



# Foundry Sand Reuse in New York

Best Practices & Regulatory Compliance

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## 3. Key Concepts and Definitions

### What is Foundry Sand?

Foundry sand is high-quality silica sand used in the metal casting industry to form molds and cores for New York's diverse industrial base, including automotive, energy, and aerospace casting. Once the sand can no longer be used internally—due to thermal fatigue or binder saturation—it is categorized as **spent foundry sand (SFS)**. In New York, SFS is considered a solid waste unless formally authorized for **Beneficial Use**.

### What is Beneficial Reuse?

In New York, beneficial reuse is a formal determination by the NYSDEC that a solid waste is a suitable substitute for a commercial product or raw material. This determination allows the material to be managed outside of standard solid waste disposal regulations, provided it poses no significant risk to public health or the environment.

## What is the TCLP Test?

The **Toxicity Characteristic Leaching Procedure (TCLP)** (EPA Method 1311) is the standard test required by NYSDEC to verify that a material is not hazardous. Passing TCLP is a mandatory prerequisite for entering the Beneficial Use Determination (BUD) process in New York.

## 4. Regulatory Guidelines

### New York State Dept. of Environmental Conservation (NYSDEC)

**NYSDEC**, specifically the Division of Materials Management, regulates the reuse of industrial byproducts through its solid waste management framework.

#### Specific Legal Citations:

- **6 NYCRR Part 360:** "Solid Waste Management General Requirements." This chapter provides the foundational authority for all waste disposal and reuse in the state.
- **6 NYCRR Part 360-1.15:** "Beneficial Use Determination (BUD)." This is the critical regulatory provision for foundries, outlining the requirements and procedures for securing a BUD for industrial materials.
- **NYSDEC Soil Cleanup Objectives (Part 375):** Provides the environmental benchmarks that must be met if SFS is used in land-based applications like structural fill or soil blending.

## The BUD Process

New York offers two types of BUDs:

1. **Pre-determined (Categorical) BUDs:** For specific, well-characterized materials and applications listed in Part 360.
2. **Case-Specific BUDs:** For unique materials or applications requiring a detailed NYSDEC review of chemical and physical data.

## 5. Reuse Applications and New York Examples

| Application                         | Description                                  | New York Context                                                            |
|-------------------------------------|----------------------------------------------|-----------------------------------------------------------------------------|
| <b>Asphalt Additive</b>             | Used as fine aggregate in hot-mix asphalt.   | A common and well-documented BUD application; widely used in Western NY.    |
| <b>Flowable Fill</b>                | Controlled low-strength material (CLSM).     | High demand in NYC, Buffalo, and Rochester urban utility projects.          |
| <b>Landfill Intermediate Cover</b>  | Use as cover between active landfill phases. | Helps regional landfills meet strict NYSDEC closure and odor rules.         |
| <b>Cement/Concrete Raw Material</b> | Silica source for concrete products.         | Viable for regional pre-cast concrete firms (e.g., in the Syracuse area).   |
| <b>Structural Fill</b>              | Bedding for building pads or embankments.    | Subject to case-specific BUD risk assessment and NYSDEC Part 375 standards. |

## 6. Environmental and Technical Considerations

### Groundwater and Watershed Protection

Due to New York's reliance on sensitive aquifers (e.g., the Long Island Sole Source Aquifer) and vital surface water systems, NYSDEC requires a detailed characterization of any material used in un-bound reuse. Foundries must ensure SFS meets the state's residential or non-residential soil cleanup objectives (Part 375) to ensure zero risk of metal or binder leaching.

## Physical Stability

New York SFS, particularly from the state's high-precision foundries in Buffalo and Rochester, often exhibits high thermal stability and uniform gradation, making it a superior structural fill material that resists the extreme freeze-thaw cycles common in Upstate NY.

## 7. Funding, Grants, and Incentives

### NYSDEC Recycling Business Development Grants

NYSDEC provides grants to New York companies that expand their capacity to process and use recyclable materials. Foundries can apply for these funds to install on-site sand cleaning or thermal reclamation systems.

### NYSERDA Industrial Efficiency Programs

The **New York State Energy Research and Development Authority (NYSERDA)** supports businesses that improve industrial efficiency and reduce their carbon footprint. Projects that significantly reduce "waste-miles" through local sand reuse may qualify for technical or financial support.

