflow=6.77 cfs 0.626 af
12.0" Round Culvert n=0.010 L=175.0' S=0.0286 '/' Outflow=6.77 cfs 0.626 af

Pond C3: 12" PVC Peak Elev=217.68' Inflow=4.63 cfs 0.457 af
12.0" Round Culvert n=0.010 L=80.0' S=0.0529 '/' Outflow=4.63 cfs 0.457 af

Pond C6: 15" RCP Peak Elev=226.57' Inflow=5.03 cfs 0.490 af
15.0" Round Culvert n=0.011 L=141.0' S=0.0100 '/' Outflow=5.03 cfs 0.490 af

Pond C6.1: 15" HDPE Peak Elev=224.16' Inflow=5.03 cfs 0.490 af
15.0" Round Culvert n=0.013 L=70.0' S=0.0169 '/' Outflow=5.03 cfs 0.490 af

Pond C6.2: 15" HDPE Peak Elev=222.88' Inflow=5.03 cfs 0.490 af
15.0" Round Culvert n=0.013 L=210.0' S=0.0079 '/' Outflow=5.03 cfs 0.490 af

Pond D1: Existing Pond Peak Elev=207.28' Storage=25,817 cf Inflow=23.56 cfs 2.755 af
Primary=10.96 cfs 2.608 af Secondary=5.25 cfs 0.147 af Outflow=16.21 cfs 2.754 af

Link AP1: Inflow=16.21 cfs 2.754 af
Primary=16.21 cfs 2.754 af

Total Runoff Area = 12.041 ac Runoff Volume = 2.755 af Average Runoff Depth = 2.75"
64.85% Pervious = 7.809 ac 35.15% Impervious = 4.232 ac

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Type III 24-hr 25-year Rainfall=5.40"

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Summary for Subcatchment 1:

Runoff = 5.07 cfs @ 12.25 hrs, Volume= 0.510 af, Depth= 2.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
59,480	61	>75% Grass cover, Good, HSG B
* 36,438	98	Paved parking
95,918	75	Weighted Average
59,480		62.01% Pervious Area
36,438		37.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	50	0.0530	0.10		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.00"
2.3	20	0.2220	0.14		Sheet Flow, BC Woods: Light underbrush n= 0.400 P2= 3.00"
6.7	530	0.0360	1.33		Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps
17.6	600	Total			

Summary for Subcatchment 2:

Runoff = 2.31 cfs @ 12.07 hrs, Volume= 0.169 af, Depth= 4.37"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
3,569	61	>75% Grass cover, Good, HSG B
* 16,629	98	Paved parking
20,198	91	Weighted Average
3,569		17.67% Pervious Area
16,629		82.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 3:

Runoff = 3.22 cfs @ 12.18 hrs, Volume= 0.288 af, Depth= 2.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-year Rainfall=5.40"

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Type III 24-hr 25-year Rainfall=5.40"

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Area (sf)	CN	Description
35,739	61	>75% Grass cover, Good, HSG B
* 1,483	90	Gravel
* 18,843	98	Paved parking
56,065	74	Weighted Average
37,222		66.39% Pervious Area
18,843		33.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.88		Sheet Flow, AB Smooth surfaces n= 0.011 P2= 3.00"
6.4	40	0.0100	0.10		Sheet Flow, 4 Grass: Short n= 0.150 P2= 3.00"
5.5	340	0.0220	1.04		Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps
12.8	430	Total			

Summary for Subcatchment 4:

Runoff = 2.11 cfs @ 12.07 hrs, Volume= 0.168 af, Depth= 5.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
* 17,054	98	Paved parking
17,054		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 5:

Runoff = 9.76 cfs @ 12.35 hrs, Volume= 1.130 af, Depth= 2.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
44,501	39	>75% Grass cover, Good, HSG A
21,330	61	>75% Grass cover, Good, HSG B
58,991	74	>75% Grass cover, Good, HSG C
* 9,121	90	Gravel
* 72,219	98	Paved parking
* 6,438	98	Water Surface
212,600	75	Weighted Average
133,943		63.00% Pervious Area
78,657		37.00% Impervious Area

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Type III 24-hr 25-year Rainfall=5.40"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	120	0.0150	0.15		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.00"
8.1	285	0.0070	0.59		Shallow Concentrated Flow, BC Short Grass Pasture Kv= 7.0 fps
1.3	295	0.0340	3.74		Shallow Concentrated Flow, CD Paved Kv= 20.3 fps
1.9	130	0.0270	1.15		Shallow Concentrated Flow, DE Short Grass Pasture Kv= 7.0 fps
0.1	60	0.2170	13.17	219.49	Parabolic Channel, EF W=25.00' D=1.00' Area=16.7 sf Perim=25.1' n= 0.040 Earth, cobble bottom, clean sides
0.2	110		9.83		Lake or Reservoir, FG Mean Depth= 3.00'
24.7	1,000	Total			

Summary for Subcatchment 6: Offsite

Runoff = 5.03 cfs @ 12.22 hrs, Volume= 0.490 af, Depth= 2.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
29,872	61	>75% Grass cover, Good, HSG B
43,636	58	Meadow, non-grazed, HSG B
32,438	67	Brush, Poor, HSG B
* 16,730	98	Paved parking
122,676	67	Weighted Average
105,946		86.36% Pervious Area
16,730		13.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0690	0.20		Sheet Flow, AB Grass: Dense n= 0.240 P2= 3.00"
2.7	175	0.0230	1.06		Shallow Concentrated Flow, BC Short Grass Pasture Kv= 7.0 fps
15.1	325	Total			

Summary for Pond C1: 18" HDPE

Inflow Area = 7.160 ac, 33.89% Impervious, Inflow Depth = 2.72" for 25-year event
 Inflow = 15.28 cfs @ 12.20 hrs, Volume= 1.625 af
 Outflow = 15.28 cfs @ 12.20 hrs, Volume= 1.625 af, Atten= 0%, Lag= 0.0 min
 Primary = 15.28 cfs @ 12.20 hrs, Volume= 1.625 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
 Peak Elev= 211.46' @ 12.20 hrs
 Flood Elev= 215.04'

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Type III 24-hr 25-year Rainfall=5.40"

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Device	Routing	Invert	Outlet Devices
#1	Primary	206.44'	18.0" Round Culvert L= 114.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.44' / 205.80' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=15.27 cfs @ 12.20 hrs HW=211.46' TW=206.15' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 15.27 cfs @ 8.64 fps)

Summary for Pond C2: 12" PVC

Inflow Area = 2.142 ac, 56.29% Impervious, Inflow Depth = 3.50" for 25-year event
 Inflow = 6.77 cfs @ 12.10 hrs, Volume= 0.626 af
 Outflow = 6.77 cfs @ 12.10 hrs, Volume= 0.626 af, Atten= 0%, Lag= 0.0 min
 Primary = 6.77 cfs @ 12.10 hrs, Volume= 0.626 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
 Peak Elev= 215.32' @ 12.12 hrs
 Flood Elev= 218.53'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.45'	12.0" Round Culvert L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.45' / 206.44' S= 0.0286 '/' Cc= 0.900 n= 0.010 PVC, smooth interior

Primary OutFlow Max=6.32 cfs @ 12.10 hrs HW=215.18' TW=210.41' (Dynamic Tailwater)
 ↑**1=Culvert** (Outlet Controls 6.32 cfs @ 8.04 fps)

Summary for Pond C3: 12" PVC

Inflow Area = 1.679 ac, 49.09% Impervious, Inflow Depth = 3.26" for 25-year event
 Inflow = 4.63 cfs @ 12.13 hrs, Volume= 0.457 af
 Outflow = 4.63 cfs @ 12.13 hrs, Volume= 0.457 af, Atten= 0%, Lag= 0.0 min
 Primary = 4.63 cfs @ 12.13 hrs, Volume= 0.457 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
 Peak Elev= 217.68' @ 12.13 hrs
 Flood Elev= 224.38'

Device	Routing	Invert	Outlet Devices
#1	Primary	215.68'	12.0" Round Culvert L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 215.68' / 211.45' S= 0.0529 '/' Cc= 0.900 n= 0.010 PVC, smooth interior

Primary OutFlow Max=4.61 cfs @ 12.13 hrs HW=217.67' TW=215.29' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 4.61 cfs @ 5.87 fps)

Summary for Pond C6: 15" RCP

Inflow Area = 2.816 ac, 13.64% Impervious, Inflow Depth = 2.09" for 25-year event
 Inflow = 5.03 cfs @ 12.22 hrs, Volume= 0.490 af
 Outflow = 5.03 cfs @ 12.22 hrs, Volume= 0.490 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.03 cfs @ 12.22 hrs, Volume= 0.490 af

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Type III 24-hr 25-year Rainfall=5.40"

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Peak Elev= 226.57' @ 12.22 hrs

Flood Elev= 229.32'

Device	Routing	Invert	Outlet Devices
#1	Primary	225.22'	15.0" Round Culvert L= 141.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 225.22' / 223.81' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=4.99 cfs @ 12.22 hrs HW=226.56' TW=224.15' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 4.99 cfs @ 4.06 fps)

Summary for Pond C6.1: 15" HDPE

Inflow Area = 2.816 ac, 13.64% Impervious, Inflow Depth = 2.09" for 25-year event
 Inflow = 5.03 cfs @ 12.22 hrs, Volume= 0.490 af
 Outflow = 5.03 cfs @ 12.22 hrs, Volume= 0.490 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.03 cfs @ 12.22 hrs, Volume= 0.490 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Peak Elev= 224.16' @ 12.22 hrs

Flood Elev= 228.41'

Device	Routing	Invert	Outlet Devices
#1	Primary	222.81'	15.0" Round Culvert L= 70.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 222.81' / 221.63' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=4.99 cfs @ 12.22 hrs HW=224.15' TW=222.87' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 4.99 cfs @ 4.06 fps)

Summary for Pond C6.2: 15" HDPE

Inflow Area = 2.816 ac, 13.64% Impervious, Inflow Depth = 2.09" for 25-year event
 Inflow = 5.03 cfs @ 12.22 hrs, Volume= 0.490 af
 Outflow = 5.03 cfs @ 12.22 hrs, Volume= 0.490 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.03 cfs @ 12.22 hrs, Volume= 0.490 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Peak Elev= 222.88' @ 12.22 hrs

Flood Elev= 228.41'

Device	Routing	Invert	Outlet Devices
#1	Primary	221.53'	15.0" Round Culvert L= 210.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.53' / 219.88' S= 0.0079 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=4.99 cfs @ 12.22 hrs HW=222.87' TW=211.37' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 4.99 cfs @ 4.06 fps)

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Type III 24-hr 25-year Rainfall=5.40"

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Summary for Pond D1: Existing Pond

Inflow Area = 12.041 ac, 35.15% Impervious, Inflow Depth = 2.75" for 25-year event
 Inflow = 23.56 cfs @ 12.25 hrs, Volume= 2.755 af
 Outflow = 16.21 cfs @ 12.51 hrs, Volume= 2.754 af, Atten= 31%, Lag= 15.5 min
 Primary = 10.96 cfs @ 12.51 hrs, Volume= 2.608 af
 Secondary = 5.25 cfs @ 12.51 hrs, Volume= 0.147 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
 Peak Elev= 207.28' @ 12.51 hrs Surf.Area= 9,006 sf Storage= 25,817 cf

Plug-Flow detention time= 39.5 min calculated for 2.751 af (100% of inflow)
 Center-of-Mass det. time= 39.9 min (878.1 - 838.1)

Volume	Invert	Avail.Storage	Storage Description		
#1	203.90'	53,405 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
203.90	6,339	321.0	0	0	6,339
204.00	6,404	322.0	637	637	6,399
205.00	7,155	337.0	6,776	7,413	7,252
206.00	7,950	352.0	7,549	14,962	8,144
207.00	8,746	367.0	8,345	23,307	9,074
208.00	9,684	387.0	9,211	32,518	10,332
209.00	10,470	399.0	10,074	42,592	11,180
210.00	11,159	410.0	10,813	53,405	11,995

Device	Routing	Invert	Outlet Devices
#1	Primary	203.87'	18.0" Round Culvert L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 203.87' / 202.26' S= 0.0383 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	206.75'	5.0' long x 35.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

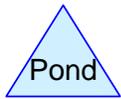
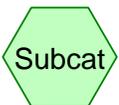
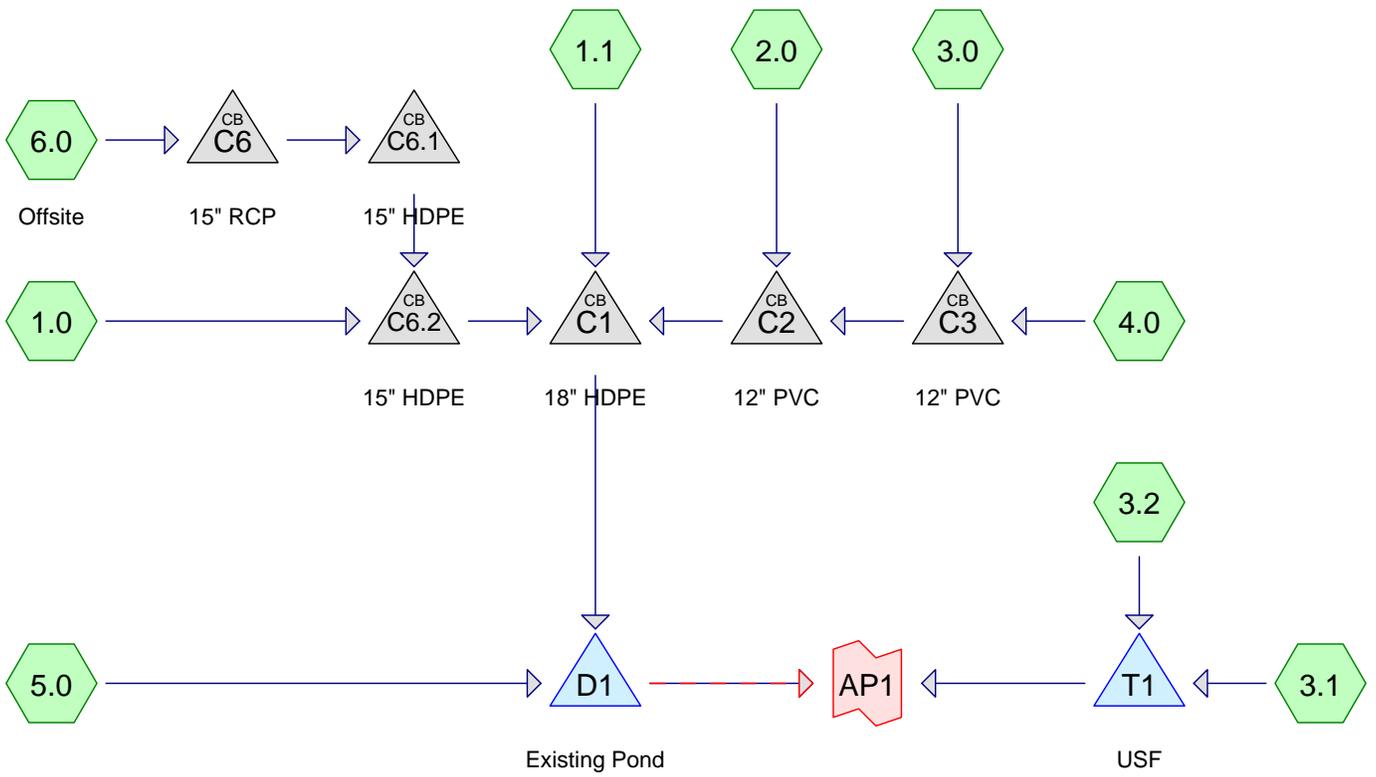
Primary OutFlow Max=10.96 cfs @ 12.51 hrs HW=207.28' TW=0.00' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 10.96 cfs @ 6.20 fps)

Secondary OutFlow Max=5.22 cfs @ 12.51 hrs HW=207.28' TW=0.00' (Dynamic Tailwater)
 ↑**2=Broad-Crested Rectangular Weir** (Weir Controls 5.22 cfs @ 1.97 fps)

Summary for Link AP1:

Inflow Area = 12.041 ac, 35.15% Impervious, Inflow Depth > 2.74" for 25-year event
 Inflow = 16.21 cfs @ 12.51 hrs, Volume= 2.754 af
 Primary = 16.21 cfs @ 12.51 hrs, Volume= 2.754 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs



Drainage Diagram for 197 - Post Development
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Type III 24-hr 2-year Rainfall=3.00"

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Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 points x 2
 Runoff by SCS TR-20 method, UH=SCS
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1.0:	Runoff Area=49,865 sf 45.50% Impervious Runoff Depth=1.13" Flow Length=294' Tc=13.7 min CN=78 Runoff=1.14 cfs 0.108 af
Subcatchment 1.1:	Runoff Area=49,007 sf 49.72% Impervious Runoff Depth=1.19" Flow Length=352' Tc=6.0 min CN=79 Runoff=1.52 cfs 0.111 af
Subcatchment 2.0:	Runoff Area=19,990 sf 82.15% Impervious Runoff Depth=2.07" Tc=5.0 min CN=91 Runoff=1.12 cfs 0.079 af
Subcatchment 3.0:	Runoff Area=6,600 sf 100.00% Impervious Runoff Depth=2.77" Tc=5.0 min CN=98 Runoff=0.45 cfs 0.035 af
Subcatchment 3.1:	Runoff Area=14,995 sf 100.00% Impervious Runoff Depth=2.77" Tc=5.0 min CN=98 Runoff=1.02 cfs 0.079 af
Subcatchment 3.2:	Runoff Area=31,725 sf 54.56% Impervious Runoff Depth=1.31" Tc=5.0 min CN=81 Runoff=1.14 cfs 0.080 af
Subcatchment 4.0:	Runoff Area=17,054 sf 100.00% Impervious Runoff Depth=2.77" Tc=5.0 min CN=98 Runoff=1.16 cfs 0.090 af
Subcatchment 5.0:	Runoff Area=212,600 sf 38.25% Impervious Runoff Depth=0.96" Flow Length=933' Tc=23.0 min CN=75 Runoff=3.28 cfs 0.391 af
Subcatchment 6.0: Offsite	Runoff Area=122,676 sf 13.64% Impervious Runoff Depth=0.58" Flow Length=325' Tc=15.1 min CN=67 Runoff=1.14 cfs 0.137 af
Pond C1: 18" HDPE	Peak Elev=207.77' Inflow=5.53 cfs 0.561 af 18.0" Round Culvert n=0.013 L=114.0' S=0.0056 '/' Outflow=5.53 cfs 0.561 af
Pond C2: 12" PVC	Peak Elev=212.47' Inflow=2.74 cfs 0.204 af 12.0" Round Culvert n=0.010 L=175.0' S=0.0286 '/' Outflow=2.74 cfs 0.204 af
Pond C3: 12" PVC	Peak Elev=216.36' Inflow=1.61 cfs 0.125 af 12.0" Round Culvert n=0.010 L=80.0' S=0.0529 '/' Outflow=1.61 cfs 0.125 af
Pond C6: 15" RCP	Peak Elev=225.73' Inflow=1.14 cfs 0.137 af 15.0" Round Culvert n=0.011 L=141.0' S=0.0100 '/' Outflow=1.14 cfs 0.137 af
Pond C6.1: 15" HDPE	Peak Elev=223.32' Inflow=1.14 cfs 0.137 af 15.0" Round Culvert n=0.013 L=70.0' S=0.0169 '/' Outflow=1.14 cfs 0.137 af
Pond C6.2: 15" HDPE	Peak Elev=222.28' Inflow=2.25 cfs 0.245 af 15.0" Round Culvert n=0.013 L=210.0' S=0.0079 '/' Outflow=2.25 cfs 0.245 af
Pond D1: Existing Pond	Peak Elev=205.16' Storage=8,595 cf Inflow=7.15 cfs 0.952 af Primary=4.95 cfs 0.952 af Secondary=0.00 cfs 0.000 af Outflow=4.95 cfs 0.952 af
Pond T1: USF	Peak Elev=226.25' Storage=4,096 cf Inflow=2.16 cfs 0.159 af Outflow=0.06 cfs 0.137 af

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Type III 24-hr 2-year Rainfall=3.00"

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Link AP1:

Inflow=5.01 cfs 1.089 af

Primary=5.01 cfs 1.089 af

Total Runoff Area = 12.041 ac Runoff Volume = 1.111 af Average Runoff Depth = 1.11"
58.54% Pervious = 7.048 ac 41.46% Impervious = 4.993 ac

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Summary for Subcatchment 1.0:

Runoff = 1.14 cfs @ 12.20 hrs, Volume= 0.108 af, Depth= 1.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
27,174	61	>75% Grass cover, Good, HSG B
* 22,691	98	Paved parking
49,865	78	Weighted Average
27,174		54.50% Pervious Area
22,691		45.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	50	0.0530	0.10		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.00"
2.3	20	0.2220	0.14		Sheet Flow, BC Woods: Light underbrush n= 0.400 P2= 3.00"
2.8	224	0.0360	1.33		Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps
13.7	294	Total			

Summary for Subcatchment 1.1:

Runoff = 1.52 cfs @ 12.09 hrs, Volume= 0.111 af, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
24,643	61	>75% Grass cover, Good, HSG B
* 24,364	98	Paved parking
49,007	79	Weighted Average
24,643		50.28% Pervious Area
24,364		49.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	30	0.0300	1.23		Sheet Flow, AB Smooth surfaces n= 0.011 P2= 3.00"
1.8	22	0.0680	0.20		Sheet Flow, BC Grass: Short n= 0.150 P2= 3.00"
3.8	300	0.0360	1.33		Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps
6.0	352	Total			

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Summary for Subcatchment 2.0:

Runoff = 1.12 cfs @ 12.08 hrs, Volume= 0.079 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
 Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
3,569	61	>75% Grass cover, Good, HSG B
* 16,421	98	Paved parking
19,990	91	Weighted Average
3,569		17.85% Pervious Area
16,421		82.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 3.0:

Runoff = 0.45 cfs @ 12.07 hrs, Volume= 0.035 af, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
 Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
* 6,600	98	Paved parking
6,600		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 3.1:

Runoff = 1.02 cfs @ 12.07 hrs, Volume= 0.079 af, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
 Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
* 14,995	98	Paved parking
14,995		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

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Summary for Subcatchment 3.2:

Runoff = 1.14 cfs @ 12.08 hrs, Volume= 0.080 af, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
14,417	61	>75% Grass cover, Good, HSG B
* 17,308	98	Paved parking
31,725	81	Weighted Average
14,417		45.44% Pervious Area
17,308		54.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 4.0:

Runoff = 1.16 cfs @ 12.07 hrs, Volume= 0.090 af, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
* 17,054	98	Paved parking
17,054		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 5.0:

Runoff = 3.28 cfs @ 12.35 hrs, Volume= 0.391 af, Depth= 0.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
44,287	39	>75% Grass cover, Good, HSG A
22,175	61	>75% Grass cover, Good, HSG B
58,991	74	>75% Grass cover, Good, HSG C
* 5,827	90	Gravel
* 74,882	98	Paved parking
* 6,438	98	Water Surface
212,600	75	Weighted Average
131,280		61.75% Pervious Area
81,320		38.25% Impervious Area

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Type III 24-hr 2-year Rainfall=3.00"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	120	0.0150	0.15		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.00"
8.1	285	0.0070	0.59		Shallow Concentrated Flow, BC Short Grass Pasture Kv= 7.0 fps
1.5	358	0.0380	3.96		Shallow Concentrated Flow, CD Paved Kv= 20.3 fps
0.1	60	0.2170	13.17	219.49	Parabolic Channel, DE W=25.00' D=1.00' Area=16.7 sf Perim=25.1' n= 0.040 Earth, cobble bottom, clean sides
0.2	110		9.83		Lake or Reservoir, EF Mean Depth= 3.00'
23.0	933	Total			

Summary for Subcatchment 6.0: Offsite

Runoff = 1.14 cfs @ 12.25 hrs, Volume= 0.137 af, Depth= 0.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
29,872	61	>75% Grass cover, Good, HSG B
43,636	58	Meadow, non-grazed, HSG B
32,438	67	Brush, Poor, HSG B
* 16,730	98	Paved parking
122,676	67	Weighted Average
105,946		86.36% Pervious Area
16,730		13.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0690	0.20		Sheet Flow, AB Grass: Dense n= 0.240 P2= 3.00"
2.7	175	0.0230	1.06		Shallow Concentrated Flow, BC Short Grass Pasture Kv= 7.0 fps
15.1	325	Total			

Summary for Pond C1: 18" HDPE

Inflow Area = 6.088 ac, 39.16% Impervious, Inflow Depth = 1.11" for 2-year event
 Inflow = 5.53 cfs @ 12.10 hrs, Volume= 0.561 af
 Outflow = 5.53 cfs @ 12.10 hrs, Volume= 0.561 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.53 cfs @ 12.10 hrs, Volume= 0.561 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2
 Peak Elev= 207.77' @ 12.10 hrs
 Flood Elev= 215.04'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.44'	18.0" Round Culvert L= 114.0' CPP, square edge headwall, Ke= 0.500

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Type III 24-hr 2-year Rainfall=3.00"

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Inlet / Outlet Invert= 206.44' / 205.80' S= 0.0056 '/ Cc= 0.900
n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=5.42 cfs @ 12.10 hrs HW=207.75' TW=204.60' (Dynamic Tailwater)
 ↳ **I=Culvert** (Barrel Controls 5.42 cfs @ 4.40 fps)

Summary for Pond C2: 12" PVC

Inflow Area = 1.002 ac, 91.82% Impervious, Inflow Depth = 2.45" for 2-year event
 Inflow = 2.74 cfs @ 12.07 hrs, Volume= 0.204 af
 Outflow = 2.74 cfs @ 12.07 hrs, Volume= 0.204 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.74 cfs @ 12.07 hrs, Volume= 0.204 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2
 Peak Elev= 212.47' @ 12.07 hrs
 Flood Elev= 218.53'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.45'	12.0" Round Culvert L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.45' / 206.44' S= 0.0286 '/ Cc= 0.900 n= 0.010 PVC, smooth interior

Primary OutFlow Max=2.69 cfs @ 12.07 hrs HW=212.46' TW=207.73' (Dynamic Tailwater)
 ↳ **I=Culvert** (Inlet Controls 2.69 cfs @ 3.43 fps)

Summary for Pond C3: 12" PVC

Inflow Area = 0.543 ac, 100.00% Impervious, Inflow Depth = 2.77" for 2-year event
 Inflow = 1.61 cfs @ 12.07 hrs, Volume= 0.125 af
 Outflow = 1.61 cfs @ 12.07 hrs, Volume= 0.125 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.61 cfs @ 12.07 hrs, Volume= 0.125 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2
 Peak Elev= 216.36' @ 12.07 hrs
 Flood Elev= 224.38'

Device	Routing	Invert	Outlet Devices
#1	Primary	215.68'	12.0" Round Culvert L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 215.68' / 211.45' S= 0.0529 '/ Cc= 0.900 n= 0.010 PVC, smooth interior

Primary OutFlow Max=1.58 cfs @ 12.07 hrs HW=216.36' TW=212.45' (Dynamic Tailwater)
 ↳ **I=Culvert** (Inlet Controls 1.58 cfs @ 2.80 fps)

Summary for Pond C6: 15" RCP

Inflow Area = 2.816 ac, 13.64% Impervious, Inflow Depth = 0.58" for 2-year event
 Inflow = 1.14 cfs @ 12.25 hrs, Volume= 0.137 af
 Outflow = 1.14 cfs @ 12.25 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.14 cfs @ 12.25 hrs, Volume= 0.137 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2

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Peak Elev= 225.73' @ 12.25 hrs
Flood Elev= 229.32'

Device	Routing	Invert	Outlet Devices
#1	Primary	225.22'	15.0" Round Culvert L= 141.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 225.22' / 223.81' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=1.14 cfs @ 12.25 hrs HW=225.73' TW=223.32' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 1.14 cfs @ 2.43 fps)

Summary for Pond C6.1: 15" HDPE

Inflow Area = 2.816 ac, 13.64% Impervious, Inflow Depth = 0.58" for 2-year event
 Inflow = 1.14 cfs @ 12.25 hrs, Volume= 0.137 af
 Outflow = 1.14 cfs @ 12.25 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.14 cfs @ 12.25 hrs, Volume= 0.137 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2
 Peak Elev= 223.32' @ 12.25 hrs
 Flood Elev= 228.41'

Device	Routing	Invert	Outlet Devices
#1	Primary	222.81'	15.0" Round Culvert L= 70.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 222.81' / 221.63' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=1.14 cfs @ 12.25 hrs HW=223.32' TW=222.28' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 1.14 cfs @ 2.43 fps)

Summary for Pond C6.2: 15" HDPE

Inflow Area = 3.961 ac, 22.85% Impervious, Inflow Depth = 0.74" for 2-year event
 Inflow = 2.25 cfs @ 12.23 hrs, Volume= 0.245 af
 Outflow = 2.25 cfs @ 12.23 hrs, Volume= 0.245 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.25 cfs @ 12.23 hrs, Volume= 0.245 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2
 Peak Elev= 222.28' @ 12.23 hrs
 Flood Elev= 228.41'

Device	Routing	Invert	Outlet Devices
#1	Primary	221.53'	15.0" Round Culvert L= 210.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.53' / 219.88' S= 0.0079 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=2.23 cfs @ 12.23 hrs HW=222.28' TW=207.58' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 2.23 cfs @ 4.15 fps)

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Summary for Pond D1: Existing Pond

