The attached guidance "Alternative Glass Use Options for MRFs" was developed to assist Material Recovery Facilities (MRFs) that are looking for beneficial reuse options for crushed container glass. This guidance describes different beneficial reuse options as well as if there are approvals and/or exemptions that must be obtained prior to beneficially reusing the glass. This guidance was prepared by the DNR's Waste and Materials Management Program. This guidance relates to the DNR's draft guidance number WA1836 titled "Managing Container Glass in Compliance with Wisconsin’s Land Disposal Ban", which is posted for public comment concurrently.

The department is now soliciting comments on this draft guidance from external stakeholders. Once the 21 day notice period is complete, all comments will be considered, revisions will be made to the guidance as needed, and final guidance will be made available to the appropriate internal and external stakeholders. Comments related to the "Alternative Glass Use Options for MRFs" draft guidance document should be sent to Casey Lamensky at Casey.Lamensky@wisconsin.gov.
Background:
There is increasing interest on the part of Material Recovery Facility (MRF) operators in options for using broken container glass for purposes other than glass cullet as a feedstock for new glass containers. In part this reflects the price of transporting glass, the limited number of outlets for cullet to cullet glass recycling (currently only one in Wisconsin), and the very low price, often a negative price, that recipients of glass pay for MRF glass.

Glass Terminology:
Three-Mix Crushed Glass: “Three-mix crushed glass” though not defined specifically in code or statute, refers to the container glass received and processed by a MRF and may either include or exclude the residual crushed glass stream. Three-mix crushed glass is subject to the land disposal ban in s. 287.07(4)(d), Wisconsin Statutes (Wis. Stats.), as a glass container, and cannot be managed by landfill disposal. Three-mix crushed glass is also a material that MRFs operating as part of a Responsible Unit (RU) program must certify they process to market quality specifications in accordance with s. 544.16(3)(a)15., Wisconsin Administrative Code (Wis. Adm. Code). Three-mix crushed glass can be beneficially reused in several ways outside of landfills and may be able to be beneficially reused within landfill footprints in some cases.

Residual Crushed Glass: “Residual crushed glass” though not defined specifically in code or statute, is glass generated in the process of cleaning or sorting a three-mix crushed glass stream from the same feedstock. Residual crushed glass is not subject to the container glass land disposal ban. Residual crushed glass may be disposed of in a licensed landfill as a solid waste without additional approvals, waivers or exemptions from the department. As with other solid waste streams, facilities have the option to pursue alternatives to landfill disposal of their residual crushed glass. The department has approved residual crushed glass for beneficial reuses in landfills such as daily cover, leachate trench fill media and haul road construction material. Residual crushed glass may also have beneficial reuses outside of the landfill.
All residual crushed glass, whether it is disposed of as a solid waste or beneficially reused, is considered residual material and must be included in a MRF’s calculation of residual material generated. This is used for both determining the amount of waste a MRF can dispose of as Category 30 waste (see WA1755, Guidance for Landfill Tonnage Fee Exemptions Under 2013 Wisconsin Act 301 for more information) and the MRF annual self-certification.

**Approval Process for Non-Landfill Alternative Uses of Crushed Glass:**
Residual crushed glass and three-mix crushed glass have the potential to be beneficially reused in many ways outside of landfill applications. In some reuse cases, no department exemption or approval is needed but in most cases, the beneficial reuses would require a low hazard waste exemption (LHE).

Using glass as sandblast media without further processing the glass once it leaves the MRF would not require any approval or exemption from the department. This type of reuse is different from other glass reuse because the reuse does not result in glass being placed in or on the ground semi-permanently. Instead the glass is reused as a product and then once it is no longer usable, the new waste is properly disposed of.

Section NR 500.08(2)(f), Wis. Adm. Code, exempts facilities where glass is processed or used as an aggregate replacement in asphalt pavement or subbase material under roadways from other solid waste code requirements as long as certain conditions are met. These conditions are:

1. Glass may not be used in areas where the glass will be exposed and may pose a safety threat or in areas that will be frequently disturbed.
2. The amount of contaminants present with the glass such as labels, caps and metal rings shall be minimized to the extent necessary to prevent interference with the performance of the asphalt or roadbed aggregate. Asphalt and roadbed aggregate containing glass shall be designed and used in accordance with generally accepted engineering practices. The glass shall have sufficient properties to perform the function of the aggregate it replaces.
3. Glass shall be collected and stored in a nuisance free manner. Glass stockpiles shall have controlled access to prevent the general public from coming in contact with the glass piles. The number of stockpiles shall be kept to a minimum and may not be spread over a large area. Stockpiles shall be placed on a hard, all weather surface such as asphalt or concrete.

For guidance in meeting this requirement, the Wisconsin Department of Transportation has created specifications for the use of salvaged/aggregate glass materials in road projects. Details can be found in specification 301.2.4.4: [http://wisconsindot.gov/rdwy/standspec/ss-03-01.pdf](http://wisconsindot.gov/rdwy/standspec/ss-03-01.pdf). It should be noted that DOT projects typically have higher standards than what would be needed for less traveled road projects and the department will not hold all projects to these specifications.
Examples of non-landfill beneficial reuses requiring a low hazard waste exemption include: drainage medium for utility trenches or drain tile, aggregate under buildings, decorative landscaping material, use in septic tank treatment systems, glass sand, flowable fill medium, and waste and waste water filter medium. The department has an application for low hazard waste exemption requests to beneficially reuse glass in these ways. The application can be found here: [http://dnr.wi.gov/files/pdf/pubs/wa/wa1540.pdf](http://dnr.wi.gov/files/pdf/pubs/wa/wa1540.pdf).