## 8. Active Participants in New York

**Major Foundries:**

- **Dresser-Rand** (Olean) - Large-scale casting for energy and industrial sectors.
- **Klein-Steel** (Rochester area) - Major metal supplier and fabricator with regional casting partners.
- **Numerous Precision Foundries:** Concentrated in the Buffalo, Rochester, and Syracuse industrial corridors.

#### Potential End-Users:

- **Tilcon New York** (Regional) - Major asphalt, concrete, and aggregate producer.
- **Peckham Industries** (Hudson Valley/Upstate) - Large-scale paving and civil contractor.
- **NYSDOT (Dept. of Transportation)** - Significant consumer of recycled aggregate for infrastructure.
- **Onondaga County Resource Recovery Agency (OCRRA)** - Major user of Alternative Daily Cover (ADC).

## 9. Success Story Highlights

**Upstate Industrial Loop:** Foundries in the Buffalo-Rochester industrial corridor, including those supplying regional energy and transportation OEMs, have successfully established long-term "Closed-Loop" partnerships with local asphalt plants. By securing a case-specific Beneficial Use Determination (BUD) under 6 NYCRR Part 360 for their spent "Green Sand," these facilities avoid the high gate fees at regional transfer stations (which can reach **\$125.00 per ton**) while providing paving companies with a high-purity, local silica source that replaces expensive virgin aggregate. These initiatives directly align with the NYSDEC's solid waste management goals by significantly reducing the volume of industrial byproducts sent to landfills and minimizing the environmental impact of long-haul waste transport.

## 10. Clear Business Case Summary

1. **Avoidance of Gate Fees:** Saving up to **\$125.00 per ton** (Onondaga County Commercial MSW rate).
2. **Reduced Logistics Costs:** By utilizing sand in local Upstate or Downstate construction rather than long-hauling to remote landfills.
3. **Regulatory Security:** An approved BUD provides long-term legal protection, removing the "waste" stigma and allowing the foundry to market SFS as a product.

## 11. Risk Management Overview

- **BUD Reporting Compliance:** Failure to maintain accurate daily tonnage records and report annually to NYSDEC can result in the revocation of the BUD and retroactive classification of the material as solid waste.
- **Leachate Liability:** For projects in un-bound structural fill, foundries must maintain professional engineering documentation proving that the sand does not pose a risk to New York's sensitive groundwater.

## 12. Step-by-Step Workflow for Foundries

1. **Analytical Profiling:** Conduct a full suite chemical profile per NYSDEC standards, including TCLP and totals.
2. **BUD Submission:** Prepare and submit the formal BUD application to the NYSDEC Division of Materials Management.
3. **Pre-Application Meeting:** Consult with regional NYSDEC staff to review the project scope and characterization data.
4. **End-User Match:** Secure an intake agreement with a local NYSDOT project or asphalt plant.
5. **Implementation:** Maintain daily tonnage records and annual characterization updates for state audits.

## 13. Real Cost Savings Example

**Scenario:** A Syracuse-area foundry generating 2,500 tons of sand annually.

- **Disposal Cost (at \$105.00/ton average):** \$262,500
- **Reuse Program (BUD Filing + Testing + Local Logistics):** \$85,000
- **Annual Savings:** \$177,500

## 15. General FAQ & Landfill-Specific FAQ

**Q: Does New York have "pre-determined" BUDs for sand?**

**A:** Asphalt and concrete ingredients are common pathways, but NYSDEC generally requires a case-specific BUD to ensure the unique binder chemistry of each individual foundry is safe for the intended application.



**Q: Are tipping fees higher in NYC than Syracuse?**

A: Yes, NYC-area rates can exceed **\$150.00/ton**, while Upstate rates typically range from **\$70-\$125/ton**, but both offer a high ROI for sand reuse.

## 16. References

1. **6 NYCRR Part 360:** New York State Solid Waste Management Regulations.
2. **NYSDEC:** Beneficial Use Determinations (BUD) Guidance and Petitions.
3. **Onondaga County Resource Recovery Agency (OCRRA):** 2024-2025 Master Fee Schedule.
4. **Camillus Landfill:** 2026 Solid Waste Tipping Fee Schedule.
5. **Sullivan County:** 2025 Solid Waste and Recycling Disposal Fee Resolution.
6. **EPA SMM Technical Guidance:** Foundry Sand in Transportation Applications.