Inflow Area = 10.969 ac, 38.76% Impervious, Inflow Depth = 1.04" for 2-year event
 Inflow = 7.15 cfs @ 12.25 hrs, Volume= 0.952 af
 Outflow = 4.95 cfs @ 12.52 hrs, Volume= 0.952 af, Atten= 31%, Lag= 16.1 min
 Primary = 4.95 cfs @ 12.52 hrs, Volume= 0.952 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2
 Peak Elev= 205.16' @ 12.52 hrs Surf.Area= 7,282 sf Storage= 8,595 cf
 Flood Elev= 210.00' Surf.Area= 11,159 sf Storage= 53,405 cf

Plug-Flow detention time= 53.8 min calculated for 0.951 af (100% of inflow)
 Center-of-Mass det. time= 54.4 min (908.6 - 854.1)

Volume	Invert	Avail.Storage	Storage Description		
#1	203.90'	53,405 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
203.90	6,339	321.0	0	0	6,339
204.00	6,404	322.0	637	637	6,399
205.00	7,155	337.0	6,776	7,413	7,252
206.00	7,950	352.0	7,549	14,962	8,144
207.00	8,746	367.0	8,345	23,307	9,074
208.00	9,684	387.0	9,211	32,518	10,332
209.00	10,470	399.0	10,074	42,592	11,180
210.00	11,159	410.0	10,813	53,405	11,995

Device	Routing	Invert	Outlet Devices
#1	Primary	203.87'	18.0" Round Culvert L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 203.87' / 202.26' S= 0.0383 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	206.75'	5.0' long x 35.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=4.95 cfs @ 12.52 hrs HW=205.16' TW=0.00' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 4.95 cfs @ 3.06 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=203.90' TW=0.00' (Dynamic Tailwater)
 ↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond T1: USF

Inflow Area = 1.073 ac, 69.14% Impervious, Inflow Depth = 1.78" for 2-year event
 Inflow = 2.16 cfs @ 12.08 hrs, Volume= 0.159 af
 Outflow = 0.06 cfs @ 16.63 hrs, Volume= 0.137 af, Atten= 97%, Lag= 273.3 min
 Primary = 0.06 cfs @ 16.63 hrs, Volume= 0.137 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2

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Peak Elev= 226.25' @ 16.63 hrs Surf.Area= 3,559 sf Storage= 4,096 cf
 Flood Elev= 228.50' Surf.Area= 4,661 sf Storage= 13,324 cf

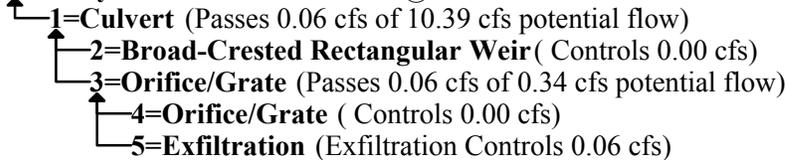
Plug-Flow detention time=(not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 502.8 min (1,302.2 - 799.4)

Volume	Invert	Avail.Storage	Storage Description
#1	225.00'	13,324 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
225.00	3,001	0	0
226.00	3,444	3,223	3,223
226.50	3,675	1,780	5,002
227.00	3,912	1,897	6,899
228.00	4,405	4,159	11,058
228.50	4,661	2,267	13,324

Device	Routing	Invert	Outlet Devices
#1	Primary	221.80'	15.0" Round Culvert L= 745.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.80' / 204.00' S= 0.0239 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	226.80'	6.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Device 1	221.80'	2.5" Vert. Orifice/Grate C= 0.600
#4	Device 3	226.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Device 3	225.00'	0.750 in/hr Exfiltration over Horizontal area

Primary OutFlow Max=0.06 cfs @ 16.63 hrs HW=226.25' TW=0.00' (Dynamic Tailwater)



Summary for Link AP1:

Inflow Area = 12.041 ac, 41.46% Impervious, Inflow Depth > 1.08" for 2-year event
 Inflow = 5.01 cfs @ 12.52 hrs, Volume= 1.089 af
 Primary = 5.01 cfs @ 12.52 hrs, Volume= 1.089 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

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Type III 24-hr 10-year Rainfall=4.60"

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Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 points x 2
 Runoff by SCS TR-20 method, UH=SCS
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1.0:	Runoff Area=49,865 sf 45.50% Impervious Runoff Depth=2.38" Flow Length=294' Tc=13.7 min CN=78 Runoff=2.48 cfs 0.227 af
Subcatchment 1.1:	Runoff Area=49,007 sf 49.72% Impervious Runoff Depth=2.46" Flow Length=352' Tc=6.0 min CN=79 Runoff=3.22 cfs 0.231 af
Subcatchment 2.0:	Runoff Area=19,990 sf 82.15% Impervious Runoff Depth=3.59" Tc=5.0 min CN=91 Runoff=1.90 cfs 0.137 af
Subcatchment 3.0:	Runoff Area=6,600 sf 100.00% Impervious Runoff Depth=4.36" Tc=5.0 min CN=98 Runoff=0.70 cfs 0.055 af
Subcatchment 3.1:	Runoff Area=14,995 sf 100.00% Impervious Runoff Depth=4.36" Tc=5.0 min CN=98 Runoff=1.58 cfs 0.125 af
Subcatchment 3.2:	Runoff Area=31,725 sf 54.56% Impervious Runoff Depth=2.63" Tc=5.0 min CN=81 Runoff=2.30 cfs 0.160 af
Subcatchment 4.0:	Runoff Area=17,054 sf 100.00% Impervious Runoff Depth=4.36" Tc=5.0 min CN=98 Runoff=1.80 cfs 0.142 af
Subcatchment 5.0:	Runoff Area=212,600 sf 38.25% Impervious Runoff Depth=2.13" Flow Length=933' Tc=23.0 min CN=75 Runoff=7.66 cfs 0.866 af
Subcatchment 6.0: Offsite	Runoff Area=122,676 sf 13.64% Impervious Runoff Depth=1.53" Flow Length=325' Tc=15.1 min CN=67 Runoff=3.58 cfs 0.359 af
Pond C1: 18" HDPE	Peak Elev=209.68' Inflow=11.55 cfs 1.151 af 18.0" Round Culvert n=0.013 L=114.0' S=0.0056 '/' Outflow=11.55 cfs 1.151 af
Pond C2: 12" PVC	Peak Elev=213.30' Inflow=4.39 cfs 0.335 af 12.0" Round Culvert n=0.010 L=175.0' S=0.0286 '/' Outflow=4.39 cfs 0.335 af
Pond C3: 12" PVC	Peak Elev=216.61' Inflow=2.49 cfs 0.197 af 12.0" Round Culvert n=0.010 L=80.0' S=0.0529 '/' Outflow=2.49 cfs 0.197 af
Pond C6: 15" RCP	Peak Elev=226.22' Inflow=3.58 cfs 0.359 af 15.0" Round Culvert n=0.011 L=141.0' S=0.0100 '/' Outflow=3.58 cfs 0.359 af
Pond C6.1: 15" HDPE	Peak Elev=224.09' Inflow=3.58 cfs 0.359 af 15.0" Round Culvert n=0.013 L=70.0' S=0.0169 '/' Outflow=3.58 cfs 0.359 af
Pond C6.2: 15" HDPE	Peak Elev=223.56' Inflow=6.04 cfs 0.586 af 15.0" Round Culvert n=0.013 L=210.0' S=0.0079 '/' Outflow=6.04 cfs 0.586 af
Pond D1: Existing Pond	Peak Elev=206.60' Storage=19,858 cf Inflow=16.51 cfs 2.017 af Primary=9.45 cfs 2.017 af Secondary=0.00 cfs 0.000 af Outflow=9.45 cfs 2.017 af
Pond T1: USF	Peak Elev=226.80' Storage=6,136 cf Inflow=3.88 cfs 0.285 af Outflow=0.37 cfs 0.235 af

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Type III 24-hr 10-year Rainfall=4.60"

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Link AP1:

Inflow=9.81 cfs 2.252 af

Primary=9.81 cfs 2.252 af

Total Runoff Area = 12.041 ac Runoff Volume = 2.302 af Average Runoff Depth = 2.29"
58.54% Pervious = 7.048 ac 41.46% Impervious = 4.993 ac

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Type III 24-hr 10-year Rainfall=4.60"

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Summary for Subcatchment 1.0:

Runoff = 2.48 cfs @ 12.19 hrs, Volume= 0.227 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
27,174	61	>75% Grass cover, Good, HSG B
* 22,691	98	Paved parking
49,865	78	Weighted Average
27,174		54.50% Pervious Area
22,691		45.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	50	0.0530	0.10		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.00"
2.3	20	0.2220	0.14		Sheet Flow, BC Woods: Light underbrush n= 0.400 P2= 3.00"
2.8	224	0.0360	1.33		Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps
13.7	294	Total			

Summary for Subcatchment 1.1:

Runoff = 3.22 cfs @ 12.09 hrs, Volume= 0.231 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
24,643	61	>75% Grass cover, Good, HSG B
* 24,364	98	Paved parking
49,007	79	Weighted Average
24,643		50.28% Pervious Area
24,364		49.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	30	0.0300	1.23		Sheet Flow, AB Smooth surfaces n= 0.011 P2= 3.00"
1.8	22	0.0680	0.20		Sheet Flow, BC Grass: Short n= 0.150 P2= 3.00"
3.8	300	0.0360	1.33		Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps
6.0	352	Total			

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Summary for Subcatchment 2.0:

Runoff = 1.90 cfs @ 12.07 hrs, Volume= 0.137 af, Depth= 3.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
3,569	61	>75% Grass cover, Good, HSG B
* 16,421	98	Paved parking
19,990	91	Weighted Average
3,569		17.85% Pervious Area
16,421		82.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 3.0:

Runoff = 0.70 cfs @ 12.07 hrs, Volume= 0.055 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
* 6,600	98	Paved parking
6,600		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 3.1:

Runoff = 1.58 cfs @ 12.07 hrs, Volume= 0.125 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
* 14,995	98	Paved parking
14,995		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

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Summary for Subcatchment 3.2:

Runoff = 2.30 cfs @ 12.08 hrs, Volume= 0.160 af, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
14,417	61	>75% Grass cover, Good, HSG B
* 17,308	98	Paved parking
31,725	81	Weighted Average
14,417		45.44% Pervious Area
17,308		54.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 4.0:

Runoff = 1.80 cfs @ 12.07 hrs, Volume= 0.142 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
* 17,054	98	Paved parking
17,054		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 5.0:

Runoff = 7.66 cfs @ 12.33 hrs, Volume= 0.866 af, Depth= 2.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
44,287	39	>75% Grass cover, Good, HSG A
22,175	61	>75% Grass cover, Good, HSG B
58,991	74	>75% Grass cover, Good, HSG C
* 5,827	90	Gravel
* 74,882	98	Paved parking
* 6,438	98	Water Surface
212,600	75	Weighted Average
131,280		61.75% Pervious Area
81,320		38.25% Impervious Area

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Type III 24-hr 10-year Rainfall=4.60"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	120	0.0150	0.15		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.00"
8.1	285	0.0070	0.59		Shallow Concentrated Flow, BC Short Grass Pasture Kv= 7.0 fps
1.5	358	0.0380	3.96		Shallow Concentrated Flow, CD Paved Kv= 20.3 fps
0.1	60	0.2170	13.17	219.49	Parabolic Channel, DE W=25.00' D=1.00' Area=16.7 sf Perim=25.1' n= 0.040 Earth, cobble bottom, clean sides
0.2	110		9.83		Lake or Reservoir, EF Mean Depth= 3.00'
23.0	933	Total			

Summary for Subcatchment 6.0: Offsite

Runoff = 3.58 cfs @ 12.22 hrs, Volume= 0.359 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
29,872	61	>75% Grass cover, Good, HSG B
43,636	58	Meadow, non-grazed, HSG B
32,438	67	Brush, Poor, HSG B
* 16,730	98	Paved parking
122,676	67	Weighted Average
105,946		86.36% Pervious Area
16,730		13.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0690	0.20		Sheet Flow, AB Grass: Dense n= 0.240 P2= 3.00"
2.7	175	0.0230	1.06		Shallow Concentrated Flow, BC Short Grass Pasture Kv= 7.0 fps
15.1	325	Total			

Summary for Pond C1: 18" HDPE

Inflow Area = 6.088 ac, 39.16% Impervious, Inflow Depth = 2.27" for 10-year event
 Inflow = 11.55 cfs @ 12.11 hrs, Volume= 1.151 af
 Outflow = 11.55 cfs @ 12.11 hrs, Volume= 1.151 af, Atten= 0%, Lag= 0.0 min
 Primary = 11.55 cfs @ 12.11 hrs, Volume= 1.151 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2
 Peak Elev= 209.68' @ 12.11 hrs
 Flood Elev= 215.04'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.44'	18.0" Round Culvert L= 114.0' CPP, square edge headwall, Ke= 0.500

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Type III 24-hr 10-year Rainfall=4.60"

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Inlet / Outlet Invert= 206.44' / 205.80' S= 0.0056 '/ Cc= 0.900
n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=11.47 cfs @ 12.11 hrs HW=209.65' TW=205.37' (Dynamic Tailwater)
 ↳ **I=Culvert** (Barrel Controls 11.47 cfs @ 6.49 fps)

Summary for Pond C2: 12" PVC

Inflow Area = 1.002 ac, 91.82% Impervious, Inflow Depth = 4.01" for 10-year event
 Inflow = 4.39 cfs @ 12.07 hrs, Volume= 0.335 af
 Outflow = 4.39 cfs @ 12.07 hrs, Volume= 0.335 af, Atten= 0%, Lag= 0.0 min
 Primary = 4.39 cfs @ 12.07 hrs, Volume= 0.335 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2
 Peak Elev= 213.30' @ 12.07 hrs
 Flood Elev= 218.53'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.45'	12.0" Round Culvert L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.45' / 206.44' S= 0.0286 '/ Cc= 0.900 n= 0.010 PVC, smooth interior

Primary OutFlow Max=4.32 cfs @ 12.07 hrs HW=213.26' TW=209.47' (Dynamic Tailwater)
 ↳ **I=Culvert** (Inlet Controls 4.32 cfs @ 5.51 fps)

Summary for Pond C3: 12" PVC

Inflow Area = 0.543 ac, 100.00% Impervious, Inflow Depth = 4.36" for 10-year event
 Inflow = 2.49 cfs @ 12.07 hrs, Volume= 0.197 af
 Outflow = 2.49 cfs @ 12.07 hrs, Volume= 0.197 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.49 cfs @ 12.07 hrs, Volume= 0.197 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2
 Peak Elev= 216.61' @ 12.07 hrs
 Flood Elev= 224.38'

Device	Routing	Invert	Outlet Devices
#1	Primary	215.68'	12.0" Round Culvert L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 215.68' / 211.45' S= 0.0529 '/ Cc= 0.900 n= 0.010 PVC, smooth interior

Primary OutFlow Max=2.45 cfs @ 12.07 hrs HW=216.59' TW=213.25' (Dynamic Tailwater)
 ↳ **I=Culvert** (Inlet Controls 2.45 cfs @ 3.26 fps)

Summary for Pond C6: 15" RCP

Inflow Area = 2.816 ac, 13.64% Impervious, Inflow Depth = 1.53" for 10-year event
 Inflow = 3.58 cfs @ 12.22 hrs, Volume= 0.359 af
 Outflow = 3.58 cfs @ 12.22 hrs, Volume= 0.359 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.58 cfs @ 12.22 hrs, Volume= 0.359 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2

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Peak Elev= 226.22' @ 12.22 hrs
 Flood Elev= 229.32'

Device	Routing	Invert	Outlet Devices
#1	Primary	225.22'	15.0" Round Culvert L= 141.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 225.22' / 223.81' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=3.56 cfs @ 12.22 hrs HW=226.22' TW=224.05' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 3.56 cfs @ 3.40 fps)

Summary for Pond C6.1: 15" HDPE

Inflow Area = 2.816 ac, 13.64% Impervious, Inflow Depth = 1.53" for 10-year event
 Inflow = 3.58 cfs @ 12.22 hrs, Volume= 0.359 af
 Outflow = 3.58 cfs @ 12.22 hrs, Volume= 0.359 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.58 cfs @ 12.22 hrs, Volume= 0.359 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2
 Peak Elev= 224.09' @ 12.21 hrs
 Flood Elev= 228.41'

Device	Routing	Invert	Outlet Devices
#1	Primary	222.81'	15.0" Round Culvert L= 70.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 222.81' / 221.63' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=3.56 cfs @ 12.22 hrs HW=224.05' TW=223.47' (Dynamic Tailwater)
 ↑**1=Culvert** (Outlet Controls 3.56 cfs @ 3.65 fps)

Summary for Pond C6.2: 15" HDPE

Inflow Area = 3.961 ac, 22.85% Impervious, Inflow Depth = 1.77" for 10-year event
 Inflow = 6.04 cfs @ 12.21 hrs, Volume= 0.586 af
 Outflow = 6.04 cfs @ 12.21 hrs, Volume= 0.586 af, Atten= 0%, Lag= 0.0 min
 Primary = 6.04 cfs @ 12.21 hrs, Volume= 0.586 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2
 Peak Elev= 223.56' @ 12.21 hrs
 Flood Elev= 228.41'

Device	Routing	Invert	Outlet Devices
#1	Primary	221.53'	15.0" Round Culvert L= 210.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.53' / 219.88' S= 0.0079 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=6.00 cfs @ 12.21 hrs HW=223.50' TW=209.09' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 6.00 cfs @ 4.89 fps)

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Summary for Pond D1: Existing Pond

Inflow Area = 10.969 ac, 38.76% Impervious, Inflow Depth = 2.21" for 10-year event
 Inflow = 16.51 cfs @ 12.23 hrs, Volume= 2.017 af
 Outflow = 9.45 cfs @ 12.56 hrs, Volume= 2.017 af, Atten= 43%, Lag= 19.9 min
 Primary = 9.45 cfs @ 12.56 hrs, Volume= 2.017 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2
 Peak Elev= 206.60' @ 12.56 hrs Surf.Area= 8,422 sf Storage= 19,858 cf
 Flood Elev= 210.00' Surf.Area= 11,159 sf Storage= 53,405 cf

Plug-Flow detention time= 44.0 min calculated for 2.017 af (100% of inflow)
 Center-of-Mass det. time= 44.0 min (881.4 - 837.4)

Volume	Invert	Avail.Storage	Storage Description		
#1	203.90'	53,405 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
203.90	6,339	321.0	0	0	6,339
204.00	6,404	322.0	637	637	6,399
205.00	7,155	337.0	6,776	7,413	7,252
206.00	7,950	352.0	7,549	14,962	8,144
207.00	8,746	367.0	8,345	23,307	9,074
208.00	9,684	387.0	9,211	32,518	10,332
209.00	10,470	399.0	10,074	42,592	11,180
210.00	11,159	410.0	10,813	53,405	11,995

Device	Routing	Invert	Outlet Devices
#1	Primary	203.87'	18.0" Round Culvert L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 203.87' / 202.26' S= 0.0383 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	206.75'	5.0' long x 35.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=9.45 cfs @ 12.56 hrs HW=206.60' TW=0.00' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 9.45 cfs @ 5.35 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=203.90' TW=0.00' (Dynamic Tailwater)
 ↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond T1: USF

Inflow Area = 1.073 ac, 69.14% Impervious, Inflow Depth = 3.19" for 10-year event
 Inflow = 3.88 cfs @ 12.08 hrs, Volume= 0.285 af
 Outflow = 0.37 cfs @ 12.95 hrs, Volume= 0.235 af, Atten= 91%, Lag= 52.3 min
 Primary = 0.37 cfs @ 12.95 hrs, Volume= 0.235 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2

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Peak Elev= 226.80' @ 12.95 hrs Surf.Area= 3,818 sf Storage= 6,136 cf
 Flood Elev= 228.50' Surf.Area= 4,661 sf Storage= 13,324 cf

Plug-Flow detention time=(not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 323.7 min (1,113.3 - 789.6)

Volume	Invert	Avail.Storage	Storage Description
#1	225.00'	13,324 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
225.00	3,001	0	0
226.00	3,444	3,223	3,223
226.50	3,675	1,780	5,002
227.00	3,912	1,897	6,899
228.00	4,405	4,159	11,058
228.50	4,661	2,267	13,324

Device	Routing	Invert	Outlet Devices
#1	Primary	221.80'	15.0" Round Culvert L= 745.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.80' / 204.00' S= 0.0239 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	226.80'	6.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Device 1	221.80'	2.5" Vert. Orifice/Grate C= 0.600
#4	Device 3	226.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Device 3	225.00'	0.750 in/hr Exfiltration over Horizontal area

Primary OutFlow Max=0.37 cfs @ 12.95 hrs HW=226.80' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 0.37 cfs of 10.52 cfs potential flow)
- 2=Broad-Crested Rectangular Weir (Weir Controls 0.00 cfs @ 0.14 fps)
- 3=Orifice/Grate (Orifice Controls 0.36 cfs @ 10.66 fps)
- 4=Orifice/Grate (Passes < 3.42 cfs potential flow)
- 5=Exfiltration (Passes < 0.07 cfs potential flow)

Summary for Link AP1:

Inflow Area = 12.041 ac, 41.46% Impervious, Inflow Depth > 2.24" for 10-year event
 Inflow = 9.81 cfs @ 12.56 hrs, Volume= 2.252 af
 Primary = 9.81 cfs @ 12.56 hrs, Volume= 2.252 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

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Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 points x 2
 Runoff by SCS TR-20 method, UH=SCS
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1.0:	Runoff Area=49,865 sf 45.50% Impervious Runoff Depth=3.05" Flow Length=294' Tc=13.7 min CN=78 Runoff=3.20 cfs 0.291 af
Subcatchment 1.1:	Runoff Area=49,007 sf 49.72% Impervious Runoff Depth=3.15" Flow Length=352' Tc=6.0 min CN=79 Runoff=4.11 cfs 0.295 af
Subcatchment 2.0:	Runoff Area=19,990 sf 82.15% Impervious Runoff Depth=4.37" Tc=5.0 min CN=91 Runoff=2.29 cfs 0.167 af
Subcatchment 3.0:	Runoff Area=6,600 sf 100.00% Impervious Runoff Depth=5.16" Tc=5.0 min CN=98 Runoff=0.82 cfs 0.065 af
Subcatchment 3.1:	Runoff Area=14,995 sf 100.00% Impervious Runoff Depth=5.16" Tc=5.0 min CN=98 Runoff=1.86 cfs 0.148 af
Subcatchment 3.2:	Runoff Area=31,725 sf 54.56% Impervious Runoff Depth=3.34" Tc=5.0 min CN=81 Runoff=2.91 cfs 0.203 af
Subcatchment 4.0:	Runoff Area=17,054 sf 100.00% Impervious Runoff Depth=5.16" Tc=5.0 min CN=98 Runoff=2.11 cfs 0.168 af
Subcatchment 5.0:	Runoff Area=212,600 sf 38.25% Impervious Runoff Depth=2.78" Flow Length=933' Tc=23.0 min CN=75 Runoff=10.06 cfs 1.130 af
Subcatchment 6.0: Offsite	Runoff Area=122,676 sf 13.64% Impervious Runoff Depth=2.09" Flow Length=325' Tc=15.1 min CN=67 Runoff=5.03 cfs 0.490 af
Pond C1: 18" HDPE	Peak Elev=211.24' Inflow=14.88 cfs 1.477 af 18.0" Round Culvert n=0.013 L=114.0' S=0.0056 '/' Outflow=14.88 cfs 1.477 af
Pond C2: 12" PVC	Peak Elev=214.28' Inflow=5.22 cfs 0.401 af 12.0" Round Culvert n=0.010 L=175.0' S=0.0286 '/' Outflow=5.22 cfs 0.401 af
Pond C3: 12" PVC	Peak Elev=216.78' Inflow=2.93 cfs 0.234 af 12.0" Round Culvert n=0.010 L=80.0' S=0.0529 '/' Outflow=2.93 cfs 0.234 af
Pond C6: 15" RCP	Peak Elev=227.33' Inflow=5.03 cfs 0.490 af 15.0" Round Culvert n=0.011 L=141.0' S=0.0100 '/' Outflow=5.03 cfs 0.490 af
Pond C6.1: 15" HDPE	Peak Elev=226.37' Inflow=5.03 cfs 0.490 af 15.0" Round Culvert n=0.013 L=70.0' S=0.0169 '/' Outflow=5.03 cfs 0.490 af
Pond C6.2: 15" HDPE	Peak Elev=225.56' Inflow=8.19 cfs 0.781 af 15.0" Round Culvert n=0.013 L=210.0' S=0.0079 '/' Outflow=8.19 cfs 0.781 af
Pond D1: Existing Pond	Peak Elev=207.19' Storage=24,982 cf Inflow=21.67 cfs 2.607 af Primary=10.77 cfs 2.506 af Secondary=3.93 cfs 0.100 af Outflow=14.70 cfs 2.607 af
Pond T1: USF	Peak Elev=226.96' Storage=6,729 cf Inflow=4.77 cfs 0.351 af Outflow=1.41 cfs 0.298 af

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Link AP1:

Inflow=15.99 cfs 2.904 af

Primary=15.99 cfs 2.904 af

Total Runoff Area = 12.041 ac Runoff Volume = 2.958 af Average Runoff Depth = 2.95"
58.54% Pervious = 7.048 ac 41.46% Impervious = 4.993 ac

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Summary for Subcatchment 1.0:

Runoff = 3.20 cfs @ 12.19 hrs, Volume= 0.291 af, Depth= 3.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
27,174	61	>75% Grass cover, Good, HSG B
* 22,691	98	Paved parking
49,865	78	Weighted Average
27,174		54.50% Pervious Area
22,691		45.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	50	0.0530	0.10		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.00"
2.3	20	0.2220	0.14		Sheet Flow, BC Woods: Light underbrush n= 0.400 P2= 3.00"
2.8	224	0.0360	1.33		Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps
13.7	294	Total			

Summary for Subcatchment 1.1:

Runoff = 4.11 cfs @ 12.09 hrs, Volume= 0.295 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
24,643	61	>75% Grass cover, Good, HSG B
* 24,364	98	Paved parking
49,007	79	Weighted Average
24,643		50.28% Pervious Area
24,364		49.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	30	0.0300	1.23		Sheet Flow, AB Smooth surfaces n= 0.011 P2= 3.00"
1.8	22	0.0680	0.20		Sheet Flow, BC Grass: Short n= 0.150 P2= 3.00"
3.8	300	0.0360	1.33		Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps
6.0	352	Total			

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Summary for Subcatchment 2.0:

Runoff = 2.29 cfs @ 12.07 hrs, Volume= 0.167 af, Depth= 4.37"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
3,569	61	>75% Grass cover, Good, HSG B
* 16,421	98	Paved parking
19,990	91	Weighted Average
3,569		17.85% Pervious Area
16,421		82.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 3.0:

Runoff = 0.82 cfs @ 12.07 hrs, Volume= 0.065 af, Depth= 5.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
* 6,600	98	Paved parking
6,600		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 3.1:

Runoff = 1.86 cfs @ 12.07 hrs, Volume= 0.148 af, Depth= 5.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
* 14,995	98	Paved parking
14,995		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

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Summary for Subcatchment 3.2:

Runoff = 2.91 cfs @ 12.08 hrs, Volume= 0.203 af, Depth= 3.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
14,417	61	>75% Grass cover, Good, HSG B
* 17,308	98	Paved parking
31,725	81	Weighted Average
14,417		45.44% Pervious Area
17,308		54.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 4.0:

Runoff = 2.11 cfs @ 12.07 hrs, Volume= 0.168 af, Depth= 5.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
* 17,054	98	Paved parking
17,054		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 5.0:

Runoff = 10.06 cfs @ 12.32 hrs, Volume= 1.130 af, Depth= 2.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
44,287	39	>75% Grass cover, Good, HSG A
22,175	61	>75% Grass cover, Good, HSG B
58,991	74	>75% Grass cover, Good, HSG C
* 5,827	90	Gravel
* 74,882	98	Paved parking
* 6,438	98	Water Surface
212,600	75	Weighted Average
131,280		61.75% Pervious Area
81,320		38.25% Impervious Area

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Type III 24-hr 25-year Rainfall=5.40"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	120	0.0150	0.15		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.00"
8.1	285	0.0070	0.59		Shallow Concentrated Flow, BC Short Grass Pasture Kv= 7.0 fps
1.5	358	0.0380	3.96		Shallow Concentrated Flow, CD Paved Kv= 20.3 fps
0.1	60	0.2170	13.17	219.49	Parabolic Channel, DE W=25.00' D=1.00' Area=16.7 sf Perim=25.1' n= 0.040 Earth, cobble bottom, clean sides
0.2	110		9.83		Lake or Reservoir, EF Mean Depth= 3.00'
23.0	933	Total			

Summary for Subcatchment 6.0: Offsite

Runoff = 5.03 cfs @ 12.22 hrs, Volume= 0.490 af, Depth= 2.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
29,872	61	>75% Grass cover, Good, HSG B
43,636	58	Meadow, non-grazed, HSG B
32,438	67	Brush, Poor, HSG B
* 16,730	98	Paved parking
122,676	67	Weighted Average
105,946		86.36% Pervious Area
16,730		13.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0690	0.20		Sheet Flow, AB Grass: Dense n= 0.240 P2= 3.00"
2.7	175	0.0230	1.06		Shallow Concentrated Flow, BC Short Grass Pasture Kv= 7.0 fps
15.1	325	Total			