**Approval Process for Landfill Alternative Uses of Crushed Glass:**

Residual crushed glass can be reused beneficially within the landfill if the landfill has received approval from the department for that use. The glass must be of proper size and must be a high enough percent glass to be effective in its intended use without creating a litter or odor problem. For example, glass for use as daily cover must “control disease vectors, fires, odors, blowing litter and scavenging without presenting a threat to human health and the environment” (s. NR 506.055(3), Wis. Adm. Code). The requirements for proposing an alternative daily cover can be found in s. NR 506.055, Wis. Adm. Code.

Three mix crushed glass can be reused beneficially within the landfill if the landfill has received department approval for that use. Landfills that want to beneficially reuse three-mix glass in their landfill must demonstrate that the glass is effective in its proposed purpose and demonstrate that other glass beneficial reuse options are limited for this material. Please see WA1836 “ Managing Container Glass in Accordance with Wisconsin’s Land Disposal Ban” for additional information.
### Appendix A: Options Tables

<table>
<thead>
<tr>
<th>Glass Stream</th>
<th>Reuse Location</th>
<th>Approval/Exemption Needed</th>
<th>Potential Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three-Mix Crushed Glass (banned from landfill disposal under s. 287.07(4)(d), Stats.)</td>
<td>Reuse in an Active Landfill</td>
<td>Landfill: Plan of Operation Approval or Plan Modification Approval that considers current glass markets and effectiveness of material for proposed use MRF: Not needed (exempt under 287.07(7)(f), Stats.)</td>
<td>ADC, drainage liner media, interior/exterior haul roads, leachate recirculation trench backfill, mounds for gas wells, stabilization fill beneath the liner</td>
</tr>
<tr>
<td>In Asphalt and Under Roadway Reuse</td>
<td>End User: Not needed (exempt under s. NR 500.08(2)(f), Wis. Adm. Code) MRF: Not needed (exempt under s. NR 500.08(2)(f), Wis. Adm. Code)</td>
<td>Asphalt additive, roadway subbase aggregate</td>
<td></td>
</tr>
<tr>
<td>New Product not used in a Semi-Permanent Surface or Subsurface Application</td>
<td>End User: Not needed, material is a new product not going to a semi-permanent surface or subsurface application MRF: Not needed, material is a new product not going to a semi-permanent surface or subsurface application</td>
<td>Sandblast media</td>
<td></td>
</tr>
<tr>
<td>Other Reuse</td>
<td>End User: LHE needed if not obtained by MRF MRF: LHE needed if not obtained by end user</td>
<td>Drainage media, aggregate under a building foundation, aggregate under a parking lot, pavement component, landscaping material</td>
<td></td>
</tr>
<tr>
<td>Glass Stream</td>
<td>Reuse Location</td>
<td>Approval/Exemption Needed</td>
<td>Potential Uses</td>
</tr>
<tr>
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</tr>
<tr>
<td>Residual Crushed Glass</td>
<td>Reuse in an Active Landfill</td>
<td>Landfill: Plan of Operation Approval or Plan Modification Approval that only considers effectiveness of material for proposed use&lt;br&gt;MRF: Not needed because material is not subject to land disposal</td>
<td>ADC, drainage liner media, interior/exterior haul roads, leachate recirculation trench backfill, mounds for gas wells, stabilization fill beneath the liner</td>
</tr>
<tr>
<td></td>
<td>In Asphalt and Under Roadway Reuse</td>
<td>End User: Not needed (exempt under s. NR 500.08(2)(f), Wis. Adm. Code)</td>
<td>Asphalt additive, roadway subbase aggregate</td>
</tr>
<tr>
<td>New Product not used in a Semi-Permanent Surface or Subsurface Application</td>
<td>MRF: Not needed, material is a new product not going to a semi-permanent surface or subsurface application</td>
<td>Sandblast media</td>
<td></td>
</tr>
<tr>
<td>Other Reuse</td>
<td>End User: LHE needed if not obtained by MRF MRF: LHE needed if not obtained by end user</td>
<td>Drainage media, aggregate under a building foundation, aggregate under a parking lot, pavement component, landscaping material</td>
<td></td>
</tr>
</tbody>
</table>
Appendix B: Relevant Statute and Code References:

Disposal Bans:
S. 287.07(4)(d), Stats., bans glass containers from land disposal.
S. 287.07(7)(f), Stats., allows container glass to be placed in landfills if it is being beneficially reused in the landfill and its use is approved in the landfill’s plan of operation approval.

Alternative Uses Outside of Landfills:
S. 289.43(8), Stats. and s. NR 500.08(5)(a), Wis. Adm. Code, cover the department’s authority to issue low hazard waste exemptions.
S. NR 500.08(2)(f), Wis. Adm. Code, allows glass to be used as an aggregate in asphalt pavement or as a subbase material under roadways without a low hazard waste exemption from the department under certain circumstances.

MRF Residuals Calculations:
S. 289.63(6)(d), 289.64(4)(d), 289.645(4)(h), and 289.67(1)(fj), Stats., exempt MRFs from paying certain landfill tipping fees for residuals up to 10% of the weight of materials accepted by the MRF.
S. NR 544.16(4)(d), Wis. Adm. Code, requires a MRF to report the tons and percent of residuals generated over the course of the year.

Landfill Daily Cover:
S. NR 506.055, Wis. Adm. Code, explains the requirements for alternative daily cover.

Contact (608) 266-2111 or DNRWasteMaterials@wisconsin.gov for further information.

Disclaimers: This document is intended solely as guidance and does not include any mandatory requirements except where requirements found in statute or administrative rule are referenced. This guidance does not establish or affect legal rights or obligations and is not finally determinative of any of the issues addressed. This guidance does not create any rights enforceable by any party in litigation with the State of Wisconsin or the Department of Natural Resources. Any regulatory decisions made by the Department of Natural Resources in any manner addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.

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