Summary for Pond C1: 18" HDPE

Inflow Area = 6.088 ac, 39.16% Impervious, Inflow Depth = 2.91" for 25-year event
 Inflow = 14.88 cfs @ 12.11 hrs, Volume= 1.477 af
 Outflow = 14.88 cfs @ 12.11 hrs, Volume= 1.477 af, Atten= 0%, Lag= 0.0 min
 Primary = 14.88 cfs @ 12.11 hrs, Volume= 1.477 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2
 Peak Elev= 211.24' @ 12.11 hrs
 Flood Elev= 215.04'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.44'	18.0" Round Culvert L= 114.0' CPP, square edge headwall, Ke= 0.500

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Type III 24-hr 25-year Rainfall=5.40"

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Inlet / Outlet Invert= 206.44' / 205.80' S= 0.0056 '/ Cc= 0.900
n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=14.80 cfs @ 12.11 hrs HW=211.20' TW=205.78' (Dynamic Tailwater)
 ↳ **I=Culvert** (Barrel Controls 14.80 cfs @ 8.37 fps)

Summary for Pond C2: 12" PVC

Inflow Area = 1.002 ac, 91.82% Impervious, Inflow Depth = 4.80" for 25-year event
 Inflow = 5.22 cfs @ 12.07 hrs, Volume= 0.401 af
 Outflow = 5.22 cfs @ 12.07 hrs, Volume= 0.401 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.22 cfs @ 12.07 hrs, Volume= 0.401 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2
 Peak Elev= 214.28' @ 12.08 hrs
 Flood Elev= 218.53'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.45'	12.0" Round Culvert L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.45' / 206.44' S= 0.0286 '/ Cc= 0.900 n= 0.010 PVC, smooth interior

Primary OutFlow Max=5.25 cfs @ 12.07 hrs HW=214.16' TW=210.86' (Dynamic Tailwater)
 ↳ **I=Culvert** (Outlet Controls 5.25 cfs @ 6.68 fps)

Summary for Pond C3: 12" PVC

Inflow Area = 0.543 ac, 100.00% Impervious, Inflow Depth = 5.16" for 25-year event
 Inflow = 2.93 cfs @ 12.07 hrs, Volume= 0.234 af
 Outflow = 2.93 cfs @ 12.07 hrs, Volume= 0.234 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.93 cfs @ 12.07 hrs, Volume= 0.234 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2
 Peak Elev= 216.78' @ 12.07 hrs
 Flood Elev= 224.38'

Device	Routing	Invert	Outlet Devices
#1	Primary	215.68'	12.0" Round Culvert L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 215.68' / 211.45' S= 0.0529 '/ Cc= 0.900 n= 0.010 PVC, smooth interior

Primary OutFlow Max=2.88 cfs @ 12.07 hrs HW=216.76' TW=214.15' (Dynamic Tailwater)
 ↳ **I=Culvert** (Inlet Controls 2.88 cfs @ 3.67 fps)

Summary for Pond C6: 15" RCP

Inflow Area = 2.816 ac, 13.64% Impervious, Inflow Depth = 2.09" for 25-year event
 Inflow = 5.03 cfs @ 12.22 hrs, Volume= 0.490 af
 Outflow = 5.03 cfs @ 12.22 hrs, Volume= 0.490 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.03 cfs @ 12.22 hrs, Volume= 0.490 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2

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Type III 24-hr 25-year Rainfall=5.40"

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Peak Elev= 227.33' @ 12.24 hrs
 Flood Elev= 229.32'

Device	Routing	Invert	Outlet Devices
#1	Primary	225.22'	15.0" Round Culvert L= 141.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 225.22' / 223.81' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=4.47 cfs @ 12.22 hrs HW=227.04' TW=226.25' (Dynamic Tailwater)
 ↑**1=Culvert** (Outlet Controls 4.47 cfs @ 3.64 fps)

Summary for Pond C6.1: 15" HDPE

Inflow Area = 2.816 ac, 13.64% Impervious, Inflow Depth = 2.09" for 25-year event
 Inflow = 5.03 cfs @ 12.22 hrs, Volume= 0.490 af
 Outflow = 5.03 cfs @ 12.22 hrs, Volume= 0.490 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.03 cfs @ 12.22 hrs, Volume= 0.490 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2
 Peak Elev= 226.37' @ 12.21 hrs
 Flood Elev= 228.41'

Device	Routing	Invert	Outlet Devices
#1	Primary	222.81'	15.0" Round Culvert L= 70.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 222.81' / 221.63' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=4.99 cfs @ 12.22 hrs HW=226.25' TW=225.45' (Dynamic Tailwater)
 ↑**1=Culvert** (Outlet Controls 4.99 cfs @ 4.06 fps)

Summary for Pond C6.2: 15" HDPE

Inflow Area = 3.961 ac, 22.85% Impervious, Inflow Depth = 2.37" for 25-year event
 Inflow = 8.19 cfs @ 12.21 hrs, Volume= 0.781 af
 Outflow = 8.19 cfs @ 12.21 hrs, Volume= 0.781 af, Atten= 0%, Lag= 0.0 min
 Primary = 8.19 cfs @ 12.21 hrs, Volume= 0.781 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2
 Peak Elev= 225.56' @ 12.21 hrs
 Flood Elev= 228.41'

Device	Routing	Invert	Outlet Devices
#1	Primary	221.53'	15.0" Round Culvert L= 210.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.53' / 219.88' S= 0.0079 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=8.14 cfs @ 12.21 hrs HW=225.50' TW=210.36' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 8.14 cfs @ 6.64 fps)

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Type III 24-hr 25-year Rainfall=5.40"

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Summary for Pond D1: Existing Pond

Inflow Area = 10.969 ac, 38.76% Impervious, Inflow Depth = 2.85" for 25-year event
 Inflow = 21.67 cfs @ 12.23 hrs, Volume= 2.607 af
 Outflow = 14.70 cfs @ 12.49 hrs, Volume= 2.607 af, Atten= 32%, Lag= 15.9 min
 Primary = 10.77 cfs @ 12.49 hrs, Volume= 2.506 af
 Secondary = 3.93 cfs @ 12.49 hrs, Volume= 0.100 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2
 Peak Elev= 207.19' @ 12.49 hrs Surf.Area= 8,920 sf Storage= 24,982 cf
 Flood Elev= 210.00' Surf.Area= 11,159 sf Storage= 53,405 cf

Plug-Flow detention time= 41.2 min calculated for 2.607 af (100% of inflow)
 Center-of-Mass det. time= 41.1 min (872.6 - 831.5)

Volume	Invert	Avail.Storage	Storage Description		
#1	203.90'	53,405 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
203.90	6,339	321.0	0	0	6,339
204.00	6,404	322.0	637	637	6,399
205.00	7,155	337.0	6,776	7,413	7,252
206.00	7,950	352.0	7,549	14,962	8,144
207.00	8,746	367.0	8,345	23,307	9,074
208.00	9,684	387.0	9,211	32,518	10,332
209.00	10,470	399.0	10,074	42,592	11,180
210.00	11,159	410.0	10,813	53,405	11,995

Device	Routing	Invert	Outlet Devices
#1	Primary	203.87'	18.0" Round Culvert L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 203.87' / 202.26' S= 0.0383 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	206.75'	5.0' long x 35.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.76 cfs @ 12.49 hrs HW=207.19' TW=0.00' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 10.76 cfs @ 6.09 fps)

Secondary OutFlow Max=3.90 cfs @ 12.49 hrs HW=207.19' TW=0.00' (Dynamic Tailwater)
 ↑**2=Broad-Crested Rectangular Weir** (Weir Controls 3.90 cfs @ 1.79 fps)

Summary for Pond T1: USF

Inflow Area = 1.073 ac, 69.14% Impervious, Inflow Depth = 3.93" for 25-year event
 Inflow = 4.77 cfs @ 12.08 hrs, Volume= 0.351 af
 Outflow = 1.41 cfs @ 12.40 hrs, Volume= 0.298 af, Atten= 70%, Lag= 19.6 min
 Primary = 1.41 cfs @ 12.40 hrs, Volume= 0.298 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2

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Type III 24-hr 25-year Rainfall=5.40"

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Peak Elev= 226.96' @ 12.40 hrs Surf.Area= 3,891 sf Storage= 6,729 cf
 Flood Elev= 228.50' Surf.Area= 4,661 sf Storage= 13,324 cf

Plug-Flow detention time=(not calculated: outflow precedes inflow)
 Center-of-Mass det. time=260.9 min (1,046.7 - 785.8)

Volume	Invert	Avail.Storage	Storage Description
#1	225.00'	13,324 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
225.00	3,001	0	0
226.00	3,444	3,223	3,223
226.50	3,675	1,780	5,002
227.00	3,912	1,897	6,899
228.00	4,405	4,159	11,058
228.50	4,661	2,267	13,324

Device	Routing	Invert	Outlet Devices
#1	Primary	221.80'	15.0" Round Culvert L= 745.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.80' / 204.00' S= 0.0239 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	226.80'	6.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Device 1	221.80'	2.5" Vert. Orifice/Grate C= 0.600
#4	Device 3	226.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Device 3	225.00'	0.750 in/hr Exfiltration over Horizontal area

Primary OutFlow Max=1.41 cfs @ 12.40 hrs HW=226.96' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 1.41 cfs of 10.56 cfs potential flow)
- 2=Broad-Crested Rectangular Weir (Weir Controls 1.04 cfs @ 1.11 fps)
- 3=Orifice/Grate (Orifice Controls 0.37 cfs @ 10.82 fps)
- 4=Orifice/Grate (Passes < 6.33 cfs potential flow)
- 5=Exfiltration (Passes < 0.07 cfs potential flow)

Summary for Link AP1:

Inflow Area = 12.041 ac, 41.46% Impervious, Inflow Depth > 2.89" for 25-year event
 Inflow = 15.99 cfs @ 12.48 hrs, Volume= 2.904 af
 Primary = 15.99 cfs @ 12.48 hrs, Volume= 2.904 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

**Appendix B:
Stormwater BMP Calculations**

GRASSED UNDERDRAINED SOIL FILTER BMP CALCULATIONS

Lewiston Zero-Sort Facility

424 River Road

Lewiston, Maine

September 2013

Treatment Volume

Underdrained soil filters must hold a volume equal to 1 inch over contributing impervious area and 0.4 inches over contributing landscaped area

Grassed underdrained soil filter T1:

Impervious Area = 32,303 sf

Landscaped Area = 14,417 sf

Required treatment volume = $(32,303 \text{ sf})(.083 \text{ ft}) + (14,417 \text{ sf})(.033 \text{ ft}) = 3,159 \text{ cf}$

Treatment volume provided = **5,002 cf**

Required filter area = $(32,303 \text{ sf})(5\%) + (14,417 \text{ sf})(2\%) = 1,903 \text{ sf}$

Filter area provided = **3,001 sf**

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Type III 24-hr 25-year Rainfall=5.40"

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Summary for Pond D1: Existing Pond

[80] Warning: Exceeded Pond C1 by 0.35' @ 24.96 hrs (0.35 cfs 0.109 af)

Inflow Area = 10.969 ac, 38.76% Impervious, Inflow Depth = 2.85" for 25-year event
 Inflow = 21.67 cfs @ 12.23 hrs, Volume= 2.607 af
 Outflow = 18.18 cfs @ 12.39 hrs, Volume= 2.121 af, Atten= 16%, Lag= 10.1 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Secondary = 18.18 cfs @ 12.39 hrs, Volume= 2.121 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2
Peak Elev= 207.99' @ 12.39 hrs Surf.Area= 9,672 sf Storage= 32,401 cf
Flood Elev= 210.00' Surf.Area= 11,159 sf Storage= 53,405 cf

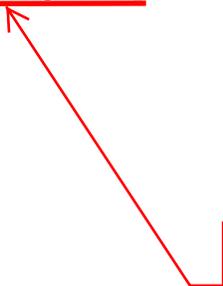
Plug-Flow detention time= 131.9 min calculated for 2.121 af (81% of inflow)
 Center-of-Mass det. time= 56.2 min (887.7 - 831.5)

Volume	Invert	Avail.Storage	Storage Description		
#1	203.90'	53,405 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
203.90	6,339	321.0	0	0	6,339
204.00	6,404	322.0	637	637	6,399
205.00	7,155	337.0	6,776	7,413	7,252
206.00	7,950	352.0	7,549	14,962	8,144
207.00	8,746	367.0	8,345	23,307	9,074
208.00	9,684	387.0	9,211	32,518	10,332
209.00	10,470	399.0	10,074	42,592	11,180
210.00	11,159	410.0	10,813	53,405	11,995

Device	Routing	Invert	Outlet Devices
#1	Primary	203.87'	18.0" Round Culvert X 0.00 L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 203.87' / 202.26' S= 0.0383 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	206.75'	5.0' long x 35.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=203.90' TW=0.00' (Dynamic Tailwater)
 ↑**1=Culvert** (Controls 0.00 cfs)

Secondary OutFlow Max=18.15 cfs @ 12.39 hrs HW=207.99' TW=0.00' (Dynamic Tailwater)
 ↑**2=Broad-Crested Rectangular Weir**(Weir Controls 18.15 cfs @ 2.94 fps)



Overflow weir independently conveys 25 year storm with 1' freeboard

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Summary for Pond D1: Existing Pond

[80] Warning: Exceeded Pond C1 by 0.36' @ 24.88 hrs (0.37 cfs 0.110 af)

Inflow Area = 10.969 ac, 38.76% Impervious, Inflow Depth = 3.78" for 100-year event
 Inflow = 29.05 cfs @ 12.22 hrs, Volume= 3.456 af
 Outflow = 26.21 cfs @ 12.34 hrs, Volume= 2.971 af, Atten= 10%, Lag= 7.2 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Secondary = 26.21 cfs @ 12.34 hrs, Volume= 2.971 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2
Peak Elev= 208.33' @ 12.34 hrs Surf.Area= 9,943 sf Storage= 35,791 cf
Flood Elev= 210.00' Surf.Area= 11,159 sf Storage= 53,405 cf

Plug-Flow detention time= 109.5 min calculated for 2.971 af (86% of inflow)
 Center-of-Mass det. time= 47.0 min (871.7 - 824.7)

Volume	Invert	Avail.Storage	Storage Description		
#1	203.90'	53,405 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
203.90	6,339	321.0	0	0	6,339
204.00	6,404	322.0	637	637	6,399
205.00	7,155	337.0	6,776	7,413	7,252
206.00	7,950	352.0	7,549	14,962	8,144
207.00	8,746	367.0	8,345	23,307	9,074
208.00	9,684	387.0	9,211	32,518	10,332
209.00	10,470	399.0	10,074	42,592	11,180
210.00	11,159	410.0	10,813	53,405	11,995

Device	Routing	Invert	Outlet Devices
#1	Primary	203.87'	18.0" Round Culvert X 0.00 L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 203.87' / 202.26' S= 0.0383 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	206.75'	5.0' long x 35.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=203.90' TW=0.00' (Dynamic Tailwater)
 ↑1=Culvert (Controls 0.00 cfs)

Secondary OutFlow Max=26.15 cfs @ 12.34 hrs HW=208.33' TW=0.00' (Dynamic Tailwater)
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 26.15 cfs @ 3.31 fps)



Overflow weir independently conveys 100-year storm without overtopping pond crest

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Type III 24-hr 25-year Rainfall=5.40"

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Summary for Pond T1: USF

Inflow Area = 1.073 ac, 69.14% Impervious, Inflow Depth = 3.93" for 25-year event
 Inflow = 4.77 cfs @ 12.08 hrs, Volume= 0.351 af
 Outflow = 2.17 cfs @ 12.25 hrs, Volume= 0.210 af, Atten= 54%, Lag= 10.2 min
 Primary = 2.17 cfs @ 12.25 hrs, Volume= 0.210 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2

Peak Elev= 227.05' @ 12.25 hrs Surf.Area= 3,939 sf Storage= 7,110 cf

Flood Elev= 228.50' Surf.Area= 4,661 sf Storage= 13,324 cf

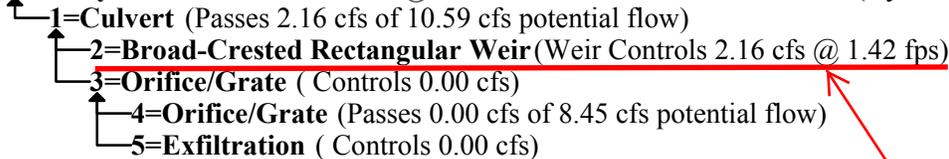
Plug-Flow detention time= 215.0 min calculated for 0.210 af (60% of inflow)

Center-of-Mass det. time= 106.2 min (891.9 - 785.8)

Volume	Invert	Avail.Storage	Storage Description
#1	225.00'	13,324 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
225.00	3,001	0	0
226.00	3,444	3,223	3,223
226.50	3,675	1,780	5,002
227.00	3,912	1,897	6,899
228.00	4,405	4,159	11,058
228.50	4,661	2,267	13,324

Device	Routing	Invert	Outlet Devices
#1	Primary	221.80'	15.0" Round Culvert L= 745.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.80' / 204.00' S= 0.0239 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	226.80'	6.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Device 1	221.80'	2.5" Vert. Orifice/Grate X 0.00 C= 0.600
#4	Device 3	226.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Device 3	225.00'	0.750 in/hr Exfiltration X 0.00 over Horizontal area

Primary OutFlow Max=2.16 cfs @ 12.25 hrs HW=227.05' TW=0.00' (Dynamic Tailwater)



Overflow weir independently conveys 25 year storm with 1' freeboard

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Type III 24-hr 100-year Rainfall=6.50"

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Summary for Pond T1: USF

Inflow Area = 1.073 ac, 69.14% Impervious, Inflow Depth = 4.96" for 100-year event
 Inflow = 6.00 cfs @ 12.07 hrs, Volume= 0.443 af
 Outflow = 4.37 cfs @ 12.15 hrs, Volume= 0.303 af, Atten= 27%, Lag= 4.4 min
 Primary = 4.37 cfs @ 12.15 hrs, Volume= 0.303 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs / 2

Peak Elev= 227.20' @ 12.15 hrs Surf.Area= 4,009 sf Storage= 7,678 cf

Flood Elev= 228.50' Surf.Area= 4,661 sf Storage= 13,324 cf

Plug-Flow detention time= 182.7 min calculated for 0.302 af (68% of inflow)

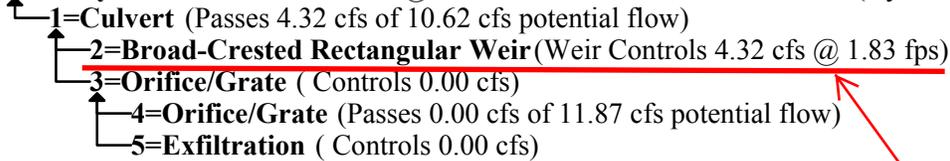
Center-of-Mass det. time= 85.9 min (867.3 - 781.4)

Volume	Invert	Avail.Storage	Storage Description
#1	225.00'	13,324 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
225.00	3,001	0	0
226.00	3,444	3,223	3,223
226.50	3,675	1,780	5,002
227.00	3,912	1,897	6,899
228.00	4,405	4,159	11,058
228.50	4,661	2,267	13,324

Device	Routing	Invert	Outlet Devices
#1	Primary	221.80'	15.0" Round Culvert L= 745.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.80' / 204.00' S= 0.0239 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	226.80'	6.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Device 1	221.80'	2.5" Vert. Orifice/Grate X 0.00 C= 0.600
#4	Device 3	226.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Device 3	225.00'	0.750 in/hr Exfiltration X 0.00 over Horizontal area

Primary OutFlow Max=4.32 cfs @ 12.15 hrs HW=227.19' TW=0.00' (Dynamic Tailwater)



Overflow weir independently conveys 100-year storm without overtopping pond crest

**Appendix C:
Inspection & Maintenance Plan**

**Inspection and Maintenance Plan
For Stormwater Management Facilities**

**Lewiston Zero-Sort
424 River Road
Lewiston**

October 2013

Stormwater management facilities include ditches/swales, riprap aprons, catch basins, drainage manholes, storm drain pipe, a grassed underdrained soil filter, and an outlet control structure. During construction activities, the maintenance of all stormwater measures will be the direct responsibility of the Contractor. After acceptance by the Owner, the maintenance of all stormwater management facilities, the establishment of any contract services required to implement the program, and the keeping of records and maintenance log book will be the responsibility of the Owner. At a minimum, the following maintenance activities for each stormwater management system shall be performed on a prescribed schedule.

Recertification Requirements

Within three months of the expiration of each five-year interval from the date of issuance of the permit, the permittee shall certify the following to the department.

- a) All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.
- b) All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the facilities.
- c) The erosion and stormwater maintenance plan for the Site is being implemented as written, or modifications to the plan have been submitted to and approved by the department and the maintenance log is being maintained.

Paved Surfaces

Accumulations of winter sand along paved surfaces shall be cleared at least once a year, preferably in the spring, and periodically during the year on an as-needed basis, to minimize transportation of sediment during rainfall events. Accumulations on pavement may be removed by pavement sweeping or vacuuming. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader.

Riprap Aprons

Riprap ditches and aprons where stone is displaced should be replaced and chinked to assure stability. With time, additional riprap may be added. Vegetation growing through riprap should be removed on an annual basis.

Catch Basins, Drainage Manholes, and Outlet Control Structures

All catch basins, drainage manholes, and outlet control structures shall be inspected twice per year (in spring and fall) to assure that the inlet entry and grates are clear of debris and will accept the intended flows. Any debris and sediments shall be cleared.

Sediment should be removed from these structures when it accumulates within 12 inches of the lowest pipe invert. At a minimum, remove floating debris and hydrocarbons at the time of the inspection. The removed material must be disposed of in accordance with the Maine Solid Waste Disposal Rules. Confined space entry safety procedures shall be practiced should entry into these structures be required.

Storm Drainage Pipes

Culverts and piped drainage systems shall be inspected on an annual basis to remove any obstructions to flow; remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit; and to repair any erosion damage at the pipe inlet and outlet. Sediment should be removed when its level exceeds 20% of the pipe diameter. This may be accomplished by hydraulic flushing or any mechanical means; however, care should be taken to contain the sediment at the pipe outlet, and not flush the sediments into the detention/infiltration pond areas as this will reduce the ponds capacity and ability to infiltrate runoff, and will hasten the time when the pond must be cleaned or rehabilitated.

Grassed Underdrained Soil Filters

Trash, sediment and debris shall be removed from the vicinity of the outlet and disposed of at a licensed off-site facility. The basin shall be inspected bi-annually for evidence of excessive retention or rapid release of flow.

If the basin fails to drain within 72 hours, the surface of the pond shall be rototilled to promote filtration and vegetation shall be re-established.

Filtration basins shall not be used for snow storage area.

Vehicular equipment used to maintain or rehabilitate filtration basins should work from the basin perimeter and not enter the basin area, as this will compact the soil surface and reduce the design infiltration rate.

Disposal

Any sediment or debris removed during maintenance of the stormwater system must be disposed of in accordance with the Maine Solid Waste Disposal Rules.

Recordkeeping

Casella will keep a written maintenance log that summarizes inspections, maintenance, and any corrective actions taken. The log shall include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean-out of any sediment or debris, the location where the sediment or debris was disposed after removal will be indicated.

Sample Inspection Report:

LEWISTON ZERO-SORT FACILITY
424 RIVER ROAD, LEWISTON, MAINE
STORMWATER FACILITIES INSPECTION REPORT

NAME: _____ SIGNATURE: _____

TITLE: _____ COMPANY: _____

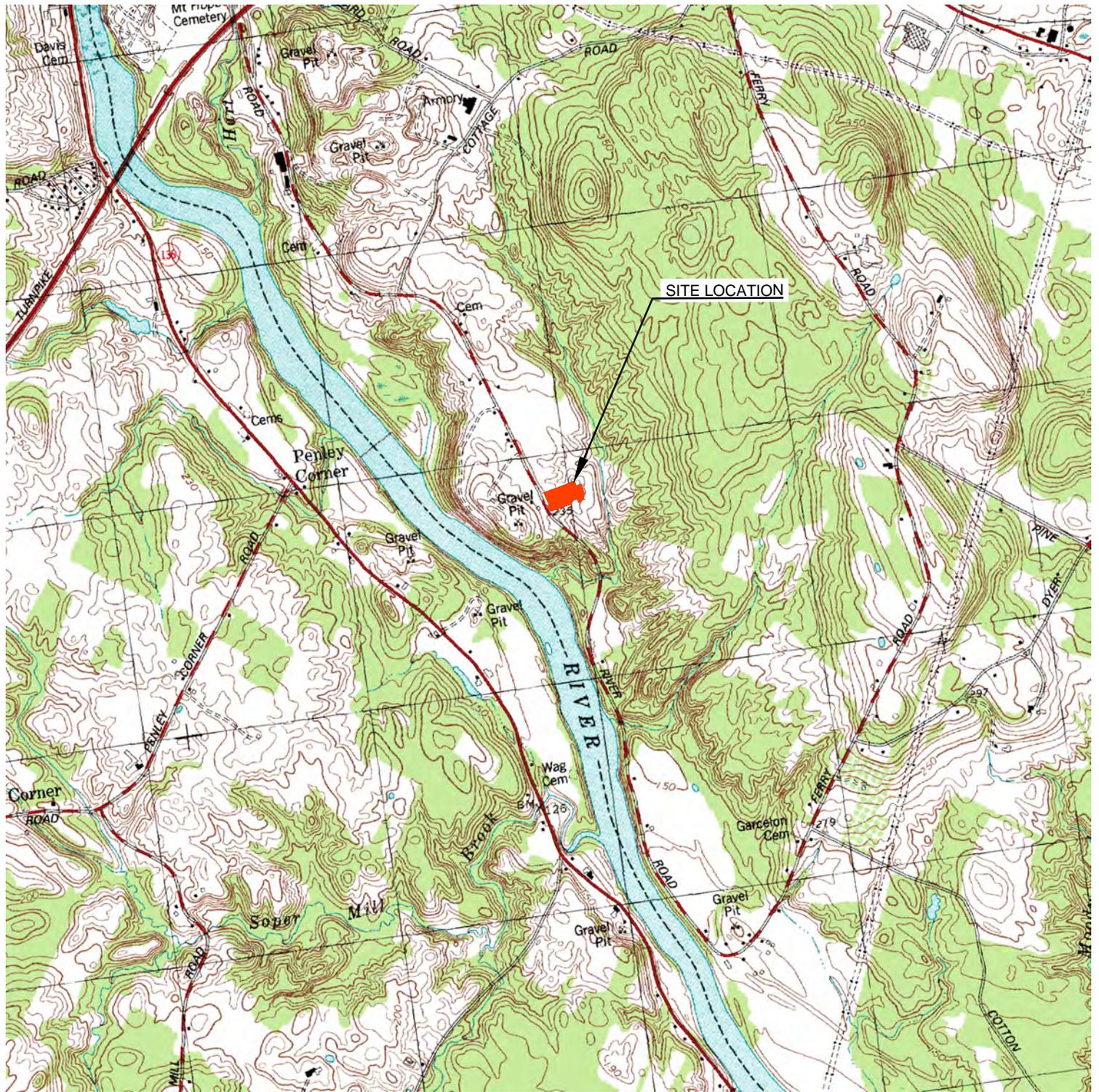
DATE: _____

OBSERVATIONS:

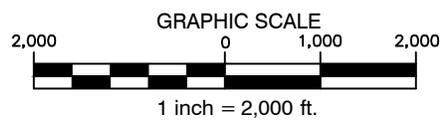
<u>BMP</u>	<u>Defects</u>	<u>Location(s)</u>	<u>Repair/Action Needed</u>	<u>Date/Action taken</u>
Paved Areas	Yes/no			
Stormdrain Pipes	Yes/no			
Outlet Control Structures	Yes/no			
Catch Basins & Drainage Manholes	Yes/no			
Underdrained Soil Filters	Yes/no			
Riprap Aprons	Yes/no			

**Appendix D:
Drainage Plans
(See Drawings Section at End of Application)**

EXHIBIT C



USGS 7.5 MINUTE QUADRANGLE, LEWISTON, MAINE, 2011.



WALSH
ENGINEERING ASSOCIATES, INC.

918 Brighton Ave | Portland, Maine 04102
ph: 207.553.9898 | www.walsh-eng.com

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LEWISTON ZERO SORT FACILITY

424 RIVER ROAD
LEWISTON, MAINE

Sheet Title:

LOCATION PLAN

Job No.:	197
Date:	Sept. 17 2013
Scale:	1" = 2,000
Drawn:	SWC
Checked:	MW

EXHIBIT D

June 17, 2013

Maine Department of Environmental Protection
Bureau of Remediation and Waste Management
17 State House Station
Augusta, ME 04333

RE: Casella Recycling, LLC / Casella Waste Systems, Inc.
Financial Capability - Solid Waste Amendment Application filing for the Lewiston MRF project

Dear Sir / Madam:

We understand that you require a bank reference for Casella Waste Systems, Inc. (the "Company") and its wholly owned subsidiary, Casella Recycling, LLC, in consideration of the Solid Waste Amendment Application filing for the Lewiston MRF project.

The Company has maintained a banking relationship with us since 1995. It is well known to us and has maintained its relationship with us in a satisfactory manner.

In addition, Bank of America, N.A. is the administrative agent for a secured credit facility of approximately \$227.5 million provided to the Company and its subsidiaries by a group of lenders (the "Credit Facility"). The amount available under the Credit Facility is currently approximately \$48 million. The Company may utilize the Credit Facility for direct borrowings and standby letters of credit subject to the conditions that (a) the Company not be in default under the terms of the Credit Facility and (b) the Company's representations and warranties contained in the agreement governing the Credit Facility be true and correct in all material respects as of the date of the borrowing.

Please note that the information set forth in this letter is subject to change without notice, and is provided in strict confidence, without any responsibility or liability on the part of Bank of America, N.A., its affiliates or any of its or its affiliates' directors, officers or employees. Bank of America, N.A. undertakes no responsibility to update the information set forth in this letter.

Very truly yours,

BANK OF AMERICA, N.A.



Maria F. Maia
Managing Director

EXHIBIT E

William J. Bray, P.E.
235 Bancroft Street
Portland, Maine 04102
Phone (207) 774-3603
trafficsolutions@maine.rr.com

June 7, 2013

Traffic Assessment

Proposed

Casella Recycling, LLC Lewiston “Zero-Sort” Facility

INTRODUCTION

Casella Recycling, LLC is proposing to operate, in conjunction with the City of Lewiston, a “Zero-Sort” recycling facility at the City’s Solid Waste and Recycling Facility on River Road. A portion of the facility will be leased from the City including the former Shredder Building/Bale Room and paved areas immediately surrounding these buildings. The lease includes an easement for Casella Recycling, LLC to access the site via the existing “scale-house” at the northwestern portion of the Site. Operations for the leased area will include receipt, segregation, baling and shipment of recyclable materials such as paper, cardboard, plastics, metals and glass. The “Zero-Sort” operations will be conducted under a solid waste permit issued by the Maine Department of Environmental Protection. A number of site alterations are proposed including construction of a 15,000 square foot addition to the existing Bale Room to accommodate processing equipment and storage of baled recyclables. All vehicle traffic generated by the facility will enter and exit through the existing “scale-house” entrance, except employees, who will ingress/egress the site through the secondary entrance drive located on the southerly edge of the site

This document estimates the peak hour trip generation of the proposed project and provides an assignment of those trips to the existing roadway network; examines current roadway safety trends on River Road, reviews vehicle sight distance of both existing site entrances, and provides a lane warrant analysis of access to the site.

EXISTING SITE TRAFFIC GENERATION

A manual vehicle turning movement count was conducted at the existing City of Lewiston Solid Waste and Recycling Facility on Thursday, May 30, 2013 to determine existing “peak” traffic demand for the site. All entering and exiting site vehicles and through vehicle traffic on River Road were recorded by vehicle classification (automobiles, straight-axle trucks, and semi-trailer trucks) in 15-minute intervals between the hours of 6:30 to 8:30AM. (Copy of the field data sheet is attached) Based upon a summary of the data, the time period between 7:30 and 8:30AM was established as the “peak” traffic period for the existing City solid waste facility. During this time period a total of 17 vehicles (9 entry trips and 8 exit trips) were recorded

circulating to/from the site; a total of 54 vehicles (35 vehicles northbound and 19 vehicles southbound) were observed directionally traveling on River Road. Eight of the 17 site generated trips were automobiles, an additional eight trips were generated by a straight-axle truck, and a single semi-trailer truck trip was recorded during the peak travel period. Figure 1, is a “stick” diagram that illustratively displays the recorded “peak” traffic data for the site.

EXISTING ROADWAY SAFETY CONDITIONS

The Maine Department of Transportation’s (MaineDOT) Accident Records Section provided three-year (2009 through 2011) safety records for the 2.18-mile section of River Road between Alfred A. Plourde Parkway and Ferry Road. MaineDOT’s report is presented as follows:

**2009 - 2011 Accident Summary
(Section of Route 201)**

<u>Location</u>	<u>Number of Accidents</u>	<u>Critical Rate Factor</u>
1. River Road @ Ferry Road	1	1.52
2. River Road @ Alfred A. Plourde Parkway	1	0.87
3. River Road between Alfred A. Plourde Parkway and Ferry Road	0	0.00

The MaineDOT considers any roadway segment or intersection a high crash location if both of the following criteria are met:

- *8 or more accidents*
- *A Critical Rate Factor greater than 1.00*

As the data shows, only two vehicle crashes have been reported for the 2.18-mile section of River Road between 2009 and 2011, an extremely low incidence of occurrences.

TRIP GENERATION PROPOSED PROJECT

Casella Recycling, LLC have developed anticipated peak hour traffic estimates by vehicle classification for the proposed recycling project based upon a forecast daily volume of 176 tons of recycling material processed by the facility. The early morning time period of 6:30 to 7:30AM, which coincides with the arrival time of all site employees, is established as the peak hour of operation for the proposed recycling operation. Vehicle trip estimates for the determined peak hour of operation are presented in the following table by classification:

Peak Hour Site Trip Summary

<u>Vehicle Classification</u>	<u>Entry Trip</u>	<u>Exit Trip</u>	<u>Total Trips</u>
Automobile	25 trips	0 trips	25 trips
Straight-Axle Packer	4	4	8
Semi-Trailer w/incoming recycling material	2	2	4
Semi-Trailer w/outgoing recycling material	2	2	4
TOTAL	33	8	41

This report has assumed, based upon conversations with Casella operational staff, that all vehicle trips generated by the proposed site will arrive/depart the existing City of Lewiston Solid Waste site with a northerly orientation along River Road. All employee trips will enter/exit the site through the southerly secondary site driveway and all truck trips will enter through the “scale-house” entrance located on the northerly edge of the City property. Figure 2, combines peak hour traffic forecasts for the proposed “Zero-Sort” operation with existing site generated traffic to form the post-development condition for the site.

SIGHT DISTANCE

The Maine Department of Transportation’s Highway Entrance and Driveway Rules require the following sight distances for a non-mobility roadway; their regulations require up to 50% greater distances if at least 30% of the site trips are larger vehicles:

Sight Distance Standards

Speed Limit	Sight Distance
25 mph	200 feet (300)
30	250 (375)
35	305 (460)
40	360 (540)
45	425 (640)
50	495 (740)
55	570 (855)

Vehicle sightlines were checked at both site driveway intersections with River Road, based upon MaineDOT’s sightline measurement guidelines. River Road is currently posted at 40mph, which requires an unobstructed sightline of 540 feet adjusted for the high percentage of large truck traffic. Sightline measurements recorded at the “scale-house” entrance; in both directions, exceed MaineDOT’s standard with a distance of 1,000+ feet right and 600+ feet left. Measurements observed at the secondary driveway entrance exceed the required 540 foot standard (600+ feet) “looking” right from the driveway approach; however, sight distance “looking” south (left) is partially obstructed. A row of mature red pine and maple trees located immediately left of the driveway approach and ditch line slope impediments restrict sight distance to approximately 350-400 feet.

LANE WARRANT ANALYSIS

The Maine Department of Transportation has published a warrant left auxiliary turn lanes in their December 2004 Highway Design Manual. The warrants are predicated upon the volume of two-way traffic traveling across the designated highway and the volume of left vehicles crossing those volumes. Figure 8-19, from MaineDOT’s referenced design manual, was used in conducting the analysis (A copy of the chart, with the superimposed traffic values, is attached as an appendix to the report). Post-development traffic forecasts estimated for both driveway entrances at the Lewiston Solid Waste Facility, as depicted on Figure 2, were used as the basis of analysis. The following values were applied:

Northerly “scale-house” Driveway Entrance

Advancing Volume = 58 vehicles
Opposing Volume = 36 vehicles
Percent Left-Turns = 26.0%

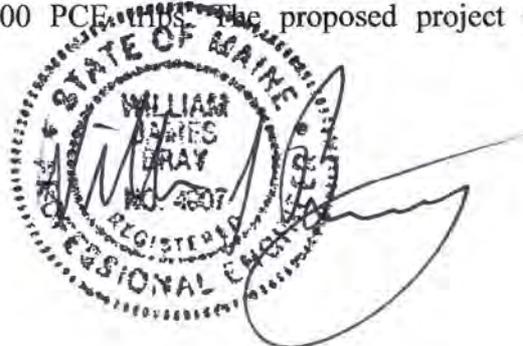
Southerly Secondary Site Entrance

Advancing Volume = 45 vehicles
Opposing Volume = 36 vehicles
Percent Left-Turns = 58.0%

Based upon the analysis, a left-turn lane is not warranted at either site driveway entrance.

SUMMARY

1. Casella Recycling, LLC proposed “Zero-Sort” recycling facility is expected to process approximately 176 tons of recycled materials daily generating a total of 41 vehicle trips (33 entering and 8 exiting) during the busiest hour of the day - 6:30 to 7:30AM. Sixteen (16) of the 41 total vehicle trips occurring during the peak hour are a combination of straight-axle and tandem trailer trucks and the remaining trips will be generated by automobiles.
2. MaineDOT’s Traffic Safety Bureau’s latest three-year safety report for the section of River Road between Alfred A. Plourde Parkway and Ferry Road shows a total of 2 crashes were reported over the 2.18-mile section of road.
3. Vehicle sightlines at the “scale-house” entrance exceed MaineDOT’s standard (540-foot) for heavy truck use for a roadway speed limit of 40mph. Measurements recorded at the secondary site entrance is acceptable “looking” north (right) from the driveway approach but the sightline to the left is partially restricted by existing trees located adjacent to the driveway and the profile of the drainage ditch. It is recommended that a number of the red pine and maple trees be removed along with grading changes to the ditch profile to improve sight distance to the south. A distance of 550 feet or more is attainable with implementation of the suggested improvements.
4. A dedicated left-turn entry lane from River Road through either of the two entrances is not warranted based upon MaineDOT’s volume warrants for left-turn lanes.
5. MaineDOT requires an applicant to file for and receive a Traffic Movement Permit if the volume of trips generated by the project, during any peak hour time period, exceeds 100 or more passenger car equivalent trips (PCE’s). MaineDOT has established that any large truck (dual tires or greater in size) is the equivalent of 2 PCE’s. The proposed project will generate a total of 57 PCE trips, which is considerably less than MaineDOT’s threshold value of 100 PCE trips. The proposed project will not require a traffic movement permit.



**INTERSECTION PLAN
WITH NUMBERED MOVEMENTS:**

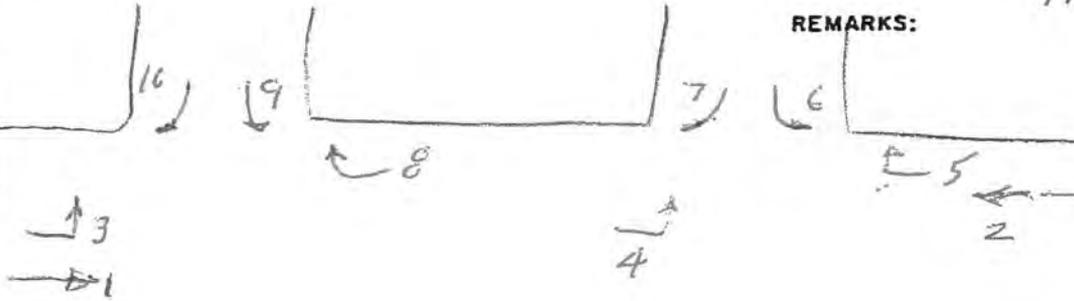
Scale
Ent.

Secondary
Ent.

Solid Waste
City Recycling
Facility

JOB NO. _____

INTERSECTION River Rd. - City Recy. Fac.
 DATE 5-30-2013
 DAY OF WEEK Thursday
 WEATHER Foggy
 REMARKS:



T = straight Axel River Road
Truck
S = Semi-Trailers

**COUNT SUMMARY
MOVEMENT**

	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
:00													
:15													
:30													
6:30	III	III		I									
6:45	(6)	(6)	-	(1)	-	-	-	-	-	-	-	-	13
7:00	(1)	III (10)	-	(2)	-	-	-	-	-	-	-	-	13
7:15	(1)	III (4)	(2)	(1)	-	-	-	-	-	-	-	-	8
7:30	-	III (9)	T (3)	(1)	-	-	(2)	(1)	-	(3)	-	-	19
7:45	III (5)	III (9)	S (2)	-	-	-	T (1)	-	(1)	(1)	-	-	19
8:00	(3)	III (9)	(1)	-	-	-	-	-	-	T (3)	-	-	16
8:15	III (4)	III (4)	T (1)	-	-	-	-	-	-	-	-	-	9
8:30	T (7)	III (13)	T (3)	T (2)	-	-	-	-	T (1)	T (1)	-	-	27
:30													
:45													
:45													
:00													

PEAK HOUR COUNT

TIME: 7:30 TO: 8:30 AM

19	35	7	2	0	0	1	0	2	5				71
----	----	---	---	---	---	---	---	---	---	--	--	--	----

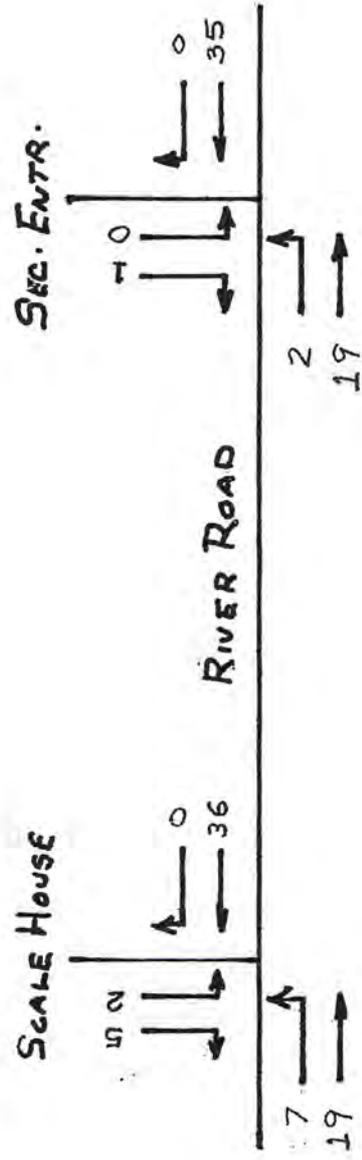


FIGURE 1: Existing 2013 Traffic – AM Peak Hour

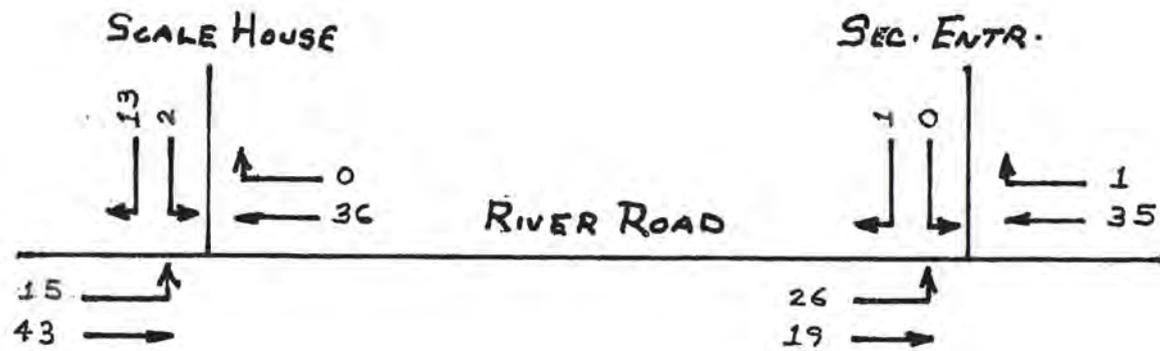
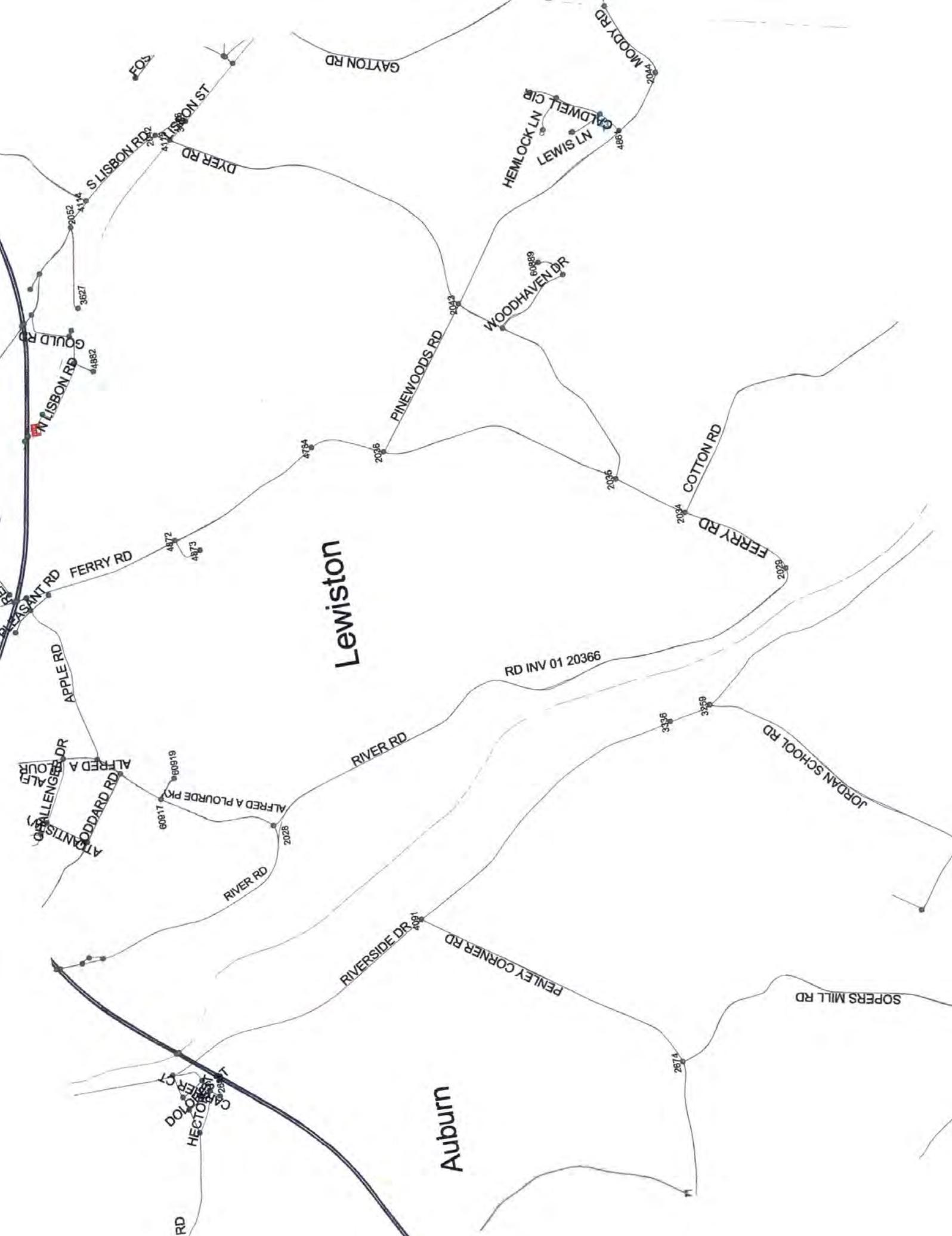


FIGURE 2: 2013 Post-Development Traffic – AM Peak Hour



Lewiston

Auburn

GAYTON RD

204 MOODY RD

HEMLOCK LN
LEWIS LN
GADWELL CIR

FOA

S LISBON RD

DYER RD

PINEWOODS RD

WOODHAVEN DR

COTTON RD

FERRY RD

S LISBON RD

GOULD RD

N LISBON RD

FERRY RD

APPLE RD

ALFRED A PLOURDE PK
CHALLENGER DR
ATANTIS DR
DODDARD RD

RIVER RD

RD INV 01 20366

RIVER RD

RIVERSIDE DR

PENLEY CORNER RD

JORDAN SCHOOL RD

SOPERS MILL RD

DOLORE
HECTOR

Crash Summary I

Sections																			
Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	K	Injury Crashes				Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF		
									A	B	C	PD							
2028	2029	172380	0 - 2.18	0120366 - 0	2.18	1	0	0	0	0	0	0	0.0	0.01078	0.00	406.37	0.00		
Int of ALFRED A PLOURDE PKY		RIVER RD		RD INV 01 20366														Statewide Crash Rate: 212.86	
Study Years:		3.00		Section Totals:		2.18	0	0	0	0	0	0	0.0	0.01078	0.00	406.37	0.00		
				Grand Totals:		2.18	2	0	0	0	0	1	0.0	0.01078	61.83	439.67	0.14		

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

Crash Summary I Section Detail Crash Summary II 1320 Public 1320 Private 1320 Summary

REPORT DESCRIPTION

River Rd

REPORT PARAMETERS

Year 2009, Start Month 1 through Year 2011 End Month: 12

Route: **0120366**

Start Node: **2029**

Start Offset: **0**

Exclude First Node

End Node: **2028**

End Offset: **0**

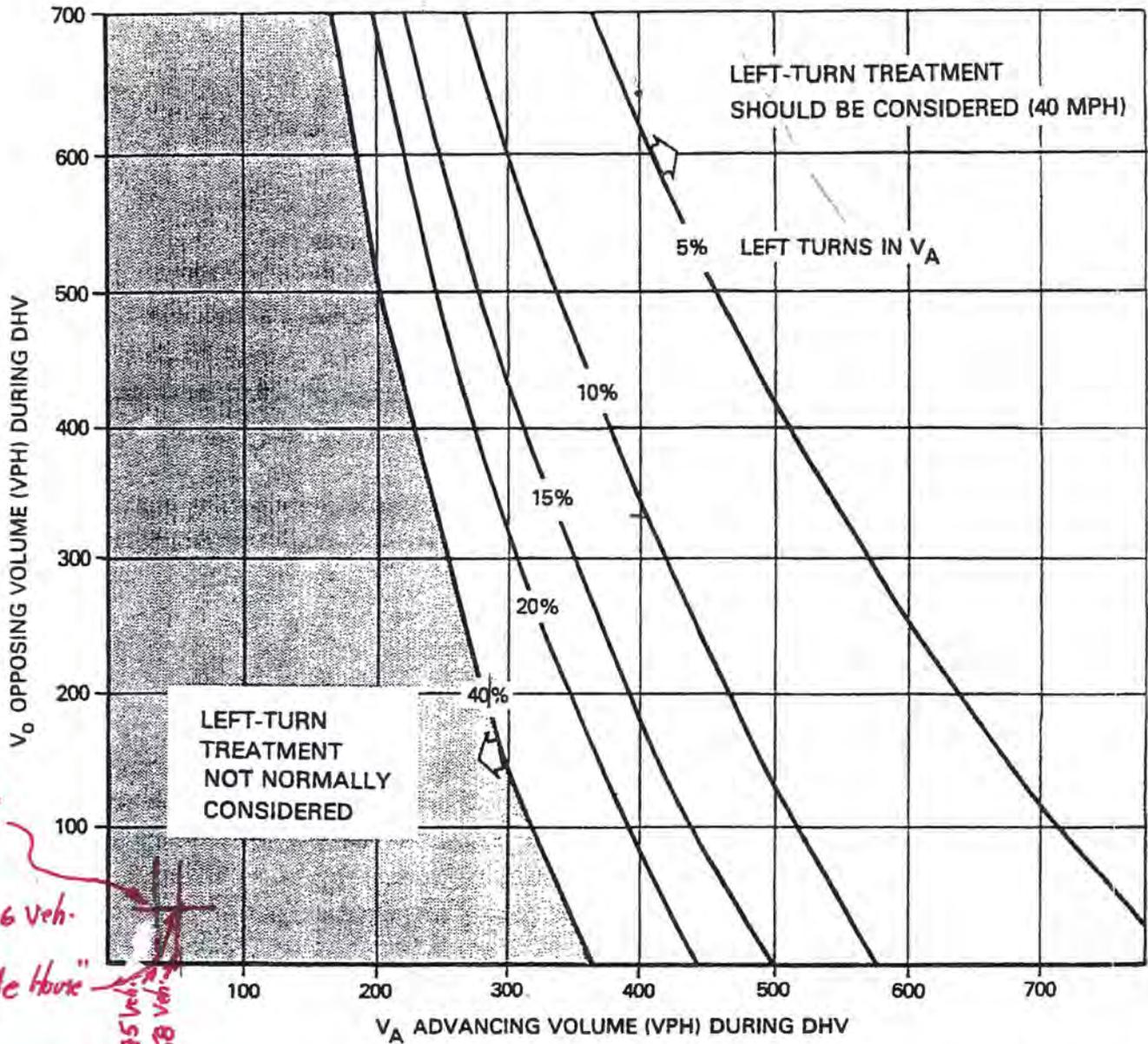
Exclude Last Node

Crash Summary I

Nodes														
Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes					Percent Annual M	Crash Rate	Critical Rate	CRF	
					K	A	B	C	PD	Injury	Ent-Veh			
2029	0120366 - 0	0102058 LEW,FERRY RD,RIVER RD	1	1	0	0	0	0	0	0.0	0.424	0.79	0.52	1.52
												Statewide Crash Rate: 0.12		
2028	0120366 - 2.18	Int of ALFRED A PLOURDE PKY RIVER RD	2	1	0	0	0	0	1	0.0	0.847	0.39	0.45	0.00
												Statewide Crash Rate: 0.11		
Study Years: 3.00			NODE TOTALS:		2	0	0	0	1	0.0	1.271	0.52	0.43	1.23

December 2004

AUXILIARY TURNING LANES



- Instructions:**
1. The family of curves represent the percent of left turns in the advancing volume (V_A). The designer should locate the curve for the actual percentage of left turns. When this is not an even increment of 5, the designer should estimate where the curve lies.
 4. Read V_A and V_O into the chart and locate the intersection of the two volumes.
 5. Note the location of the point in #2 relative to the line in #1. If the point is to the right of the line, then a left-turn lane is warranted. If the point is to the left of the line, then a left-turn lane is not warranted based on traffic volumes.

**VOLUME WARRANTS FOR LEFT-TURN LANES
AT UNSIGNALIZED INTERSECTIONS ON 2-LANE HIGHWAYS
(40 mph)**

Figure 8-19

EXHIBIT F

EXHIBIT F

EROSION AND SEDIMENTATION CONTROL REPORT

for

Site Improvements

at

Lewiston Zero-Sort™ Facility

424 River Road, Lewiston, Maine

Revised December 2, 2013

INTRODUCTION

The following plan for controlling sedimentation and erosion in this project is based on conservation practices found in the Maine Erosion & Sediment Control BMPS Manual, Maine Department of Environmental Protection, March 2003, or latest edition. The contractor who implements this plan shall be familiar with this publication and adhere to it and the practices presented herein.

The existing project site is situated on an approximately 3.27 acre parcel of consisting of buildings, pavement, and lawn areas. The existing impervious ratio of the leased area is 64%.

The proposed site improvements include the construction of a 15,000 square foot recycling processing and baling building, parking area, and installation of utilities and stormwater management amenities.

Reference is made to the erosion control plans included with the plan set, showing the locations and types of proposed measures contained in this report.

GENERAL EROSION AND SEDIMENTATION CONTROL PRACTICES

The following is a list of general erosion control practices that will be used to prevent erosion and sedimentation before, during and after the construction of this project. In addition, special care shall be used at all times to:

- 1) Limit disturbance and, hence, erosion
- 2) Correct any erosion problems immediately
- 3) Regularly monitor the implemented practices, especially after every rainfall
- 4) Revegetate disturbed areas as soon as possible after construction
- 5) Conform to all requirements/standards of the site's Maine DEP Erosion & Sediment Control BMP Manual.

Silt Fence

As noted on the plans, silt fence shall be installed on the downgradient portions of the site when needed.

Catch Basin/Field Inlet Protection

A silt sack sediment barrier, or approved equal, shall be installed at the existing and proposed catch basins/field inlets as shown on the plans.

CONSTRUCTION PHASE

The following general practices will be implemented to prevent erosion during construction on this project:

1. Only those areas under active construction will be cleared and left in an untreated or unvegetated condition. Once construction of an area is complete, final grading, loaming and seeding shall occur immediately (refer to “Post Construction Revegetation” section). If final grading, loaming and seeding can not occur immediately, it shall be done prior to any storm event and within 15 days of completing construction in the area. If final grading, loaming and seeding cannot occur within 15 days, or if the area is not under active construction for a period longer than 15 days, see Item No. 4 below.
2. Prior to the start of construction in a specific area, silt fencing shall be installed on downgradient portions of the site as located on the plans to protect against any construction related erosion. In addition, immediately following construction of catch basins, install silt sack sediment barriers, or approved equal, as shown on the plans.
3. Topsoil will be stockpiled when necessary in areas which have minimum potential for erosion and will be kept as far as possible from existing drainage areas and wetlands. All stockpiles expected to remain longer than 15 days shall be :
 - A. Treated with anchored mulch (within 5 days of the last deposit of stockpiled soil).
 - B. Seeded with conservation mix and mulched immediately.Stockpiles expected to remain longer than 3 days shall be encircled with haybales or silt fence at the toe of the pile.
4. All disturbed areas expected to remain longer than 15 days shall be:
 - A. Treated with straw at a rate of 70-90 lbs. per 1000 square feet from 4/16 to 10/1, or at a rate of 150-200 lbs. per 1000 square feet from 10/1 to 4/15.
 - B. Seeded with conservation mix of perennial rye grass (1.0 lbs/1000 sq.ft.) and mulched immediately. From 10/1 to 4/15, follow the seeding rates as outlined below in sub-section 4.D. of the “Post Construction Revegetation” section.
 - C. Monitored every two weeks until seeding can occur and remulched as needed to protect slopes.
5. All grading will be held to a maximum 3:1 slope where practical. Greater slopes may be used where the banks are protected with soft armour matting, erosion control matting, or riprap. All slopes will be stabilized with permanent seeding immediately after final grading is complete. (It is understood that immediately means within 5 days of the completion of work. See Post-Construction revegetation for seeding specification.)
6. Construction traffic will be directed over the existing and proposed pavement. Any areas subject to rutting will be stabilized immediately. River Road shall be swept daily should sediment be tracked onto it.

POST CONSTRUCTION REVEGETATION

The following general practices will be implemented to prevent erosion as soon as an area is ready to undergo final grading:

1. A minimum of 6” of loam will be spread over disturbed areas and graded to a uniform depth and natural appearance.
2. General Lawn Areas: “Estate Green” grass seed by Allen, Sterling & Lothrop (Falmouth, Maine), or approved equal.
3. Mulch shall be hay or straw mulches that are dry and free from undesirable seeds and course materials.
 - A. Application rate must be 2 bales (70-90 lbs.) per 1,000 square feet or 1.5 to 2 tons (90-100 bales) per acre to cover 75 to 90% of the ground surface.
 1. Drive over with tracked construction equipment on grades of 5% and less.
 2. Blanket with tacked photodegradable/biodegradable netting on grades greater than 5%.
 - A. Hydro-mulch shall consist of a mixture of asphalt, wood fibre or paper fibre and water, which is sprayed over a seeded area. Hydro-mulch shall not be used between 10/1 and 4/15.
4. Construction shall be planned to eliminate the need for seeding between October 1st and April 15th. Should seeding be necessary between these dates, the following procedure shall be followed:
 - A. Only unfrozen loam shall be used.
 - B. Loaming, seeding and mulching will not be done over snow or ice cover. If snow exists, it must be removed prior to placement of seed.
 - C. Where permanent seeding is necessary, Annual Winter Rye (1.2 lbs/1000 s.f.) shall be sown instead of the previously noted seeding rate.
 - D. Where temporary seeding is required, Annual Winter Rye (2.5 lbs/1000 s.f.) shall be sown instead of the previously noted seeding rate.
 - E. Fertilizing, seeding and mulching shall be done on loam the day the loam is spread.
 - F. Hay mulch shall be secured with photodegradable/biodegradable netting. Tracking by machinery alone will not suffice. Winter mulching rates, as specified above in subsection 5.A. of the “Construction Phase” section, should be applied during this period.

5. Following final seeding, the site will be inspected every 30 days until 90% cover has been established. Reseeding will be carried out by the contractor within 10 days of notification by the design professional that the existing catch is inadequate.

MONITORING SCHEDULE

The contractor shall be responsible for installing, monitoring, maintaining, repairing, replacing and removing all of the erosion and sedimentation controls or appointing a qualified subcontractor to do so.

Maintenance measures will be applied as needed during the entire construction cycle. Immediately following any significant rainfall, and at least once a week, a visual inspection will be made of all erosion and sedimentation controls as follows:

1. Silt fence shall be inspected and repaired. Sediment trapped behind these barriers shall be excavated when it reaches a depth of 6" and redistributed to areas undergoing final grading.
2. Catch basin protections shall be inspected and repaired. Sediment trapped in the silt sack, or other protection, shall be cleaned out when it reaches a depth of 6" and redistributed to areas undergoing final grading.
3. Site pavement shall be visually inspected and repaired as needed. Any areas subject to rutting shall be stabilized immediately. The public roadway shall be swept should sediment be deposited/tracked onto them.

STANDARDS FOR STABILIZING SITES FOR THE WINTER

The following standards and methodologies shall be used for stabilizing the site during the winter construction period

1. **Standard for the timely stabilization of disturbed slopes** (Any area having a grade greater than 25%) – The contractor will seed and mulch all slopes to be vegetated by September 15th. If the contractor fails to stabilize any slope to be vegetated by September 15th, then the contractor will take one of the following actions to stabilize the slope for late fall and winter.
 - A. Stabilize the soil with temporary vegetation and erosion control mats – By October 1st the contractor will seed the disturbed slope with winter rye at a rate of 3 pounds per 1000 square feet and then install erosion control mats or anchored hay mulch over the seeding. The contractor will monitor growth of the rye over the next 30 days.
 - B. Stabilize the slope with wood-waste compost – The contractor will place a six-inch layer of wood-waste compost on the slope by November 15th. The contractor will not use wood-waste compost to stabilize slopes having grades greater than 50% (2H:IV) or having groundwater seeps on the slope face.
 - C. Stabilize the slope with stone riprap – The contractor will place a layer of stone riprap on the slope by November 15th. The development's owner will hire a

registered professional engineer to determine the stone size needed for stability on the slope and to design a filter layer for underneath the riprap.

2. **Standard for the timely stabilization of disturbed soils** – By September 15th the contractor will seed and mulch all disturbed soils on the site. If the contractor fails to stabilize these soils by this date, then the contractor will take on of the following actions to stabilize the soil for late fall and winter.
 - A. Stabilize the soil with temporary vegetation – By October 1st the contractor will seed the disturbed soil with winter rye at a seeding rate of 3 pounds per 1000 square feet, lightly mulch the seeded soil with hay or straw at 75 pounds per 1000 square feet, and anchor the mulch with plastic netting. The contractor will monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed soil before November, 1, then the contractor will mulch the area for over-winter protection as described in item iii of this standard.
 - B. Stabilize the soil with sod – The contractor will stabilize the disturbed soil with properly installed sod by October 1st. Proper installation includes the contractor pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.
 - C. Stabilize the soil with mulch – By November 15th the contractor will mulch the disturbed soil by spreading hay or straw at a rate of at least 150 pounds per 1000 square feet on the area so that no soil is visible through the mulch. Immediately after applying the mulch, the contractor will anchor the mulch with netting or other method to prevent wind from moving the mulch off the disturbed soil

EROSION CONTROL REMOVAL

An area is considered stable if it is paved or if 90% growth of planted seeds is established. Once an area is considered stable, the erosion control measures can be removed as follows:

1. Silt Fence
Silt fence shall be disposed of legally and properly off-site. All sediment trapped behind these controls shall be distributed to an area undergoing final grading or removed and relocated off-site.
2. Catch Basin Inlet Protections
The catch basin/field inlet protections shall be disposed of legally and properly off-site. All sediment trapped in/around/behind these controls shall be removed and relocated off-site or to an area undergoing final grading. The sediment trapped by these devices shall not be regraded locally since they exist in drainage ways.
3. Miscellaneous
Once all the trapped sediments have been removed from the temporary sedimentation devices the disturbed areas must be regraded in an aesthetic manner to conform to the surrounding topography. Once graded these disturbed areas must be loamed (if necessary), fertilized, seeded and mulched in accordance with the rates previously stated.

The above erosion controls must be removed within 30 days of final stabilization of the site.

Conformance with this plan and following these practices will result in a project that complies with the State Regulations and the Standards of the Natural Resources Protection Act, and will protect water quality in areas downstream from the project.

Prepared By:

A handwritten signature in black ink, appearing to read "Michael J. Walsh". The signature is fluid and cursive, with a long horizontal stroke at the end.

Michael J. Walsh, P.E.
Walsh Engineering Associates, Inc.

EXHIBIT G



918 Brighton Avenue | Portland, Maine 04102

September 18, 2013

Kevin Gagne
Lewiston Water and Sewer Division
103 Adams Ave.
Lewiston, ME 04240

**RE: Ability to Provide Water Service
Tax Map 156- Lot 7
Lewiston Landfill & Zero-Sort® Facility
Lewiston, Maine**

Dear Mr. Gagne,

On behalf of Casella Recycling, LLC(Casella) Walsh Engineering Associates, Inc. (WEA) is requesting an “Ability to Serve” letter from the Lewiston Water and Sewer Division for water and sewer services at 424 River Road to service a proposed single-stream recycling facility (i.e. Zero-Sort). In order to accommodate onsite processing of recyclable materials facility modifications include a 15,000 square foot Processing Building, additional parking and stormwater management features within the Casella leased portion of the site. The City of Lewiston operations include a relocated 1,080 square foot Office Building, new 1,800 square foot Waste Storage Building, additional parking and stormwater management features. Casella Recycling will utilize the existing public water service to the former Shredder Building. The Lewiston Zero-Sort operations will also utilize the existing facility system and pump station to discharge sanitary wastewater to the Lewiston-Auburn Water Pollution Control Authority. The change in site operations will result in approximately 30 new Casella employees in addition to four existing City employees. Therefore increase in site waste discharge volume for 30 new employees will be approximately 450 gallons per day or 15 gallons per day for each employee.

According to the City of Lewiston GIS information, there is a 6inch diameter existing sanitary sewer main and 12-inch diameter water main on River Road. Water service to the relocated City of Lewiston Office Building and Waste Storage Building will be a 1-inch diameter water line.

We are requesting the following:

- Verification of size and type of the sanitary sewer force main and waterline on River Road
- An ability to serve letter

A conceptual site plan is attached showing locations of the proposed structure and preliminary utility locations. We are on a quick timeline for approvals and would very much appreciate your earliest response.



918 Brighton Ave | Portland, ME 04102

Please contact us if you require any additional information.
Thank you,

A handwritten signature in cursive script that reads "Amie M. Chiasson".

Amie Chiasson, EIT
Walsh Engineering Associates, Inc.

EXHIBIT H

LEWISTON
Androscoggin County
LEWISTON LANDFILL EXPANSION)
#S-005242-7A-C-N)

11 SITE LOCATION OF DEVELOPMENT
AND SOLID WASTE ORDER
FINDINGS OF FACT AND ORDER

BASED on the above findings of fact, the Board makes the following CONCLUSIONS, pursuant to 38 M.R.S.A., Sections 484 and 1310-N:

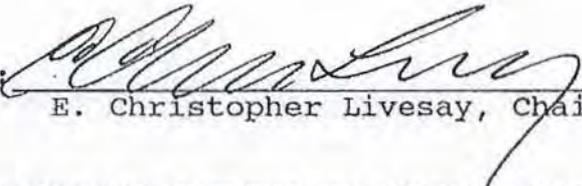
- A. The applicant has provided adequate evidence of financial capacity and technical ability to meet air and water pollution control standards.
- B. The applicant has made adequate provision for solid waste disposal, the control of offensive odors, and the securing and maintenance of sufficient and healthful water supplies in that all disposed waste will be contained in a secure landfill and covered daily, and the applicant has provided for public water along River Road and Cottage Road.
- C. The applicant has made adequate provision for traffic movement of all types into, out of, or within the development area in that sight distance at the facility entrance and River Road is adequate, and the proposed project will not have an adverse traffic operational impact in the project vicinity.
- D. The applicant has made adequate provision to fit the development harmoniously into the existing environment in that the proposed expansion is in an industrial zone and buffer strips of natural vegetation will be maintained on three sides of the facility.
- E. The proposed development will be built on unsuitable soils in that depth to bedrock is shallow and therefore will not act to attenuate any leakage of contaminants from the landfill in the event of failure of the liner systems.
- F. The proposed development does not overlie a significant sand and gravel aquifer and does not pose an unreasonable threat to an adjacent sand and gravel aquifer or to an underlying fractured bedrock aquifer in that the underlying aquifer quality is already degraded due to the existing landfill and the engineered systems include a double composite liner system with two leachate collection detection and removal systems.
- G. The proposed facility will not degrade waters of the State, contaminate the ambient air, constitute a threat to health or welfare or create a nuisance in that it is sited adjacent to an existing landfill and groundwater discharge is to Class "C" surface waters.

LEWISTON
Androscoggin County
LEWISTON LANDFILL EXPANSION)
#S-005242-7A-C-N

17 SITE LOCATION OF DEVELOPMENT
) AND SOLID WASTE ORDER
) FINDINGS OF FACT AND ORDER

DONE AND DATED AT AUGUSTA, MAINE THIS 24 DAY OF Oct., 1990

BOARD OF ENVIRONMENTAL PROTECTION

BY: 
E. Christopher Livesay, Chairperson

ANY PERSON WISHING TO APPEAL THIS ORDER MUST DO SO WITHIN
THIRTY (30) DAYS OF RECEIPT OF THIS ORDER.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURE.

Date of initial receipt of application January 5, 1989
Date of application acceptance July 31, 1990

Date filed with Board of Environmental Protection N/A



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE HOUSE STATION 17 AUGUSTA, MAINE 04333

DEPARTMENT ORDER

IN THE MATTER OF

CITY OF LEWISTON)
ANDROSCOGGIN COUNTY, MAINE)
SOLID WASTE FACILITY CHANGES)
#S-005242-WD-V-M)
(AFTER-THE-FACT APPROVAL WITH CONDITIONS))

SOLID WASTE ORDER

MINOR REVISION

Pursuant to the provisions of 38 M.R.S.A. Section 1301 ET. seq., and 06-096 CMR Chapter 400 et. seq., Solid Waste Management Rules, effective November 2, 1998 and amended September 6, 1999, the Department of Environmental Protection has considered the application of CITY OF LEWISTON ("Lewiston") with its supportive data, staff summary, and other related materials on file and FINDS THE FOLLOWING FACTS:

I. APPLICATION SUMMARY

- A. Application: Lewiston has applied for a minor modification to Department Order #S-005242-7A-C-N, dated October 24, 1990, which approved the construction and operation of the secure landfill.
- B. History: On October 24, 1990, Lewiston received Department license approval to construct and operate a 15.8 acre secure landfill on River Road in Lewiston for the disposal of municipal solid waste. The landfill has a design capacity of 694,000 cubic yards.

On August 31, 1995, Lewiston received Department license approval to modify the elevations of Phase I of the secure landfill. The modified elevations resulted in extending the capacity of Phase I another 1.4 years to August of 1996.

On February 18, 1997, Lewiston received Department license approval to amend their secure landfill license (#S-005442-7A-C-N) with the acceptance of Mid-Maine Waste Action Corporation municipal solid waste incinerator ash. Putresible municipal solid waste will no longer be accepted and the ash will be disposed into Phase II and Phase III, once constructed.

On April 16, 1997, Lewiston received Department license approval to place approximately 2000 tons of Mid-Maine Waste Action Corporation municipal solid waste incinerator ash into Phase I of the secure landfill.

- C. Summary of Proposal: Lewiston requests after the fact approval to modify their recycling storage area located at the west end of the facility site. The recycling storage area was not approved for the storage of municipal solid waste. Since February 1997 the facility has modified its operations so that no municipal solid waste is disposed in the landfill. Lewiston also requests after the fact license

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approval for the storage locations of used tires, scrap metal, inert fill material, and over-sized construction and demolition debris (CDD).

2. **STORED WASTES.** At the west end of the solid waste facility and adjacent to River Road, the main solid waste transfer storage area is maintained. Ten open-topped roll-offs are stored on pavement. Two roll-offs contain clean wood and brush; two roll-offs contain construction and demolition debris; 1 roll-off contains municipal solid waste; 1 roll-off contains glass; 1 roll-off contains tin cans; 1 roll-off contains plastic; 1 roll-off contains corrugated cardboard; and 1 roll-off contains newspaper. Solid wastes are also stored around the perimeter of the shredder building and southwest of the secure landfill. All as shown on a plan entitled: Lewiston Solid Waste Facility, Lewiston, Maine, dated May 2000 and drawn by CMA Engineers, Inc.
 - A. Municipal Solid Waste. Municipal solid waste is stored in the landfill shredder building and is transferred periodically to Mid-Maine Waste Action Corporation, a Department-licensed solid waste disposal facility. The shredder building is located immediately south of the solid waste transfer storage area. The storage area is a water-tight and roofed building. Periodically, municipal solid waste is transferred by Lewiston to Mid-Maine Waste Action Corporation.
 - B. Clean Wood and Brush. Clean wood and brush is stored at the main transfer storage area and periodically removed to KTI Biofuels in Lewiston, Maine. Seasonally, leaves are also collected and transferred to Lewiston-Auburn Pollution Control Authority's for composting.
 - C. Scrap Metals and White Goods. Scrap metals are collected on a 11,200 square foot asphalt pad. Periodically the waste is transported by Grimmels to their processing facility in Topsham, Maine. The storage area is located on the east side of the shredder building adjacent to the closed attenuation landfill. White goods, initially, are stored upright on the west side of the shredder building. Once determined by landfill staff that the white goods are devoid of freon, the white goods are stored in the scrap metal storage area.
 - D. Used Tires. Used tire storage is immediately southerly of the scrap metal storage and is at the edge of the closed attenuation landfill. Used tires are removed by a Department category A non-hazardous waste transporter. Records documenting the legal disposal is maintained by the solid waste facility. The storage area is maintained at approximately 1,000 square feet. Insufficient mineral fire breaks are maintained around the stockpile. Lewiston has requested a variance.
 - E. Construction Demolition Debris. Construction Demolition Debris(CDD) is stored in roll-offs at the main transfer station. Asphalt shingles and sheetrock are, typically, transferred to Commercial Recycling Systems in Scarborough, Maine or disposed in the active phase of the secure landfill. Over-sized CDD is transferred to a one-acre

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storage area immediately southwest of Phase II of the secure landfill. This storage area has a minimum two-foot separation to bedrock and ground water. The over-sized bulky waste is removed periodically by Grimmels Industries to their processing facility in Topsham, Maine.

- F. Inert Materials. Immediately adjacent to the closed attenuation landfill and southerly of the used tire storage area is a 2,500 square foot storage area for inert fill material. Periodically, the inert fill material is transported to the Lewiston Goddard Road pit for processing for eventual use as road construction material.
- G. Waste Oil. Waste oil is stored in 55-gallon drums within the Shredder building. The storage area is a bermed concrete floor with a secondary containment capacity of approximately 2,000 gallons. A maximum of seventy 55-gallon drums of waste oil can be stored within the storage area. The waste oil storage has the required labeling, locking, and hard-funnel requirements. Waste oil is used in the solid waste facility waste oil furnace for fuel. Contaminated waste oil is excluded in accordance with the solid waste facility special and hazardous waste exclusion plan.
- H. Universal Waste Storage Area. Universal wastes in the form of fluorescent light bulbs are accepted and temporarily stored at the main transfer storage area. The storage area is operated in accordance with 06-096 CMR 850 of Maine's Hazardous Waste Regulations.

3. OPERATIONS MANUAL.

Lewiston's Department approved operations manual dated May 25, 2001 describes the day to day required operations for the secure landfill and solid waste storage area. Periodically, and at a minimum annually, the operations manual is revised to reflect changes in operations for the solid waste facility.

4. STORAGE PAD DESIGN.

Wastes including over-sized construction demolition debris, used tires, inert fill material, scrap metals, and white goods are stored outside without containment. The scrap metal and white good storage area is paved. All other waste streams have a 2-foot thick soil storage pad providing the minimum separation to bedrock and ground water. The solid waste facility periodically inspects the storage pads for assuring integrity and separation is maintained.

5. VARIANCES.

Lewiston has requested variances from the following applicable solid waste regulations:

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- 06-096 CMR 402.2.A.1.a. The regulation requires that the solid waste facility shall not be located within 100 feet of an active or closed landfill. The intent of the regulation is to prevent impacts to the cover of a closed landfill and allow adequate space for remediation of an active or closed landfill, as needed. The inert fill area, used tire area, and scrap metal area are partially located over the closed municipal landfill. No evidence of leaks or seeps is evident suggesting damage to the cap and the storage areas could be temporarily re-located should space be needed for remediation activities.
- 06-096 CMR 402.2.A.1.b.i. The regulation requires all residential structures must be a minimum of 500 feet away from the solid waste storage handling area. The intent of the regulation is to provide minimal nuisance and vector buffers. Residential structures are located within 500 feet and southwest of the solid waste facility storage area as depicted on the plan entitled: "City of Lewiston Solid Waste Facility", dated April 2001 and drawn by the City of Lewiston. Lewiston noted in their variance request that nuisances and vectors are quickly addressed. Previous Department inspections show no compliance problems with litter, vectors, and noise/odor nuisances along the west border of the solid waste facility.
- 06-096 CMR 402.2.A.1.b.ii. The regulation requires a minimum 100-foot setback between the waste handling area and all public roads. The intent of this regulation is to reduce traffic congestion at the entrance to the solid waste facility and minimize nuisances and vectors. The reduced setback will not result in increased traffic congestion as the storage facility can only be accessed from the main access road previously approved under Department license #S-005242-7A-C-N. Based on facility records and previous Department inspections, no significant nuisance or vector problems have occurred.
- 06-096 CMR 402.2.A.1.b.iv.b. The regulation prohibits a municipal solid waste handling area within 250 feet of an abutting property unless specific written permission has been granted by the property owner or the proposed use is compatible with the abutting property. The abutting property owner, Joan Truchon, 415 River Road, Lewiston, has submitted a letter for permitting a reduction in the setback of the solid waste storage facility to her property boundary.
- 06-096 CMR 402.2.A.4. The regulation requires a minimum 100-foot setback to a protected nature resource. The waste handling area is located less than 100 feet to a fresh water stream. The intent of the regulation is to provide minimal protection to the protected resource from littering, vectors, and erosion. Based on previous Department inspections and solid waste facility self-inspections no significant vectors, nuisances, or sedimentation to the fresh water stream have occurred.
- 06-096 CMR 402.2.B.4. The regulation requires that the maximum outside storage area for white goods, tires, and construction and demolition debris shall be 2,500

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square feet. The intent of the regulation is to maintain waste storage areas to the minimum area needed. Larger areas require prior Department approval and must include a Department-approved maintenance plan. The scrap metal and over-sized construction and demolition debris storage areas exceed 2,500 square feet. Due to residential and commercial generation, Lewiston has determined that an 11,200 square foot storage area is required for scrap metals, an acre storage area is required for the over-sized construction demolition debris storage area, and a 1,000 square foot storage area for used tires. This is based on a minimum storage time of five to six months prior to removal to a Department approved receiving facility. A twenty-five foot wide fire break is maintained on three sides of the tire storage area and only the northerly side is vegetated because of its close proximity to the closed landfill. As described in the Department-approved operations manual, Lewiston conducts daily inspections of each storage area for assuring vectors, odor, dust, and litter is minimized. The operations manual also provides for adequate fire protection including portable fire extinguishers and municipal fire department response.

- 06-096 CMR 402.2.C.8. The regulation requires that the applicant have a storm water control plan in accordance with 06-096 CMR 400.4.M or be certified by a qualified professional that post construction run-off will not exceed pre-construction runoff. The post construction impervious surfaces have been in place since 1992 and no significant storm water impacts, based on solid waste facility inspections, have occurred. This includes the 1999 Hurricane Floyd, which deposited excessive amounts of precipitation.

6. ALL OTHER

All other Findings of Fact, Conclusions, and Conditions remain as approved in Department License #S-005242-7A-C-N.

BASED on the above Finding of Facts, and subject to the Conditions listed below, the Department makes the following CONCLUSION:

The minor revision to Department Order #S-005242-7A-C-N, as proposed by the CITY OF LEWISTON will not pollute any water of the state, contaminate the ambient air, constitute a hazard to health or welfare, or create a nuisance provided the solid waste facility operations manual is revised to include improved inspections and a waste storage pad maintenance plan.

THEREFORE, the Department APPROVES the noted after-the-fact application and variance requests of the CITY OF LEWISTON, SUBJECT TO THE ATTACHED CONDITIONS, and all applicable standards and regulations:

1. The Standard Conditions of Approval, a copy attached as Appendix A.

CITY OF LEWISTON
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2. Within 90 days Lewiston shall submit, for Department review and approval, a revised solid waste facility operations manual which describes the day to day operations of the solid waste transfer storage facility. The revised operations manual shall also include a storage pad maintenance plan for the over-sized construction and demolition debris storage area and scrap metals storage area and adequate inspection methods at each waste storage location for assuring odors, vectors, and other nuisances are substantially controlled.

DONE AND DATED AT AUGUSTA, MAINE, THIS 6th DAY
OF August, 2003

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: David Lennett
Dawn R. Gallagher, Commissioner

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

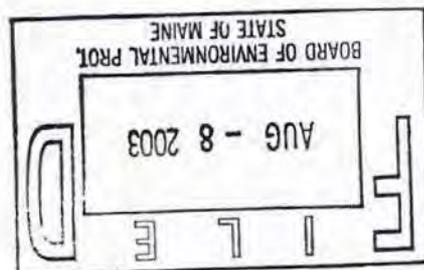
Date of initial receipt of application: April 27, 2001

Date of application acceptance: May 18, 2001

Date filed with Board of Environmental Protection:

This Order prepared by Wm Butler, Bureau of Remediation and Waste Management.

XWB47721/si



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.



DEP FACT SHEET

Appealing a Commissioner's Licensing Decision

issued: April 2003

contact: (207) 287-2811

SUMMARY

Two methods are 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 appeal.

I. ADMINISTRATIVE APPEALS TO THE BOARD

LEGAL REFERENCES

Maine Revised Statutes Annotated (M.R.S.A.) Title 38, section 341-D(4) and DEP Rule Chapter 2, section 24(B).

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. An appeal filed after 30 calendar days will be dismissed.

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 if followed by the original document within 5 working days. To be deemed received on a particular day, appeal documents must be received by 5:00p.m., as determined by received time stamp on the document or fax. 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. *Evidence demonstrating that the appellant is an aggrieved person.* In order to bring an appeal, the appellant must demonstrate that the appellant may be particularly injured by the project.
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.* As part of the appeal, the Board will limit its consideration to those arguments specifically raised in the written notice of appeal.

4. *New or additional evidence.* This evidence may be presented only when the party can show due diligence in bringing the evidence to the licensing process at the earliest possible time or the evidence is newly discovered and could not have been presented earlier in the process.

Further Considerations

In order to file an effective petition:

1. *Be familiar with all relevant material in the applicant's file.* This is public information that is easily accessible. With prior notice, the Department will make the material available during normal working hours, provide space to review the file, and provide opportunity for you to photocopy materials or have materials photocopied for you. (There is a minimal charge for copies or copying services.)
2. *Be familiar with the regulations and laws the application was processed under.* Department staff will provide this information upon request and will answer questions regarding applicable requirements.
3. *Remember that the filing of a petition does not operate as a stay to any decision.* However, if an applicant proceeds with a project, he or she runs the risk of the decision being revoked or modified as a result of the petition.
4. *Make sure all information and materials are supplied to the project manager assigned to your petition.* The role of DEP staff is to evaluate all relevant material contained in the file and your petition and to make a recommendation to the Board.

Board Action

Within 30 days of receiving your petition the Board must decide whether to reconsider its decision. If the Board grants your petition, it vacates its earlier decision and reconsiders the entire matter. In the case of a license, the Board may then approve, approve with conditions, deny the application, or order a public hearing to be held within 30 days. In the case of an appeal order, the Board may then affirm the Commissioner's decision, affirm the decision with conditions, reverse the decision, or order a public hearing to be held within 30 days.

If the Board dismisses your petition, the original decision stands.

You will be notified of the Board's decision.

Additional Information

If you have questions or need additional information on the petition process, contact your DEP project manager.

Note: This Fact Sheet is intended for general guidance purposes only; it is not intended for use as a legal reference.

EXHIBIT I

101 104 111
Ret.

*City of Lewiston
Maine*

Zoning Board of Appeal
CITY BUILDING

Date: March 24, 1977

City of Lewiston
Public Works Department
Willow Street
Lewiston, ME 04240

NOTICE:

A hearing was held on March 23, 1977 by the Lewiston Zoning Board of Appeal concerning a matter filed by you for appeal.

The Lewiston Zoning Board of Appeal wishes to notify you that after hearing the appeal on the matter, the board voted 5/0 that permission be granted on the appeal filed, as filed in City Clerk's Office.

Comment:

To construct a one-story concrete building measuring 110' x 142' to be used as a shredding plant at 424-482 River Road, Lewiston, Maine.

PLEASE NOTE: On all appeals granted by the Zoning Board of Appeals, work must commence within six months and be completed within one year of date of appeal.
BUILDING PERMIT is required before any work is started.

Signed: [Signature]
Chairman or Secretary

6

Lewiston, Maine

Date: March 14, 1977

ZONING BOARD OF APPEALS

OFFICIAL NOTICE

In accordance with the provisions of the Lewiston Ordinance, you are hereby notified that a Public Hearing will be held by the Zoning Board of Appeals for the City of Lewiston, at 7:00 P.M. in Meeting Room "A", City Building, on

March 23, 1977

Date of Hearing

to consider the refusal of the Lewiston Building Inspector to issue a permit to: City of Lewiston, Department of Public Works, Willow Street, Lewiston, Maine to construct a one-story concrete building measuring 110' X 142' to be used as a shredding plant at 424-482 River Road, Lewiston, Me. This location is in an Agricultural zone and is contrary to Sections 29-4 (C) (1), and 29-11 (C) (12) of the Lewiston Zoning Ordinance. Conditional use permit required by the Zoning Board of Appeals. Appeal filed with City Clerk under Sec. 29-25 of the Zoning Ordinance.

Appeal filed
with City Clerk on March 14, 1977

CITY CLERK
LEWISTON, MAINE

APPEAL TO THE ZONING BOARD OF APPEALS

Date: March 14, 1977

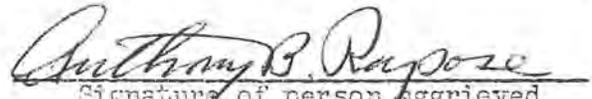
I, the undersigned, City of Lewiston, Department of Public Works

residing at Willow Street, Lewiston, Maine 04240

hereby wish to file an appeal from the decision of the Lewiston Building Inspector in refusing me a permit to: construct a one-story concrete building measuring 110' X 142' to be used as a shredding plant at 424-482 River Road, Lewiston, Maine. This location is in an Agricultural zone and is contrary to Secs. 29-4 (C) (1), 29-11 (C) (12) of the Zoning Ordinance. Conditional use permit required by the Zoning Board of Appeals. Appeal filed with City Clerk under Sec. 29-25 of the Lewiston Zoning Ordinance.

This appeal is filed with the Lewiston City Clerk in accordance with the provisions of the Lewiston Zoning Ordinance.

\$10.00 required fee paid at Lewiston City Clerk's Office on March 14, 1977


Signature of person aggrieved

LZ-91

CHARLES A. BUTEAU
BUILDING INSPECTOR

*City of Lewiston
Maine*

TEL. 207 78 4-2951
EXT. 46
ZIP CODE 04240

Office of Building Inspector
CITY BUILDING

NAME City of Lewiston (Owner)
Department of Public Works
Willow Street

Lewiston, ME 04240

Date March 9, 1977

OFFICIAL NOTICE

Dear Sir:

Your request for permit from this office to: construct a one-story concrete building measuring
110' x 142' to be used as a shredding plant at 424-482 River Road, Lewiston, Maine

is refused, (denied). This location is in an Agr. Zone, and is contrary to the Lewiston
Zoning Ordinance, Sections 29-4 (C) (1), 29-11 (C) (12)
Conditional Use permit required by the Zoning Board of Appeals.
May be filed for Appeal to City Clerk under Sec. 29-25

Signed Charles Buteau
Lewiston Building Inspector

March 15, 1977

Appeal by: City of Lewiston, Department of Public Works-Willow Street- Lewiston, Maine 04240

Subject: Construct a one-story concrete building at 424-482 River Road-be used as a shredding plant.

Mailing Address

Rhea Marie Horner & Virginia Emily Martin	290-375 River Road	210 Maine Ave. Portland, Me 04103
Armand R & Stella M Truchon	378-422 River Road	River Road
Romeo W & Joan Truchon	484-520 River Road & 393-457 River Road	River Road
Nancy A Beaudette	522-552 River Road	River Road
Camilien & Carmel Goupil	554-604 River Road	River Road
Central Maine Power Co		Augusta, Me
Roland J & Lucienne Goupil	405-407 River Road & 463-527 River Road	River Road
Peter R & Dolores P Grenier	409-411 River Road	River Road
Gendron & Gendron, Inc	459-461 River Road	265 South Ave. City
Lucien & Lorraine Belanger	843-951 Pleasant St.	65 St.Croix St. City
James J & Patricia J McKeown	959-967 Pleasant St.	RFD 3 Ferry Road City
Laura Hodgkin & Northeast Bank N.A. (Co-Trustees P.O. Box 701 Y)	969-1069 Pleasant St. rear 993-1069 Pleasant St.	35 Ash St. City
Armand A & Cecile Belanger	1079-1137 Pleasant St	Ferry Road City
Robert E & Yvette Belanger	1099-1137 Pleasant St	Ferry Road City
Clementine Lachance	797-841 Pleasant St.	RFD 3 Ferry Road City

3/9/77

Refusal submitted to the Mayor to be filed by her with the
City Clerk

CHARLES A. BUTEAU
BUILDING INSPECTOR

*City of Lewiston
Maine*

Office of Building Inspector
CITY BUILDING

TEL. 207 78 4-2951
EXT. 46
ZIP CODE 04240

NAME City of Lewiston (Owner)
Department of Public Works
Willow Street

Lewiston, ME 04240

Date March 9, 1977

OFFICIAL NOTICE

Dear Sir:

Your request for permit from this office to: construct a one-story concrete building measuring
110' x 142' to be used as a shredding plant at 424-482 River Road, Lewiston, Maine

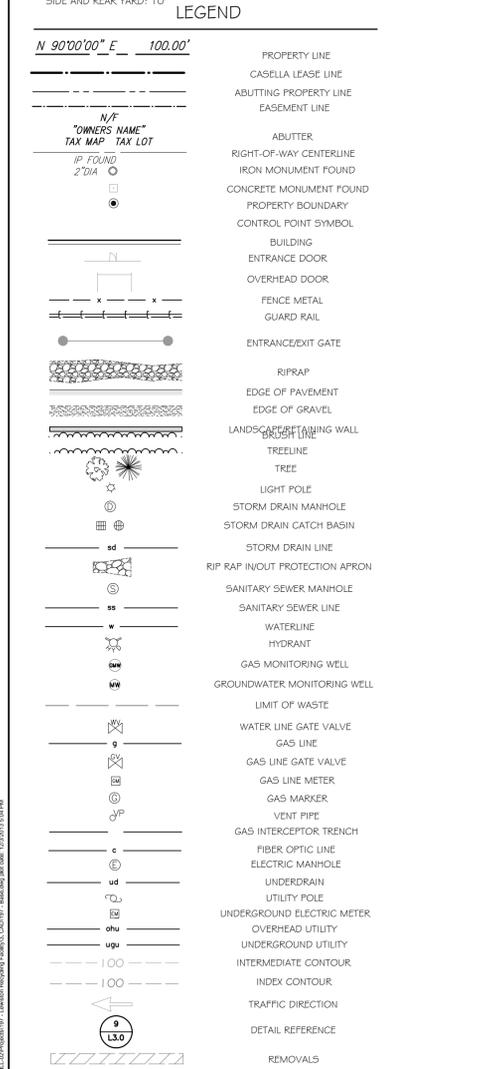
is refused, (denied). This location is in an Agr. Zone, and is contrary to the Lewiston
Zoning Ordinance, Sections 29-4 (C) (1), 29-11 (C) (12)
Conditional Use permit required by the Zoning Board of Appeals.
May be filed for Appeal to City Clerk under Sec. 29-25

Signed Charles Buteau

- PLAN REFERENCES:**
1. TOPOGRAPHIC AND PROPERTY BOUNDARY INFORMATION TAKEN FROM A COMPILATION OF THE FOLLOWING:
 - 1.1. A PLAN TITLED "PARTIAL BOUNDARY SURVEY AND EXISTING CONDITION PLAN", PREPARED BY JONES ASSOCIATES, INC. OF 63 TUCKER LANE, POLAND SPRING, MAINE, DATED MAY 30, 2013.
 - 1.2. "CITY OF LEWISTON, LEWISTON SOLID WASTE FACILITY, SURFACE WATER DRAINAGE AREAS", DATED MAY 2011, PREPARED BY CMA ENGINEERS, ON FILE AT CITY OF LEWISTON SOLID WASTE FACILITY OFFICE.
 - 1.3. "BOUNDARY PLAN GENDRON PARCELS, 380-424 RIVER ROAD, LEWISTON, MAINE, PREPARED FOR GENDRON & GENDRON, INC.", DATED JANUARY 2006, PREPARED BY TECHNICAL SERVICES, INC., RECORDED AT SAID REGISTRY OF DEEDS IN PLAN BOOK 45, PAGE 106.
 - 1.4. "CENTRAL MAINE POWER SECTION 75, HOTEL ROAD-LEWISTON LOWER MILE 5, PLAN # 605-175 & 605-176, LAST REVISED DECEMBER, 1995, ON FILE AT CENTRAL MAINE POWER.
 - 1.5. "DEFINITION OF RIVER ROAD, LEWISTON, MAINE, SOUTH AVENUE TO GARCELONS FERRY", DATED MAY 1939, PREPARED BY THE ANDROSCOGGIN COUNTY COMMISSIONERS, RECORDED AT SAID REGISTRY OF DEEDS IN THE COUNTY COMMISSIONERS PLAN VOLUME 2, PAGE 60.
 2. APPROXIMATE LIMITS OF WASTE, WATER LINE, GAS LINE, AND MONITORING WELL INFORMATION TAKEN FROM A PLAN TITLED "SURFACE WATER DRAINAGE AREAS", PREPARED BY CMA ENGINEERS OF LAFAYETTE CENTER, STORER STREET BUILDING, SUITE 208, KENNEBUNK, ME, DATED MAY, 2011.
 3. GAS INTERCEPTOR TRENCH INFORMATION TAKEN FROM A PLAN TITLED "ATTENUATION LANDFILL FINAL CLOSURE, GRADING AND SITE PLAN", PREPARED BY WOODARD & CURRAN, INC. OF PORTLAND, ME, DATED JUNE, 1994.
- GENERAL NOTES:**
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING "DIG SAFE" AND LOCAL UTILITY COMPANIES AT LEAST THREE (3) BUSINESS DAYS, BUT NOT MORE THAN 30 CALENDAR DAYS, PRIOR TO THE COMMENCEMENT OF ANY EXCAVATION, IN ACCORDANCE WITH MAINE STATE LAW, "DIG SAFE" TELEPHONE NUMBER IS 1-800-344-7233.
 2. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL AND ANY MEANS, METHODS, AND TECHNIQUES EMPLOYED TO PERFORM THE WORK SHOWN ON THE PLANS.
 3. ALL WORK SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS INCLUDING ALL SAFETY REGULATIONS (OSHA).
 4. ALL WORK SHALL BE IN CONFORMANCE ALL UTILITY COMPANIES STANDARDS.
 5. THE CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS FOR THE WORK SHOWN ON THESE PLANS PRIOR TO CONSTRUCTION.
 6. ALL PAVEMENT CONCRETE CUTS SHALL BE SAW CUT TO RESULT IN CLEAN EDGES. A TACK COAT SHALL BE APPLIED ALONG THE PAVEMENT CUT EDGES AND THE NEW PAVEMENT BUTTED TO IT, UNLESS OTHERWISE DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE.
 7. ALL WORK SHALL COMPLY WITH THE CITY OF LEWISTON AND MDP PERMIT REQUIREMENTS. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY SITE EXCAVATION OR REGRADING. REFER TO THE WRITTEN EROSION CONTROL PLAN AND DRAWINGS FOR FURTHER EROSION CONTROL GUIDELINES.
 8. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS SHOWN ON THE DRAWINGS. IF ANY DISCREPANCIES ARE FOUND, THE OWNER OR OWNER'S REPRESENTATIVE SHALL BE NOTIFIED IMMEDIATELY.

- PARCEL INFORMATION:**
1. OWNER OF RECORD: CITY OF LEWISTON
 2. A PORTION OF THE PARCEL IS LEASED BY CASELLA WASTE VIA LEASE RECORDED IN ANDROSCOGGIN COUNTY REGISTRY OF DEEDS BOOK 1006 PAGE 258
 3. STREET ADDRESS: 424 RIVER ROAD, LEWISTON, MAINE
 4. PARCEL SHOWN HEREON IS TOWN OF LEWISTON TAX MAP 156, LOT 7.
 5. APPROXIMATE AREA OF EXISTING LEASED AREA: 3.26 ACRES ±
 6. TOTAL AREA OF PARCEL: 190 ACRES
- ZONING INFORMATION:**
1. ZONING DISTRICT: INDUSTRIAL
 2. LEASED AREA 3.27 ACRES ±
- *ZONING REQUIREMENTS PER CITY OF LEWISTON LAND USE ORDINANCE & DISTRICT REGULATIONS, NO. 12-15 DATED 07/20/13:
- LOT COVERAGE MAXIMUM: 75%
 - MAXIMUM BUILDING HEIGHT: 100'
 - MINIMUM STREET FRONTAGE: 100'
 - FRONT SETBACK: 50'
 - FRONT YARD: 25'
 - SIDE AND REAR SETBACK: 25'
 - SIDE AND REAR YARD: 10'

- LEGEND**
- N 90°00'00" E 100.00'
- | | |
|-----|---------------------------------|
| --- | PROPERTY LINE |
| --- | CASELLA LEASE LINE |
| --- | ABUTTING PROPERTY LINE |
| --- | EASEMENT LINE |
| --- | ABUTTER |
| --- | RIGHT-OF-WAY CENTERLINE |
| --- | IRON MONUMENT FOUND |
| --- | CONCRETE MONUMENT FOUND |
| --- | PROPERTY BOUNDARY |
| --- | CONTROL POINT SYMBOL |
| --- | BUILDING |
| --- | ENTRANCE DOOR |
| --- | OVERHEAD DOOR |
| --- | FENCE METAL |
| --- | GUARD RAIL |
| --- | ENTRANCE/EXIT GATE |
| --- | RIPRAP |
| --- | EDGE OF PAVEMENT |
| --- | EDGE OF GRAVEL |
| --- | LANDSCAPE RETAINING WALL |
| --- | BRUSH LINE |
| --- | TREELINE |
| --- | TREE |
| --- | LIGHT POLE |
| --- | STORM DRAIN MANHOLE |
| --- | STORM DRAIN CATCH BASIN |
| --- | STORM DRAIN LINE |
| --- | RIP RAP IN/OUT PROTECTION APRON |
| --- | SANITARY SEWER MANHOLE |
| --- | SANITARY SEWER LINE |
| --- | WATERLINE |
| --- | HYDRANT |
| --- | GAS MONITORING WELL |
| --- | GROUNDWATER MONITORING WELL |
| --- | LIMIT OF WASTE |
| --- | WATER LINE GATE VALVE |
| --- | GAS LINE |
| --- | GAS LINE GATE VALVE |
| --- | GAS LINE METER |
| --- | GAS MARKER |
| --- | VENT PIPE |
| --- | GAS INTERCEPTOR TRENCH |
| --- | FIBER OPTIC LINE |
| --- | ELECTRIC MANHOLE |
| --- | UNDERDRAIN |
| --- | UTILITY POLE |
| --- | UNDERGROUND ELECTRIC METER |
| --- | OVERHEAD UTILITY |
| --- | UNDERGROUND UTILITY |
| --- | INTERMEDIATE CONTOUR |
| --- | INDEX CONTOUR |
| --- | TRAFFIC DIRECTION |
| --- | DETAIL REFERENCE |
| --- | REMOVALS |



WALSH
ENGINEERING ASSOCIATES, INC.

918 Brighton Ave | Portland, Maine 04102
ph: 207.553.9898 | www.walsh-eng.com

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STATE OF MAINE

WILLIAM R. WALSH, III
No. 8204

12/3/13

Lewiston Zero-Sort™ Facility

424 River Road
Lewiston, ME

Casella Recycling, LLC

14 Bunker Hill Industrial Park
Charlestown, MA 02129

FOR PERMITTING - NOT FOR CONSTRUCTION

Rev.	Date	Description	Drawn	Check
1	10/16/13	Submitted for MDEP review	AMC	WRW
2	12/3/13	Revised per City of Lewiston Comments	SWC	WRW

Sheet Title:
Existing Conditions and Removals Plan

Job No.: 197	Sheet No.:
Date: Nov. 26, 2013	C1.0
Scale: 1" = 40'	
Drawn: WTE	
Checked: WRW	

- PLAN REFERENCES:**
1. TOPOGRAPHIC AND PROPERTY BOUNDARY INFORMATION TAKEN FROM A COMPILATION OF THE FOLLOWING:
 - 1.1. A PLAN TITLED "PARTIAL BOUNDARY SURVEY AND EXISTING CONDITION PLAN", PREPARED BY JONES ASSOCIATES, INC. OF 63 TUCKER LANE, POLAND SPRING, MAINE, DATED MAY 30, 2013.
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GENERAL NOTES:

1. SEE SHEET C1.0 FOR GENERAL NOTES AND PARCEL INFORMATION.

LAYOUT, MATERIALS, AND UTILITY NOTES:

1. ALL DIMENSIONS, LOCATIONS AND CONTROLS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION ACTIVITIES. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE OWNER OR OWNER'S REPRESENTATIVE.
2. DO NOT SCALE THE DRAWINGS FOR REQUIRED DIMENSIONS. ANY DISCREPANCIES IN DIMENSIONING SHALL BE REPORTED IMMEDIATELY TO THE OWNER'S REPRESENTATIVE.
3. ALL ANGLES ARE 90 DEGREES UNLESS OTHERWISE SHOWN.
4. ALL EDGES OF PAVING SHALL BE STAKED OUT BY THE CONTRACTOR AND REVIEWED BY THE OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
5. PROVIDE A SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING.
6. ALL DISTURBED AREAS NOT OTHERWISE TREATED SHALL BE LOAMED AND SEEDDED.
7. CENTERLINES OF DRIVEWAY AND WALKWAY, PROPOSED PARKING LOTS AND PROPOSED UTILITY LINES SHALL BE LOCATED AND LAID OUT BY PROFESSIONALLY LICENSED SURVEYOR.

ZONING INFORMATION:

1. ZONING DISTRICT: INDUSTRIAL
2. LEASED AREA 3.26 ACRES ±

*ZONING REQUIREMENTS PER CITY OF LEWISTON LAND USE ORDINANCE & DISTRICT REGULATIONS, No. 12-15 DATED 07/2013:

LOT COVERAGE MAXIMUM: REQUIRED = 75%
 PROVIDED = 13.3%

MAXIMUM BUILDING HEIGHT: 100'
 MINIMUM STREET FRONTAGE: 100'
 FRONT YARD: 25'
 SIDE AND REAR SETBACK: 25'
 SIDE AND REAR YARD: 10'

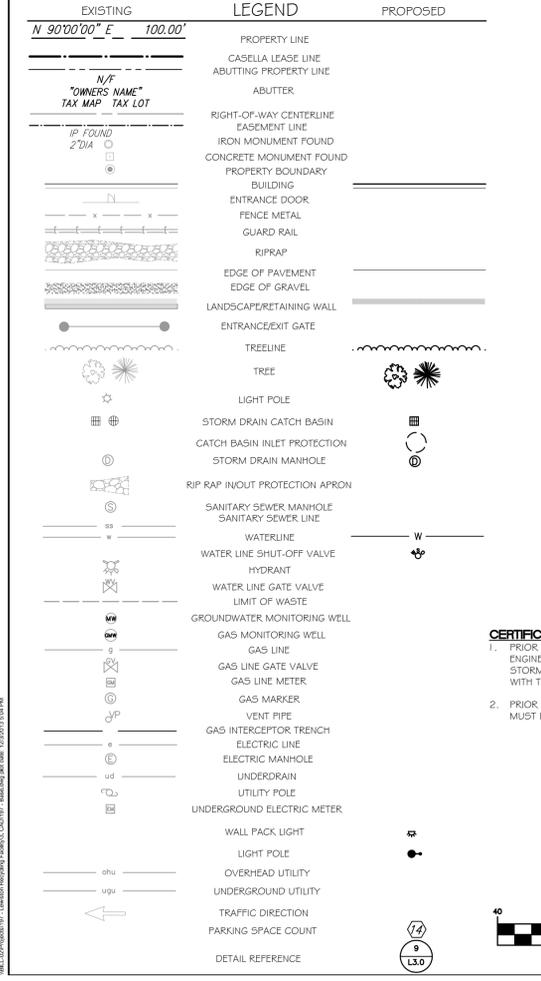
PARKING SPACE CALCULATION:

CITY OF LEWISTON REQUIREMENT: 1 SPACE PER 500 SF GROSS FLOOR AREA UP TO 3,000 SF AND ONE ADDITIONAL SPACE PER ADDITIONAL 1,000 SF

CASELLA LEASED AREA:	CITY OF LEWISTON OPERATIONS:
EXISTING TRANSFER BUILDING/BALE ROOM: 22,720 SF	PROPOSED WASTE STORAGE FACILITY: 1,060 SF
PROPOSED ADDITIONAL BUILDING: 15,000 SF	REQUIRED SPACES: 3 SPACES
ASSUMED SECOND FLOOR OFFICE SPACE: 1,040 SF	
TOTAL CALCULATED FLOOR AREA: 38,760 SF	PROPOSED OFFICE BUILDING: 1,060 SF
	REQUIRED SPACES: 3 SPACES
FIRST 3,000 SF FLOOR AREA REQUIRES: 6 SPACES	TOTAL REQUIRED SPACES: 6 SPACES
REMAINING 35,760 FLOOR AREA REQUIRES: 36 SPACES	
TOTAL # SPACES REQUIRED: 42 SPACES	
# OF CASELLA EMPLOYEES: 25 PEOPLE	# OF CITY EMPLOYEES: 4 PEOPLE
ASSUMED VISITORS: 3 PEOPLE	ASSUMED VISITORS: 1 PERSON
TOTAL PARKING SPACES NEEDED: 28 SPACES	TOTAL PARKING SPACES NEEDED: 5 SPACES
SPACES PROVIDED: NEW: 2 HANDICAP 46 SPACES	SPACES PROVIDED: NEW: 1 HANDICAP 6 SPACES
TOTAL SPACES PROVIDED: 48 SPACES	TOTAL SPACES PROVIDED: 7 SPACES

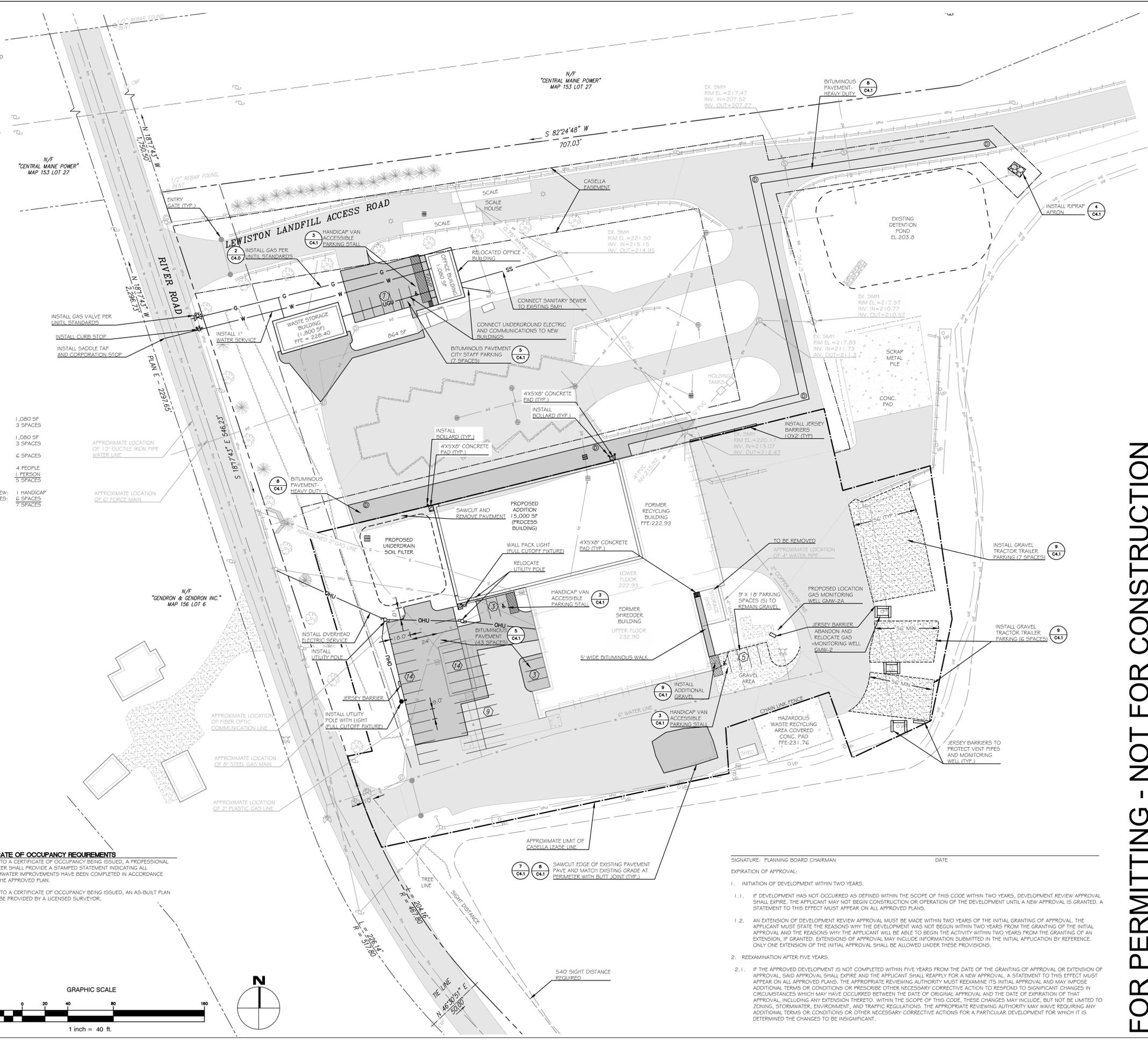
LEGEND

EXISTING	PROPOSED



CERTIFICATE OF OCCUPANCY REQUIREMENTS

1. PRIOR TO A CERTIFICATE OF OCCUPANCY BEING ISSUED, A PROFESSIONAL ENGINEER SHALL PROVIDE A STAMPED STATEMENT INDICATING ALL STORMWATER IMPROVEMENTS HAVE BEEN COMPLETED IN ACCORDANCE WITH THE APPROVED PLAN.
2. PRIOR TO A CERTIFICATE OF OCCUPANCY BEING ISSUED, AN AS-BUILT PLAN MUST BE PROVIDED BY A LICENSED SURVEYOR.



WALSH
 ENGINEERING ASSOCIATES, INC.

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 ph: 207.553.9898 | www.walsh-eng.com

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STATE OF MAINE

WILLIAM R. WALSH, III
 No. 8204

12/3/13

Lewiston Zero-Sort™ Facility

424 River Road
 Lewiston, ME

Casella Recycling, LLC

14 Bunker Hill Industrial Park
 Charlestown, MA 05129

FOR PERMITTING - NOT FOR CONSTRUCTION

Signature: PLANNING BOARD CHAIRMAN DATE

EXPIRATION OF APPROVAL:

1. INITIATION OF DEVELOPMENT WITHIN TWO YEARS.
- 1.1. IF DEVELOPMENT HAS NOT OCCURRED AS DEFINED WITHIN THE SCOPE OF THIS CODE WITHIN TWO YEARS, DEVELOPMENT REVIEW APPROVAL SHALL EXPIRE. THE APPLICANT MAY NOT BEGIN CONSTRUCTION OR OPERATION OF THE DEVELOPMENT UNTIL A NEW APPROVAL IS GRANTED. A STATEMENT TO THIS EFFECT MUST APPEAR ON ALL APPROVED PLANS.
- 1.2. AN EXTENSION OF DEVELOPMENT REVIEW APPROVAL MUST BE MADE WITHIN TWO YEARS OF THE INITIAL GRANTING OF APPROVAL. THE APPLICANT MUST STATE THE REASONS WHY THE DEVELOPMENT WAS NOT BEGUN WITHIN TWO YEARS FROM THE GRANTING OF THE INITIAL APPROVAL AND THE REASONS WHY THE APPLICANT WILL BE ABLE TO BEGIN THE ACTIVITY WITHIN TWO YEARS FROM THE GRANTING OF AN EXTENSION, IF GRANTED. EXTENSIONS OF APPROVAL MAY INCLUDE INFORMATION SUBMITTED IN THE INITIAL APPLICATION BY REFERENCE. ONLY ONE EXTENSION OF THE INITIAL APPROVAL SHALL BE ALLOWED UNDER THESE PROVISIONS.
2. REDEXAMINATION AFTER FIVE YEARS.
- 2.1. IF THE APPROVED DEVELOPMENT IS NOT COMPLETED WITHIN FIVE YEARS FROM THE DATE OF THE GRANTING OF APPROVAL OR EXTENSION OF APPROVAL, SAID APPROVAL SHALL EXPIRE AND THE APPLICANT SHALL REPLY FOR A NEW APPROVAL. A STATEMENT TO THIS EFFECT MUST APPEAR ON ALL APPROVED PLANS. THE APPROPRIATE REVIEWING AUTHORITY MUST REEXAMINE ITS INITIAL APPROVAL AND MAY IMPOSE ADDITIONAL TERMS OR CONDITIONS OR PRESCRIBE OTHER NECESSARY CORRECTIVE ACTION TO RESPOND TO SIGNIFICANT CHANGES IN CIRCUMSTANCES WHICH MAY HAVE OCCURRED BETWEEN THE DATE OF ORIGINAL APPROVAL AND THE DATE OF EXPIRATION OF THAT APPROVAL, INCLUDING ANY EXTENSION THEREOF. WITHIN THE SCOPE OF THIS CODE, THESE CHANGES MAY INCLUDE, BUT NOT BE LIMITED TO ZONING, STORMWATER, ENVIRONMENT, AND TRAFFIC REGULATIONS. THE APPROPRIATE REVIEWING AUTHORITY MAY WAIVE REQUIRING ANY ADDITIONAL TERMS OR CONDITIONS OR OTHER NECESSARY CORRECTIVE ACTIONS FOR A PARTICULAR DEVELOPMENT FOR WHICH IT IS DETERMINED THE CHANGES TO BE INSIGNIFICANT.

Rev. | Date | Description | Drawn | Check

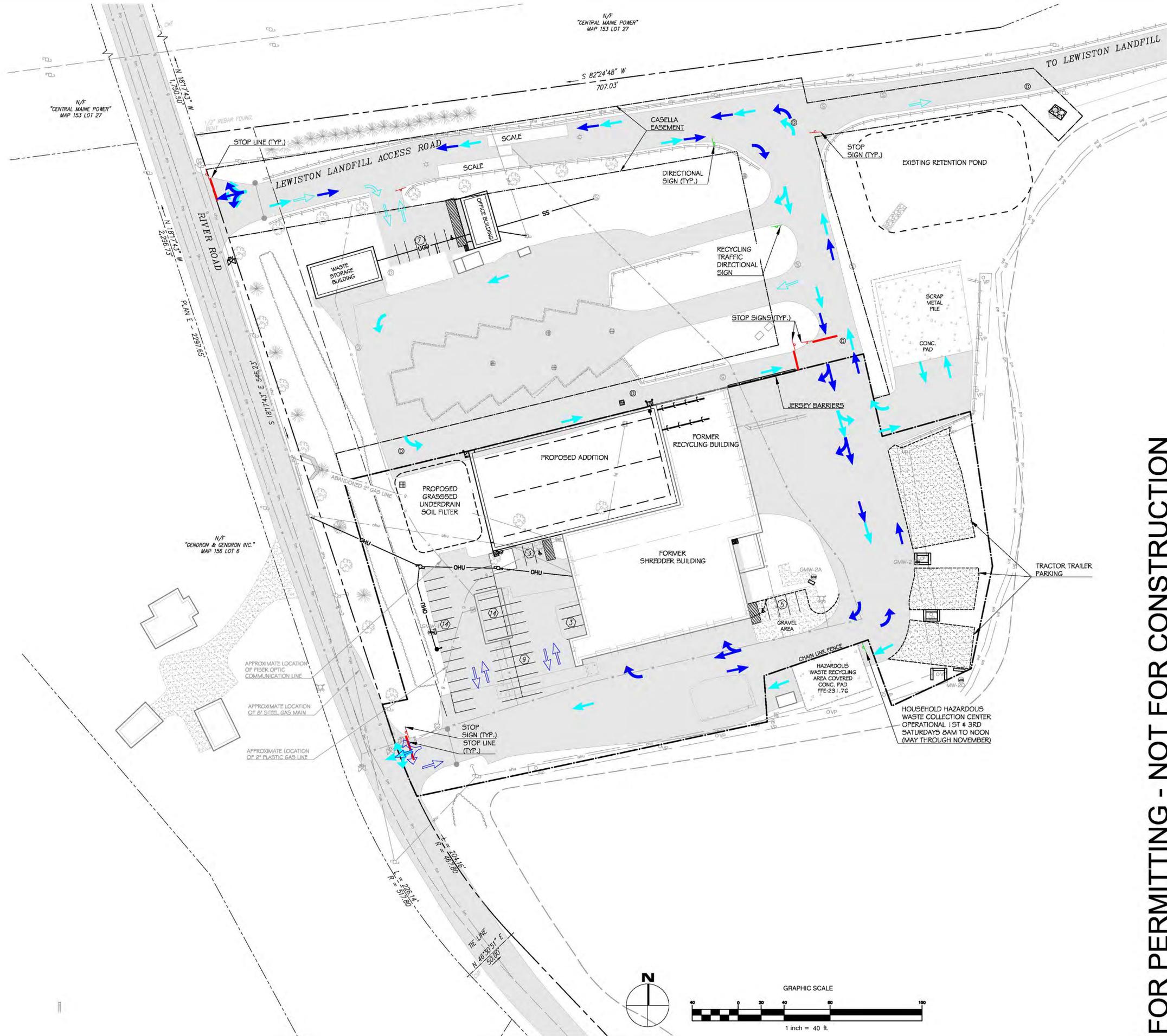
1	10/10/13	Submitted for MDEP review	AMC	WRW
2	11/26/13	Revised per City of Lewiston Comments	WTE	WRW
3	12/3/13	Revised per City of Lewiston Comments	SWC	WRW

Sheet Title: **Site Plan**

Job No.: 197 | Sheet No.: **C2.0**

Date: Nov. 26, 2013
 Scale: 1" = 40'
 Drawn: WTE
 Checked: WRW

GENERAL NOTES:
 1. SEE GENERAL NOTES AND PLAN REFERENCES ON SHEET C2.0.



EXISTING	LEGEND	PROPOSED
	CITY OF LEWISTON TRAFFIC (PUBLIC)	
	CITY OF LEWISTON EMPLOYEE TRAFFIC	
	CASELLA RECYCLING FACILITY TRUCK TRAFFIC	
	CASELLA RECYCLING FACILITY EMPLOYEE TRAFFIC	
	STOP SIGN	
	TRAFFIC SIGN	
	PROPERTY LINE	
	CASELLA LEASE LINE	
	ABUTTING PROPERTY LINE	
	ABUTTER	
	RIGHT-OF-WAY CENTERLINE	
	EASEMENT LINE	
	IRON MONUMENT FOUND	
	CONCRETE MONUMENT FOUND	
	PROPERTY BOUNDARY	
	CONTROL POINT SYMBOL	
	BUILDING	
	ENTRANCE DOOR	
	FENCE METAL	
	GUARD RAIL	
	EDGE OF PAVEMENT	
	EDGE OF GRAVEL	
	LANDSCAPE/RETAINING WALL	
	ENTRANCE/EXIT GATE	
	TREELINE	
	TREE	
	LIGHT POLE	
	STORM DRAIN MANHOLE	
	STORM DRAIN CATCH BASIN	
	STORM DRAIN LINE	
	RIP RAP IN/CUT PROTECTION APRON	
	SANITARY SEWER MANHOLE	
	SANITARY SEWER LINE	
	WATERLINE	
	HYDRANT	
	LIMIT OF WASTE	
	GROUNDWATER MONITORING WELL	
	GAS MONITORING WELL	
	WATER LINE GATE VALVE	
	GAS LINE	
	GAS LINE GATE VALVE	
	GAS LINE METER	
	GAS MARKER	
	VENT PIPE	
	GAS INTERCEPTOR TRENCH	
	ELECTRIC LINE	
	ELECTRIC MANHOLE	
	UNDERDRAIN	
	UTILITY POLE	
	UNDERGROUND ELECTRIC METER	
	OVERHEAD UTILITY	
	UNDERGROUND UTILITY	
	POND LINE	
	PARKING SPACE COUNT	

N 90°00'00" E 100.00'

N/F "OWNER'S NAME" TAX MAP TAX LOT

IP FOUND 2" DIA

N/F "OWNER'S NAME" TAX MAP TAX LOT

IP FOUND 2" DIA

N/F "OWNER'S NAME" TAX MAP TAX LOT

IP FOUND 2" DIA

N/F "OWNER'S NAME" TAX MAP TAX LOT

IP FOUND 2" DIA

N/F "OWNER'S NAME" TAX MAP TAX LOT

IP FOUND 2" DIA

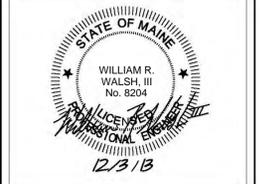
N/F "OWNER'S NAME" TAX MAP TAX LOT

IP FOUND 2" DIA

N/F "OWNER'S NAME" TAX MAP TAX LOT

IP FOUND 2" DIA

WALSH
 ENGINEERING ASSOCIATES, INC.
 918 Brighton Ave | Portland, Maine 04102
 ph: 207.553.9898 | www.walsh-eng.com
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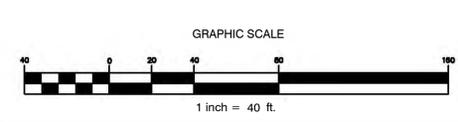
Lewiston Zero-Sort™ Facility
 424 River Road
 Lewiston, ME
Casella Recycling, LLC
 14 Bunker Hill Industrial Park
 Charlestown, MA 02129

FOR PERMITTING - NOT FOR CONSTRUCTION

Rev.	Date	Description	Drawn	Check
1	10/10/13	Submitted for MDEP review	AMC	WRW
2	12/3/13	Revised per City of Lewiston Comments	SWC	WRW

Sheet Title:
Traffic Flow

Job No.: 197
 Date: Nov. 26, 2013
 Scale: 1" = 40'
 Drawn: WTE
 Checked: WRW
 Sheet No.: **C2.1**



- PLAN REFERENCES:**
1. TOPOGRAPHIC AND PROPERTY BOUNDARY INFORMATION TAKEN FROM A COMPILATION OF THE FOLLOWING:
 - 1.1. A PLAN TITLED "PARTIAL BOUNDARY SURVEY AND EXISTING CONDITION PLAN", PREPARED BY JONES ASSOCIATES, INC. OF 63 TUCKER LANE, POLAND SPRING, MAINE, DATED MAY 30, 2013.
 - 1.2. "CITY OF LEWISTON, LEWISTON SOLID WASTE FACILITY, SURFACE WATER DRAINAGE AREAS", DATED MAY 2011, PREPARED BY CMA ENGINEERS, ON FILE AT CITY OF LEWISTON SOLID WASTE FACILITY OFFICE.
 - 1.3. "BOUNDARY PLAN GENDRON PARCELS, 300-424 RIVER ROAD, LEWISTON, MAINE, PREPARED FOR GENDRON 4 GENDRON, INC.", DATED JANUARY 2006, PREPARED BY TECHNICAL SERVICES, INC., RECORDED AT SAID REGISTRY OF DEEDS IN PLAN BOOK 45, PAGE 106.
 - 1.4. "CENTRAL MAINE POWER SECTION 75, HOTEL ROAD-LEWISTON LOWER MILE 5, PLAN # G05-175 & G05-176, LAST REVISED DECEMBER, 1985, ON FILE AT CENTRAL MAINE POWER.
 - 1.5. "DEFINITION OF RIVER ROAD, LEWISTON, MAINE, SOUTH AVENUE TO GARCELONS FERRY", DATED MAY 1939, PREPARED BY THE ANDOSCOGG COUNTY COMMISSIONERS, RECORDED AT SAID REGISTRY OF DEEDS IN THE COUNTY COMMISSIONERS PLAN VOLUME 2, PAGE 60.
 2. APPROXIMATE LIMITS OF WASTE, WATER LINE, GAS LINE, AND MONITORING WELL INFORMATION TAKEN FROM A PLAN TITLED "SURFACE WATER DRAINAGE AREAS", PREPARED BY CMA ENGINEERS OF LAFAYETTE CENTER, STORER STREET BUILDING, SUITE 208, KENNEBUNK, ME., DATED MAY, 2011.
 3. GAS INTERCEPTOR TRENCH INFORMATION TAKEN FROM A PLAN TITLED "ATTENUATION LANDFILL FINAL CLOSURE, GRADING AND SITE PLAN", PREPARED BY WOODARD 4 CURRAN, INC. OF PORTLAND, ME., DATED JUNE, 1994.

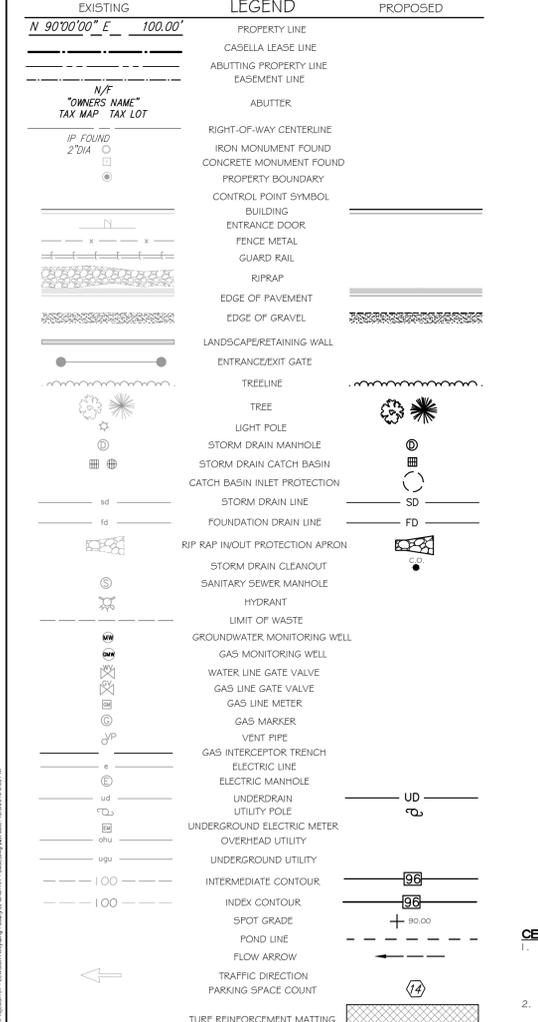
- GENERAL NOTES:**
1. SEE SHEET C1.0 FOR GENERAL NOTES AND PARCEL INFORMATION.

- LAYOUT, MATERIALS, AND UTILITY NOTES:**
1. ALL DIMENSIONS, LOCATIONS AND CONTROLS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION ACTIVITIES. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE OWNER OR OWNERS REPRESENTATIVE.
 2. DO NOT SCALE THE DRAWINGS FOR REQUIRED DIMENSIONS. ANY DISCREPANCIES IN DIMENSIONING SHALL BE REPORTED IMMEDIATELY TO THE OWNERS REPRESENTATIVE.
 3. ALL ANGLES ARE 90 DEGREES UNLESS OTHERWISE SHOWN.
 4. ALL EDGES OF PAVING SHALL BE STAKED OUT BY THE CONTRACTOR AND REVIEWED BY THE OWNERS REPRESENTATIVE PRIOR TO CONSTRUCTION.
 5. PROVIDE A SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING.
 6. ALL DISTURBED AREAS NOT OTHERWISE TREATED SHALL BE LOAMED AND SEEDED.
 7. CENTERLINES OF DRIVEWAY AND WALKWAY, PROPOSED PARKING LOTS AND PROPOSED UTILITY LINES SHALL BE LOCATED AND LAID OUT BY PROFESSIONALLY LICENSED SURVEYOR.

- GRADING AND DRAINAGE NOTES:**
1. REFER TO SHEET C1.0 FOR PLAN REFERENCES REGARDING ALL BOUNDARY AND TOPOGRAPHIC INFORMATION.
 2. PRIOR TO ANY CONSTRUCTION ACTIVITIES, CONTRACTOR SHALL VERIFY ALL AFFECTED GRADES. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE OWNER OR OWNERS REPRESENTATIVE.
 3. ALL AREAS NOT REQUIRING GRADING SHALL BE LEFT UNDISTURBED. CONTRACTOR SHALL NOT DISTURB THESE AREAS AND PRESERVE EXISTING VEGETATION.
 4. GRADE ALL NEW WORK FOR POSITIVE DRAINAGE AND NO PUDDING. MATCH EXISTING GRADES SMOOTHLY AND CONTINUOUSLY.
 5. OWNER AND ENGINEER WILL BE CLOSELY MONITORING FINISH GRADING IN THE FIELD. CONTRACTOR SHALL PERFORM FINISH WORK AS DIRECTED BY THE OWNER OR ENGINEER TO ACHIEVE THE FINISH GRADE CONDITIONS SHOWN ON THE PLANS.
 6. INSTALL EROSION CONTROL BLANKET ON ALL SLOPES STEEPER THAN 3:1. SEE DETAIL 11 ON SHEET C4.1.

- EROSION CONTROL NOTES:**
1. THE CONTRACTOR SHALL INSTALL ALL EROSION AND SEDIMENTATION CONTROL MEASURES PRIOR TO CONSTRUCTION. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE DRAWINGS, SPECIFICATIONS, AND THE CONTRACTOR SHALL COMPLY WITH THE MAINE EROSION AND SEDIMENT CONTROL BMPs, MANUAL AS PUBLISHED BY THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION'S BUREAU OF LAND AND WATER QUALITY, MARCH 2003 OR LATEST EDITION.
 2. ALL EROSION CONTROL MEASURES SHALL BE LEFT UNDISTURBED. CONTRACTOR SHALL NOT DISTURB AREAS ON SITE NOT COVERED BY BUILDINGS OR PAVED AREAS SHALL BE STABILIZED WITH LOAM AND SEED, OR BY OTHER METHODS AS REQUIRED BY THE WRITTEN EROSION CONTROL PLAN.
 3. DISTURBED AREAS SHALL BE LIMITED TO ONLY THOSE AREAS UNDER ACTIVE CONSTRUCTION. FOR DISTURBED AREAS THAT ARE NOT UNDER ACTIVE CONSTRUCTION AND THAT CAN NOT YET UNDERGO FINAL GRADING, INSTALL TEMPORARY SEEDING AND MULCHING REFER TO WRITTEN EROSION CONTROL PLAN.
 4. PERMANENT SEEDING OR STABILIZATION SHALL BE CARRIED OUT IMMEDIATELY AFTER FINAL GRADING IS COMPLETED, OR TEMPORARY MEASURES SHALL BE APPLIED SUCH AS MULCHING OR SEEDING UNTIL PERMANENT STABILIZATION MEASURES ARE IN PLACE.
 5. TOPSOIL SHALL BE STOCKPILED IN AREAS AWAY FROM PROTECTED NATURAL RESOURCES AND IN AREAS WHICH HAVE A MINIMAL POTENTIAL FOR EROSION. REFER TO OWNER FOR LOCATION OF MATERIAL STOCKPILE.
 6. ALL EROSION CONTROL MEASURES SHALL BE REGULARLY INSPECTED AND REPAIRED IN ACCORDANCE WITH THE WRITTEN EROSION CONTROL PLAN FOR THE DURATION OF THE PROJECT UNTIL ALL AREAS ARE STABILIZED. REMOVE ACCUMULATED SILT AND SEDIMENT AS NEEDED AND MAINTAIN SILT FENCE IN GOOD, OPERABLE CONDITION.

EXISTING	PROPOSED



CERTIFICATE OF OCCUPANCY REQUIREMENTS

1. PRIOR TO A CERTIFICATE OF OCCUPANCY BEING ISSUED, A PROFESSIONAL ENGINEER SHALL PROVIDE A STAMPED STATEMENT INDICATING ALL STORMWATER IMPROVEMENTS HAVE BEEN COMPLETED IN ACCORDANCE WITH THE APPROVED PLAN.
2. PRIOR TO A CERTIFICATE OF OCCUPANCY BEING ISSUED, AN AS-BUILT PLAN MUST BE PROVIDED BY A LICENSED SURVEYOR.

WALSH
ENGINEERING ASSOCIATES, INC.

918 Brighton Ave | Portland, Maine 04102
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STATE OF MAINE

WILLIAM R. WALSH, III
No. 8204

12/3/13

Lewiston Zero-SortSM Facility

425 River Road
Lewiston, ME

Casella Recycling, LLC

14 Bunker Hill Industrial Park
Charlestown, MA 02129

FOR PERMITTING - NOT FOR CONSTRUCTION

SIGNATURE: PLANNING BOARD CHAIRMAN

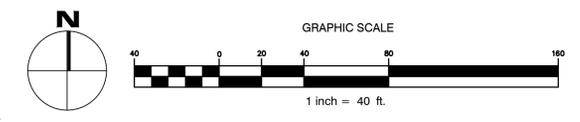
EXPIRATION OF APPROVAL:

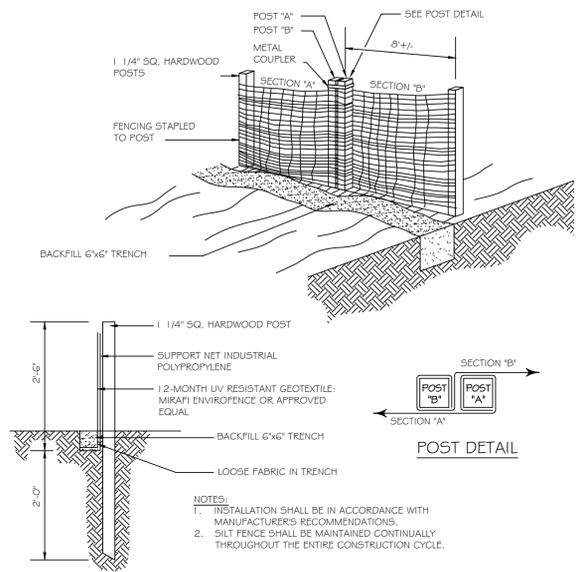
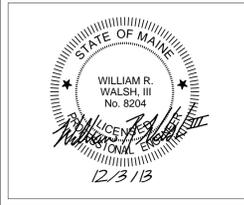
1. INITIATION OF DEVELOPMENT WITHIN TWO YEARS.
- 1.1. IF DEVELOPMENT HAS NOT OCCURRED AS DEFINED WITHIN THE SCOPE OF THIS CODE WITHIN TWO YEARS, DEVELOPMENT REVIEW APPROVAL SHALL EXPIRE. THE APPLICANT MAY NOT BEGIN CONSTRUCTION OR OPERATION OF THE DEVELOPMENT UNTIL A NEW APPROVAL IS GRANTED. A STATEMENT TO THIS EFFECT MUST APPEAR ON ALL APPROVED PLANS.
- 1.2. AN EXTENSION OF DEVELOPMENT REVIEW APPROVAL MUST BE MADE WITHIN TWO YEARS OF THE INITIAL GRANTING OF APPROVAL. THE APPLICANT MUST STATE THE REASONS WHY THE DEVELOPMENT WAS NOT BEGUN WITHIN TWO YEARS FROM THE GRANTING OF THE INITIAL APPROVAL AND THE REASONS WHY THE APPLICANT WILL BE ABLE TO BEGIN THE ACTIVITY WITHIN TWO YEARS FROM THE GRANTING OF AN EXTENSION. IF GRANTED, EXTENSIONS OF APPROVAL MAY INCLUDE INFORMATION SUBMITTED IN THE INITIAL APPLICATION BY REFERENCE. ONLY ONE EXTENSION OF THE INITIAL APPROVAL SHALL BE ALLOWED UNDER THESE PROVISIONS.
2. REEXAMINATION AFTER FIVE YEARS.
- 2.1. IF THE APPROVED DEVELOPMENT IS NOT COMPLETED WITHIN FIVE YEARS FROM THE DATE OF THE GRANTING OF APPROVAL OR EXTENSION OF APPROVAL, SAID APPROVAL SHALL EXPIRE AND THE APPLICANT SHALL REAPPLY FOR A NEW APPROVAL. A STATEMENT TO THIS EFFECT MUST APPEAR ON ALL APPROVED PLANS. THE APPROPRIATE REVIEWING AUTHORITY MUST REEXAMINE ITS INITIAL APPROVAL AND MAY IMPROSE ADDITIONAL TERMS OR CONDITIONS OR PRESCRIBE OTHER NECESSARY CORRECTIVE ACTION TO RESPOND TO SIGNIFICANT CHANGES IN CIRCUMSTANCES WHICH MAY HAVE OCCURRED BETWEEN THE DATE OF ORIGINAL APPROVAL AND THE DATE OF EXPIRATION OF THAT APPROVAL. INCLUDING ANY EXTENSION THERETO, WITHIN THE SCOPE OF THIS CODE, THESE CHANGES MAY INCLUDE, BUT NOT BE LIMITED TO ZONING, STORMWATER, ENVIRONMENT, AND TRAFFIC REGULATIONS. THE APPROPRIATE REVIEWING AUTHORITY MAY WAIVE REQUIRING ANY ADDITIONAL TERMS OR CONDITIONS OR OTHER NECESSARY CORRECTIVE ACTIONS FOR A PARTICULAR DEVELOPMENT FOR WHICH IT IS DETERMINED THE CHANGES TO BE INSIGNIFICANT.

Rev.	Date	Description	Drawn	Check
1	10/30/13	Submitted for MDEP review	AMC	WRW
2	11/26/13	Revised per MDEP 1-Added final drains & connections	WTE	WRW
2	12/3/13	Revised per City of Lewiston Comments	SWC	WRW

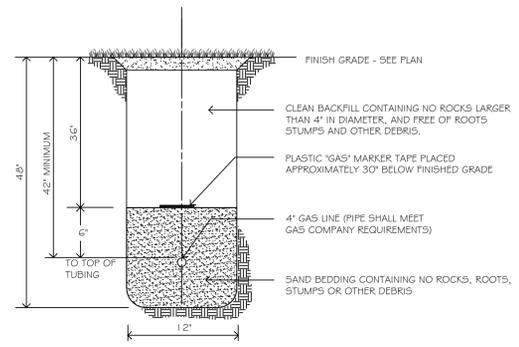
Sheet Title:
Grading, Drainage, and Erosion Control Plan

Job No.:	197	Sheet No.:	
Date:	Nov. 26, 2013	Scale:	1" = 40'
Drawn:	WTE	Checked:	WRW
		C3.0	

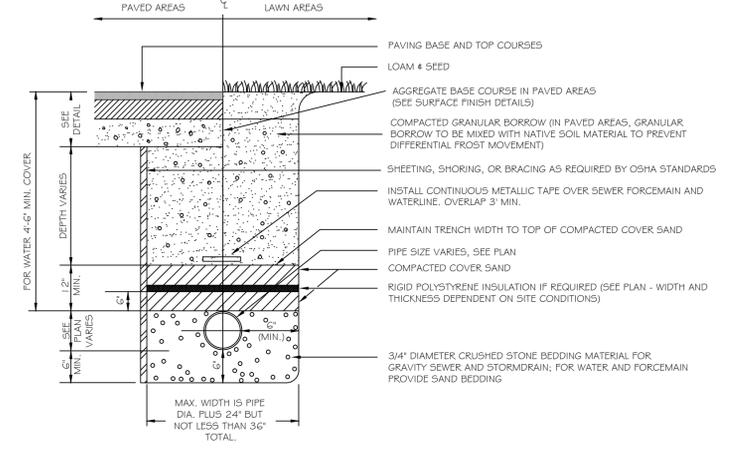




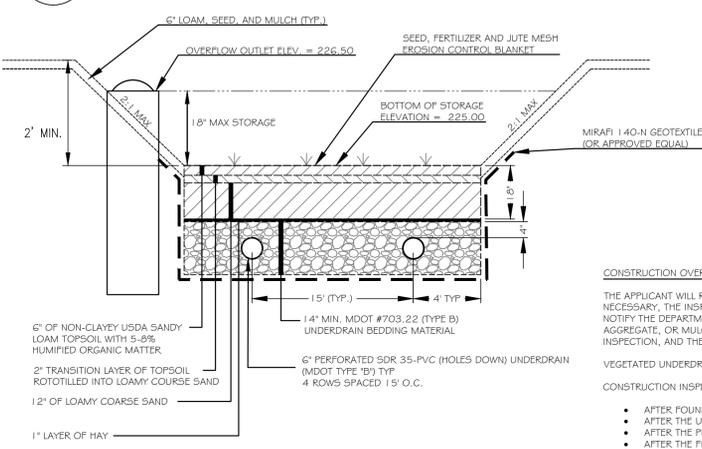
1
C4.0
PREFABRICATED SILT FENCE
NOT TO SCALE



2
C4.0
NATURAL GAS SERVICE TRENCH SECTION
NOT TO SCALE



3
C4.0
TYPICAL PIPE TRENCHING DETAIL
NOT TO SCALE



4
C4.0
GRASSED UNDERDRAIN SOIL FILTER TYPICAL CROSS SECTION
NOT TO SCALE

GRASSED UNDERDRAIN SOIL FILTER NOTES:

- THE SOIL BED SHALL BE 20" IN DEPTH AND CONSIST OF THE FOLLOWING:
 - 6" OF NON-CLAYEY USDA SANDY LOAM TOPSOIL WITH 5-8% HUMIFIED ORGANIC MATTER
 - 2" TRANSITION LAYER OF TOPSOIL ROTOTILLED INTO LOAMY COURSE SAND
 - 12" OF LOAMY COARSE SAND
- THE SOIL BED MATERIAL SHALL BE LIGHTLY COMPACTED (80% TO 92% STANDARD PROCTOR) USING WATER. IF HEAVY COMPACTION OCCURS, ROTOTILL AGAIN PRIOR TO SEEDING OR SODDING.
- A 1" LAYER OF HAY SHALL BE PLACED BETWEEN THE BOTTOM OF THE SOIL BED AND THE TOP OF THE UNDERDRAIN MATERIAL.
- SEE LANDSCAPE PLAN FOR SEEDING INFORMATION.
- REFER TO GRADING PLANS FOR UNDERDRAIN LAYOUT.
- THE MAXIMUM DISTANCE BETWEEN UNDERDRAIN PIPES SHALL BE 15 FEET.
- GRASSED UNDERDRAIN SOIL FILTER MEDIA SHALL NOT BE INSTALLED UNTIL THE TRIBUTARY AREA HAS BEEN PERMANENTLY STABILIZED.

Table 1
MDOE Specifications for Underdrains (MDOE #703.22)

Sieve Size	% by Weight
Underdrain Type B	
1"	90-100
1/2"	75-100
#4	50-100
#20	15-80
#50	0-15
#200	0-5

Table 2
MDEP Loamy Coarse Sand Gradation

Sieve Size	% by Weight
#10	85-100
#20	70-100
#60	15-40
#200	8-15

CONSTRUCTION OVERSIGHT

THE APPLICANT WILL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER TO INSPECT THE CONSTRUCTION AND STABILIZATION OF ALL STORMWATER MANAGEMENT STRUCTURES TO BE BUILT AS PART OF THE PROJECT. IF NECESSARY, THE INSPECTING ENGINEER WILL INTERPRET THE CONSTRUCTION PLANS FOR THE CONTRACTOR. ONCE ALL STORMWATER MANAGEMENT STRUCTURES ARE CONSTRUCTED AND STABILIZED, THE INSPECTING ENGINEER WILL NOTIFY THE DEPARTMENT IN WRITING WITHIN 30 DAYS TO STATE THAT THE STRUCTURES HAVE BEEN COMPLETED. ACCOMPANYING THE ENGINEER'S NOTIFICATION MUST BE A COPY OF THE TEST RESULTS FOR ANY SOIL FILL, AGGREGATE, OR MULCH MATERIALS USED IN THE CONSTRUCTION OF THE STORMWATER MANAGEMENT STRUCTURES AND A LOG OF THE ENGINEER'S INSPECTIONS GIVING THE DATE OF EACH INSPECTION, THE TIME OF EACH INSPECTION, AND THE ITEMS INSPECTED ON EACH VISIT.

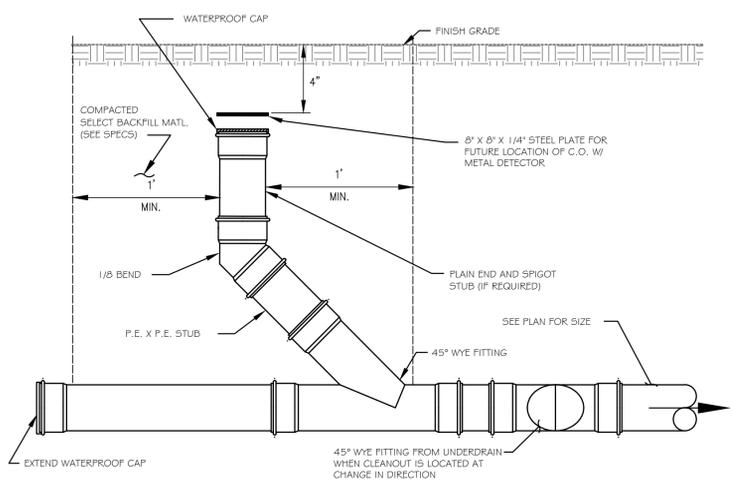
VEGETATED UNDERDRAIN SOIL FILTER BASINS

CONSTRUCTION INSPECTIONS: AT A MINIMUM, THE PROFESSIONAL ENGINEER'S INSPECTION WILL OCCUR:

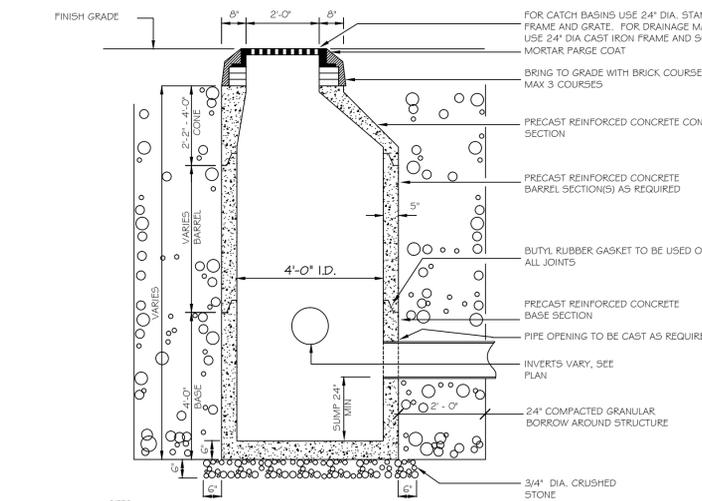
- AFTER FOUNDATION SOIL PREPARATION BUT PRIOR TO PLACEMENT OF THE EMBANKMENT FILL
- AFTER THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED
- AFTER THE PIPE BEDDING FILL IS PLACED BUT PRIOR TO THE PLACEMENT OF THE FILTER MEDIA
- AFTER THE FILTER MEDIA HAS BEEN PLACED AND THE FILTER SURFACE SEEDED.

TESTING AND SUBMITTALS: ALL THE SOIL, MULCH, AND AGGREGATE USED FOR THE CONSTRUCTION OF THE VEGETATED UNDERDRAIN SOIL FILTER BASIN MUST BE CONFIRMED AS SUITABLE BY TESTING. THE CONTRACTOR SHALL IDENTIFY THE SOURCE OF EACH MATERIAL AND OBTAIN SAMPLES FOR EACH MATERIAL FOR TESTING. ALL TESTING MUST BE DONE BY A CERTIFIED LABORATORY. ALL RESULTS OF FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR CONFIRMATION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE COMPLETION OF THE FOLLOWING SAMPLING AND TESTING BEFORE THE FILL OR AGGREGATE IS PLACED AS PART OF THE VEGETATED UNDERDRAIN SOIL FILTER BASINS CONSTRUCTION.

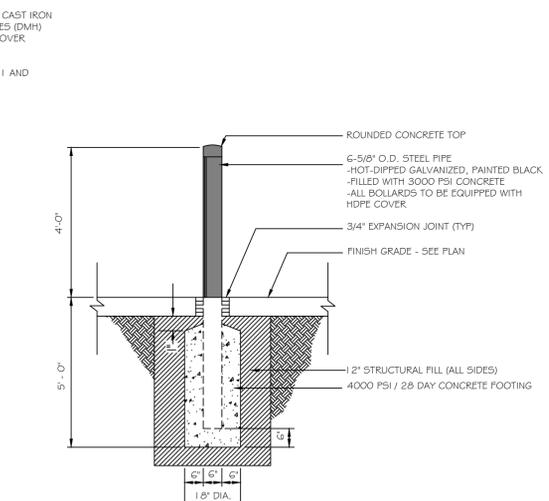
- OBTAIN A SAMPLE OF THE LOAMY COARSE SAND FILTER LAYER. THE SAMPLE MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT. THE SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY. PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C 136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES 1996A) OF THE SAND TO BE USED FOR COARSE SAND FILTER LAYER. THE SAND MUST CONFORM TO THE GRADATION SHOWN IN TABLE 2 ABOVE.
- OBTAIN A SAMPLE OF THE GRAVEL FILL TO BE USED FOR THE PIPE BEDDING. THE SAMPLE MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT FACE. THE SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY. PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C 136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES 1996A) OF THE GRAVEL TO BE USED FOR THE UNDERDRAIN PIPE BEDDING. THE GRAVEL FILL MUST CONFORM TO MDOE SPECIFICATION 703.22 UNDERDRAIN TYPE B SHOWN IN TABLE 1 ABOVE.



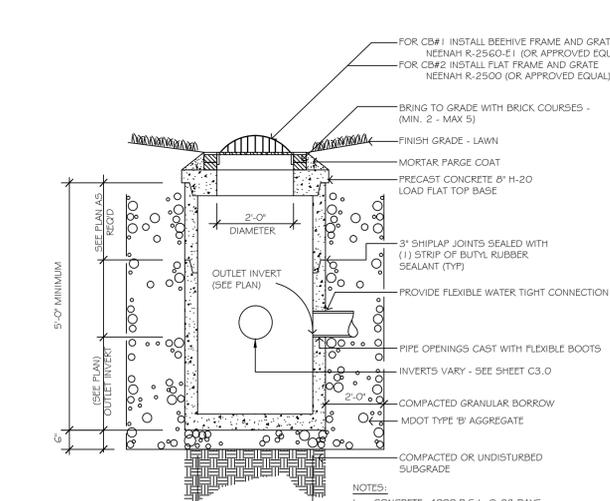
5
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UNDERDRAIN CLEANOUT
NOT TO SCALE



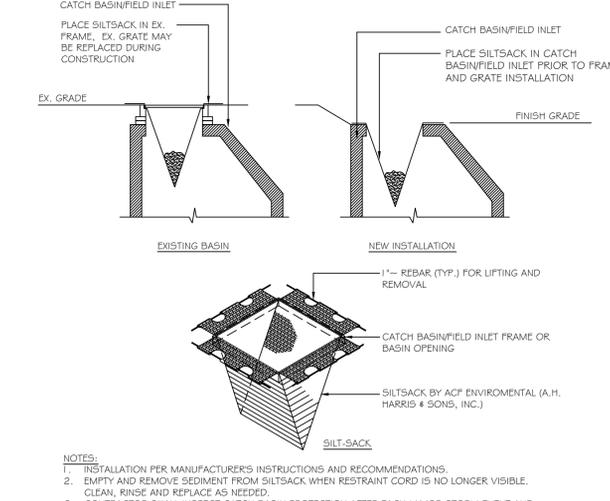
6
C4.0
PRECAST CONCRETE CATCH BASIN/DRAINAGE MANHOLE
NOT TO SCALE



7
C4.0
STEEL BOLLARD DETAIL
NOT TO SCALE



8
C4.0
CATCH BASIN #1 DETAIL
NOT TO SCALE



9
C4.0
CATCH BASIN PROTECTION DETAIL
NOT TO SCALE

FOR PERMITTING - NOT FOR CONSTRUCTION

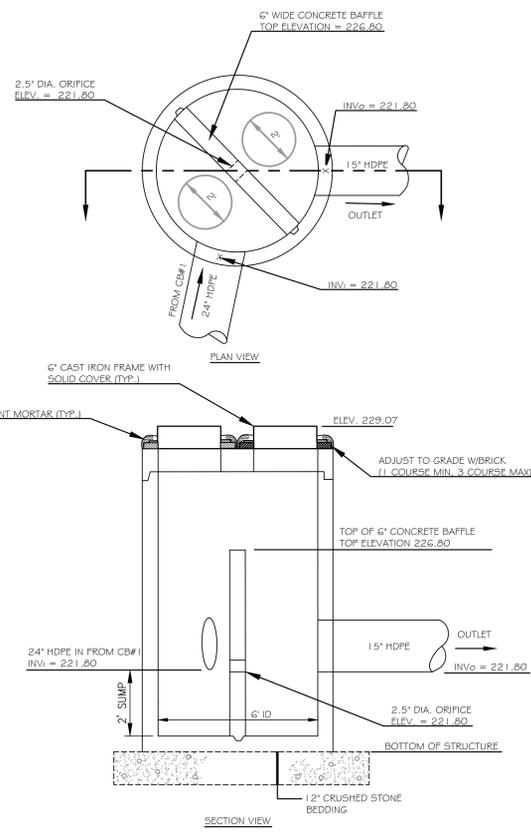
Lewiston Zero-Sort™ Facility
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2	12/3/13	Revised per City of Lewiston Comments	SWC	WRW

Sheet Title:
SITE DETAILS

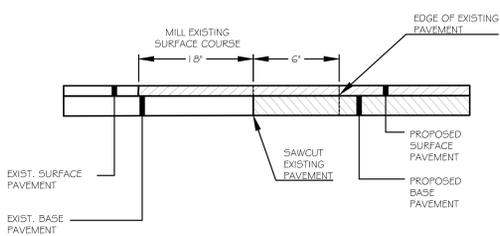
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Date: Nov. 26, 2013
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Drawn: WTE
Checked: WRW

Sheet No.: **C4.0**

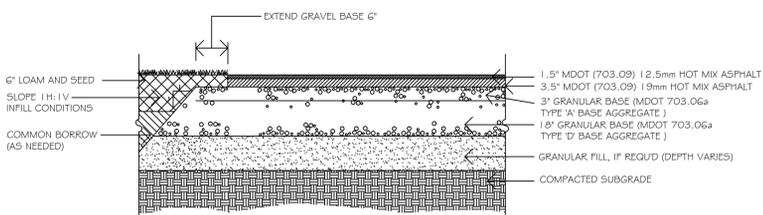


1 OUTLET CONTROL STRUCTURE #1 (OCS#1)
C4.1 NOT TO SCALE

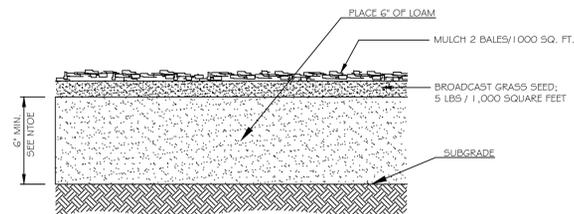
6 DETAIL NOT USED
C4.1 NOT TO SCALE



7 HMA PAVEMENT BUTT JOINT DETAIL
C4.1 NOT TO SCALE

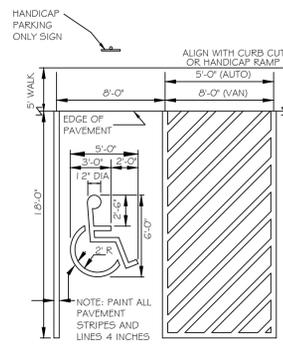


8 BITUMINOUS PAVEMENT SECTION - HEAVY DUTY
C4.1 NOT TO SCALE

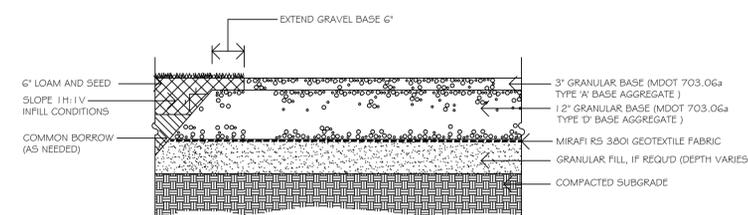


NOTES
1. SEED WITH 'SHADY MIX' AS DISTRIBUTED BY ALLEN, STERLING, AND LOTHROP OF FALMOUTH, MAINE AT A RATE OF 5 LBS PER 1,000 SQUARE FEET AND MULCH.

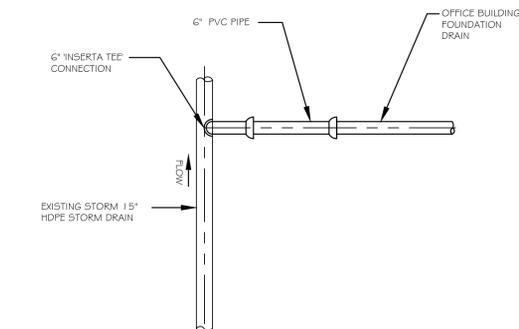
2 LOAM AND SEED DETAIL
C4.1 NOT TO SCALE



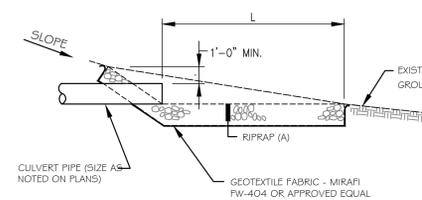
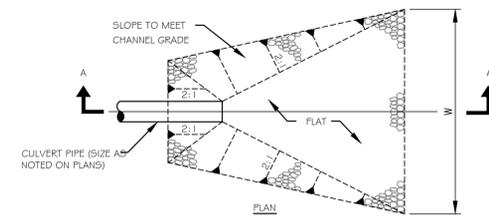
3 ACCESSIBLE PARKING STALL DETAIL
C4.1 NOT TO SCALE



9 GRAVEL PAVEMENT SECTION
C4.1 NOT TO SCALE



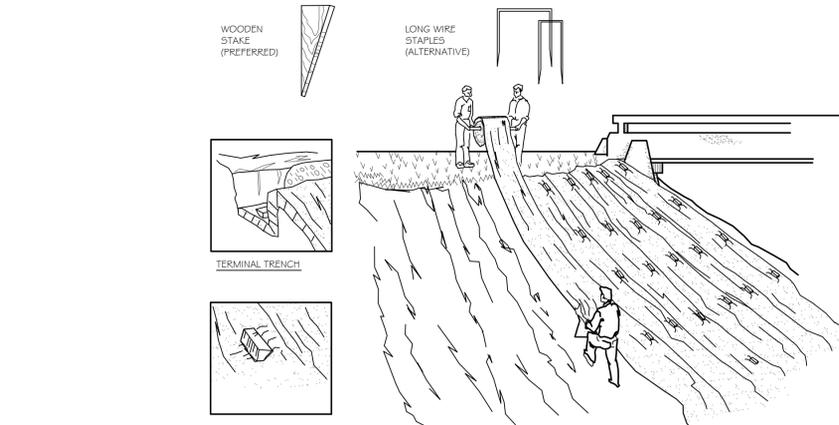
10 FOUNDATION DRAIN - STORM DRAIN CONNECTION
C4.1 NOT TO SCALE



DIAMETER	L	W	A	D ₅₀
15"	6'	5'	15"	6"

4 RIPRAP APRON DETAIL
C4.1 NOT TO SCALE

5 BITUMINOUS PAVEMENT SECTION - PARKING AREAS
C4.1 NOT TO SCALE

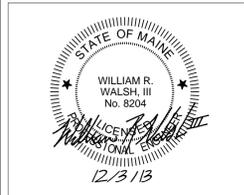


INSTALLATION INSTRUCTIONS:

- TURF REINFORCEMENT MAT MATERIAL SHALL BE ENKAMAT 7020, OR APPROVED EQUAL. EROSION CONTROL BLANKET SHALL BE CURLEX II, OR APPROVED EQUAL.
- APPLY 3" OF LOAM ONTO THE GROUND SURFACE.
- OVER TOP THE 3" OF LOAM, UNROLL MAT IN THE DIRECTION OF WATER FLOW.
- MAT SHOULD LIE FLAT. DO NOT STRETCH MAT OVER GROUND. STRETCHING MAY CAUSE MAT TO BRIDGE DEPRESSIONS IN THE SURFACE AND ALLOW EROSION UNDERNEATH.
- BURY TRANSVERSE TERMINAL ENDS OF MAT TO SECURE AND PREVENT EROSION UNDERNEATH.
- SECURE MAT SNUGLY INTO ALL TRANSVERSE CHECK SLOTS.
- BACKFILL AND COMPACT TRENCHES AND CHECK SLOTS AFTER STAKING THE MAT IN BOTTOM OF TRENCH.
- OVERLAP ROLL ENDS BY THREE (3) FEET (MIN.) WITH UPSLOPE MAT ON TOP TO PREVENT UPLIFT OF MAT END BY WATER FLOW, IF INSTALLING IN THE DIRECTION OF A CONCENTRATED WATER FLOW, START NEW ROLLS IN A TRANSVERSE DITCH.
- OVERLAP ADJACENT EDGES OF MAT BY THREE (3) INCHES (MIN.) AND STAKE.
- USE WOOD STAKES OR STAPLES FOR PINNING MAT TO THE GROUND SURFACE, PER MANUFACTURER'S RECOMMENDATIONS.
- IN ALL TRANSVERSE TERMINAL TRENCHES AND CHECK SLOTS, STAKE EACH MAT AT ITS CENTER AND OVERLAP EDGES BEFORE BACKFILLING AND COMPACTING.
- STAKE OVERLAPS LONGITUDINALLY AT THREE (3) TO FIVE (5) FOOT INTERVALS.
- WORK ADDITIONAL LOAM INTO THE MAT AND COVER THE MAT SURFACE WITH 1" OF LOAM, THEN SEED AND MULCH.

11 GENERAL INSTALLATION GUIDELINES FOR TURF REINFORCEMENT MAT
C4.1 NOT TO SCALE

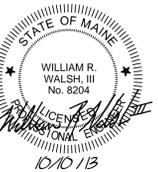
FOR PERMITTING - NOT FOR CONSTRUCTION



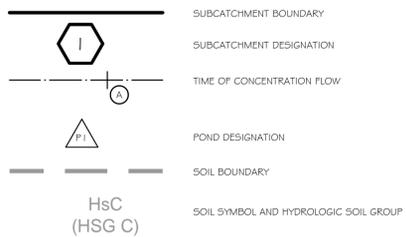
Lewiston Zero-Sort™ Facility
424 River Road
Lewiston, ME
Casella Recycling, LLC
14 Bunker Hill Industrial Park
Charlestown, MA 02129

Rev.	Date	Description	Drawn	Check
1	10/30/13	Submitted for MDEP review	AMC	WRW
2	11/26/13	Appendum 1-Added detail	WTE	WRW
2	12/3/13	Revised per City of Lewiston Comments	SWC	WRW

Sheet Title:
SITE DETAILS
Job No.: 197
Date: Nov. 26, 2013
Scale: NOT TO SCALE
Drawn: WTE
Checked: WRW
Sheet No.:
C4.1



DRAINAGE LEGEND



Tc FLOW LINE DATA:

SUBCATCHMENT 1		
SEGMENT	LENGTH	SLOPE
A-B	50'	0.053
B-C	20'	0.222
C-D	530'	0.036
SUBCATCHMENT 2 5 MINUTE MINIMUM		
SUBCATCHMENT 3		
SEGMENT	LENGTH	SLOPE
A-B	50'	0.010
B-C	50'	0.010
C-D	340'	0.022
SUBCATCHMENT 4 5 MINUTE MINIMUM		
SUBCATCHMENT 5		
SEGMENT	LENGTH	SLOPE
A-B	120'	0.015
B-C	285'	0.007
C-D	295'	0.034
D-E	130'	0.027
E-F	60'	0.217
F-G	110'	N/A
SUBCATCHMENT 6		
SEGMENT	LENGTH	SLOPE
A-B	150'	0.069
B-C	175'	0.023

SOIL LEGEND:

SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP
BgB:	BEGRADE VERY FINE SANDY LOAM, 2% TO 8% SLOPES	C
Du:	DUNE LAND	A
HfC2:	HARTLAND VERY FINE SANDY LOAM, 0% TO 15% SLOPES	B
HfD2:	HARTLAND VERY FINE SANDY LOAM, 15% TO 25% SLOPES	B
SuD2:	SUFFIELD SILT LOAM, 15% TO 30% SLOPES, ERODED	C
LANDFILL:	LANDFILL COVER MATERIAL (FILL)	C (ASSUMED)

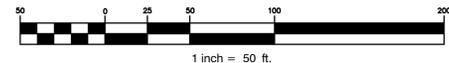
SOURCE: SOIL SURVEY STAFF, NATURAL RESOURCES CONSERVATION SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE, WEB SOIL SURVEY. AVAILABLE ONLINE AT [HTTP://WEBSOILSURVEY.NRCS.USDA.GOV/](http://websoilsurvey.nrcs.usda.gov/).
ACCESSED 7/15/13.

GENERAL NOTES:

- ONSITE CONTOURS AND ELEVATIONS ARE BASED ON GROUND SURVEY PROVIDED BY JONES ASSOCIATES, INC.
- OFFSITE CONTOURS AND ELEVATIONS ARE BASED ON PUBLICLY AVAILABLE LIDAR SURVEY INFORMATION.



GRAPHIC SCALE



FOR PERMITTING - NOT FOR CONSTRUCTION

Lewiston Zero-Sort @ Facility
424 River Road
Lewiston, ME

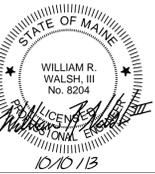
Casella Recycling, LLC
14 Bunker Hill Industrial Park
Charlestown, MA 02129

Rev.	Date	Description	Drawn	Check
1	10/10/13	Submitted for MDP Review	AMC	WRW

Sheet Title:
PRE DEVELOPMENT DRAINAGE PLAN

Job No.: 197
Date: Sept. 17, 2013
Scale: 1" = 50'
Drawn: AMC
Checked: WRW

Sheet No.:
D1.0



Lewiston Zero-Sort @ Facility
424 River Road
Lewiston, ME

Casella Recycling, LLC
14 Bunker Hill Industrial Park
Charlestown, MA 02129

FOR PERMITTING - NOT FOR CONSTRUCTION

Rev.	Date	Description	Drawn	Check
1	10/10/13	Submitted for MDP Review	AMC	WRW

Job No.:	197	Sheet No.:	
Date:	Sept. 17, 2013		
Scale:	1" = 50'		
Drawn:	AMC		
Checked:	WRW		

Sheet Title:
POST DEVELOPMENT DRAINAGE PLAN

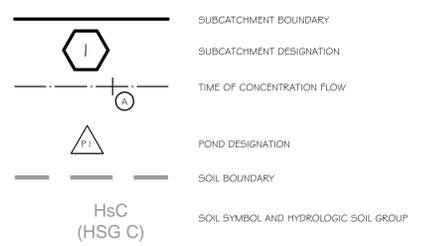
D2.0



To FLOW LINE DATA:

SUBCATCHMENT	SEGMENT	LENGTH	SLOPE	FLOW TYPE	
SUBCATCHMENT 1.0	A-B	50'	0.033	SHEET FLOW	
	B-C	20'	0.222	SHEET FLOW	
	C-D	224'	0.036	SHALLOW CONCENTRATED FLOW	
SUBCATCHMENT 1.1	A-B	30'	0.030	SHEET FLOW	
	B-C	22'	0.069	SHEET FLOW	
	C-D	300'	0.036	SHALLOW CONCENTRATED FLOW	
SUBCATCHMENT 2.0	5 MINUTE MINIMUM				
	SUBCATCHMENT 3.0				
	5 MINUTE MINIMUM				
SUBCATCHMENT 3.1	5 MINUTE MINIMUM				
	SUBCATCHMENT 3.2	5 MINUTE MINIMUM			
		SUBCATCHMENT 4.0	5 MINUTE MINIMUM		
SUBCATCHMENT 5.0			SEGMENT	LENGTH	SLOPE
	A-B		120'	0.015	SHEET FLOW
	B-C	285'	0.007	SHALLOW CONCENTRATED FLOW	
C-D	295'	0.034	SHALLOW CONCENTRATED FLOW		
D-E	130'	0.027	SHALLOW CONCENTRATED FLOW		
E-F	60'	0.217	PARABOLIC CHANNEL FLOW		
F-G	110'	NA	LAKES/RESERVOIR		
SUBCATCHMENT 6.0	SEGMENT	LENGTH	SLOPE	FLOW TYPE	
	A-B	150'	0.069	SHEET FLOW	
B-C	175'	0.023	SHALLOW CONCENTRATED FLOW		

DRAINAGE LEGEND



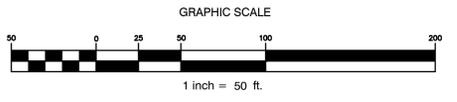
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GENERAL NOTES:

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- OFF-SITE CONTOURS AND ELEVATIONS ARE BASED ON PUBLICLY AVAILABLE LIDAR SURVEY INFORMATION.



D:\2013\197 - Lewiston Zero-Sort @ Facility\DWG\13-D2.0 Post Development Drainage Plan.dwg 10/10/13 10:44 AM

December 4, 2013

Mr. David Hediger
City Planner/Deputy Director Planning and Code Enforcement
City of Lewiston
27 Pine Street
Lewiston, ME 04240-7201

**RE: Response to Staff Comments & Development Review Application
Lewiston Zero-Sort™ Facility
424 River Road
Lewiston, Maine**

Dear Mr. Hediger:

Casella Recycling, LLC and Walsh Engineering Associates, Inc. have reviewed the comments provided by the City of Lewiston Planning Department dated November 14, 2013 and the City of Lewiston Department of Public Works dated November 1, 2013. Please find our responses to the comments below in *italics*:

City of Lewiston Planning and Code Enforcement Comments:

1. "Lighting: Detail should be provided on wall pack lights; these should be cut-off fixtures."
Full cut-off lighting fixture notations have been added to the site plan (Sheet C2.0).
2. "Site plan must contain a signature block for Planning Board chairman and expiration of approval language per Article XIII, Section 11."
The signature block has been added to the site plan (Sheet C2.0).
3. "Prior to a certificate of occupancy being issued a professional engineer must provide a stamped statement indicating all stormwater improvements have been completed in accordance with the approved plan. A note to this effect should be added to the plans."
A note has been added to the site plan (Sheet C2.0) indicating this requirement.
4. "Prior to a certificate of occupancy being issued, an as-built site plan must be provided by a professional surveyor."
A note has been added to the site plan (Sheet C2.0) indicating this requirement.
5. "Applicant should consider requesting a conditional use permit be valid for two years to start construction pursuant to Article X, Section 5. Doing so would make the conditional use approval expiration consistent with the development review expiration period."
The Application Narrative has been revised to request that the conditional use permit be valid for a period of two years from the start of construction. Please refer to the Part II – Conditional Uses, Section 5 - Limitations on conditional use permits.

City of Lewiston Department of Public Works Comments:

Application

1. Exhibit F – Erosion and Sedimentation Control
 - a. “The erosion control plan indicates maintaining a construction entrance, however, none are currently proposed for the site.”

A construction entrance is not included in the design as there will be adequate construction vehicle travel over paved surfaces within the site prior to entering the River Road right-of-way. If sediment is observed to be tracked onto the right-of-way it will be swept at each working day. The Erosion and Sediment Control Plan has been modified accordingly.
 - b. “Note 5 of the Post Construction Revegetation section should specify 90% cover not 80%.”

The report has been modified accordingly.
 - c. “The Erosion Control Removal section should be revised to specify 90% cover not 80%.”

The report has been modified accordingly.
2. Exhibit G – Ability to Serve
 - a. “The pipe sizes indicated match the sizes indicated in the letter”
 - i. *Noted. Thank you for the verification.*

Plans

1. “The existing manhole adjacent to the proposed Waste Storage Building shown on Sheet C3.0 is proposed to be converted to a catch basin, does the existing manhole have and adequate sump to trap sediment?”

Based on recent field measurements there is a 17-inch sump in the existing manhole. It is the opinion of Walsh Engineering Associates that this is an adequate sump depth for a catch basin.
2. “Detail 4 on sheet C4.0 specifies a spacing of 15' between the underdrains, however, note #6 for the detail specifies a maximum distance of 8' between underdrains, which is correct?”

The 15' spacing (as allowed by the Maine Department of Environmental Protection) is correct. Note #6 has been corrected.
3. “Detail 8 on sheet C4.0 specifies and underdrain invert of 221.10, the plans specify 221.90, which is correct?”

The invert of 221.90, as shown on the grading plan, is correct. The invert has been removed from Detail 8 on sheet C4.0 as there is more than one catch basin to be installed at the site.
4. “Sediment pretreatment should be added to the plans to trap sediment from entering the underdrained soil filter from the paved parking lot. Armoring the slope entering the underdrained filter should be considered to prevent erosion.”

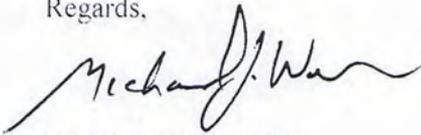
Two 6-inch deep vegetated sedimentation basins have been provided at the north end of the parking lot. The basins have a combined volume of 63 cubic feet, which is approximately three (3) times the annual sedimentation volume based on the Maine DEP Chapter 500 sedimentation volume calculation.

5. Construction oversight for the construction of the underdrained soil filter shall be completed in accordance with section 7.1.4 of Volume III: BMPs technical Design Manual (December 2012 revision). Copies of the reports shall be forwarded to the City.

Noted. The construction inspection schedule has been added to detail 4 on sheet C4.0. Inspection reports will be forwarded to the city.

We look forward to meeting with the Planning Board next Monday. Please call with any questions regarding this response or the enclosed Development Review Application documents.

Regards,



Michael J. Walsh, P.E.
Walsh Engineering Associates, Inc.

- cc. Toni King, Casella Recycling, LLC
Dan Emerson, Casella Recycling, LLC
Ken Robbins, Casella Recycling, LLC
Bill Walsh, Walsh Engineering Associates, Inc.

- enc. Application and supporting documents
Drawings:
 - C1.0 Existing Conditions and Removals Plan
 - C2.0 Site Plan
 - C2.1 Traffic Flow
 - C3.0 Grading, Drainage, and Erosion Control Plan
 - C4.0 Site Details
 - C4.1 Site DetailsCD with PDFs of Application Materials