

Understanding DEP's Requirements for Soil and Fill Materials

Generally, *'fill'* refers to material placed on land for the purpose of filling low areas, changing the contours of an area, stabilizing existing grades and/or raising the grade of an area. Fill usually consists of soils, sands and clays, but may also include non-water-soluble, non-decomposable inert solids such as rock, gravel, brick, block, concrete, glass and/or clay or ceramic products, or any combination thereof, that do not meet the definition of solid waste pursuant to the Solid Waste Rules at N.J.A.C. 7:26-1.6(a)6. For purposes of this document, the terms "soil" and "fill" convey synonymous meaning.

As per the above rules, any fill containing debris (wood, metals, plastics, wire, wallboard, roofing materials, insulation, carpets or padding, trash, etc.), is considered solid waste, cannot be used as fill and must be disposed at an approved solid waste disposal facility.

Fill that does not contain debris, but is determined to have concentrations of one or more hazardous contaminants that exceed the New Jersey Residential Direct Contact Soil Remediation Standards (NJRDCSRS) or New Jersey Non-Residential Direct Contact Soil Remediation Standards (NJNRDCSRS) – whichever is more stringent as set forth in N.J.A.C. 7:26D, Remediation Standards – is also considered solid waste but, under certain conditions, may be used as a "restricted use" fill instead of being disposed. With the appropriate DEP approvals, restricted-use fill can be used as alternative daily cover material at operating landfills, to close terminated landfills, at certain remediation sites, or other beneficial uses as determined and approved by the DEP.

To send restricted-use material to an operating landfill for use as daily or intermediate cover, the generator of the material must contact the landfill operator for acceptability and instructions. A list of landfills operating in New Jersey can be found at www.nj.gov/dep/dshw/lrm/aocslf.htm.

Terminated landfills only may accept restricted-use fill in accordance with a DEP-approved closure and post-closure plan. To obtain information regarding New Jersey terminated landfills that may be accepting restricted-use fill, the generator of the material should contact the DEP's Division of Solid and Hazardous Waste, Bureau of Solid Waste Permitting, at (609) 292-9880.

Restricted-use fill destined for use at a site being remediated pursuant to the Site Remediation Reform Act and under the supervision of a Licensed Site Remediation Professional (LSRP) or under DEP oversight, must be managed in accordance with applicable Site Remediation rules and the most recent Fill Material Guidance for Site Remediation Program sites. For further information regarding regulatory requirements on using restricted-use fill at remediation sites, please refer to the Technical Requirements for Site Remediation, N.J.A.C. 7:26E (www.nj.gov/dep/rules/rules/njac7_26e.pdf). Technical guidance regarding the use of restricted use fill at remediation sites can be found in the Fill Material Guidance for SRP Sites (www.nj.gov/dep/srp/guidance/srra/fill_protocol.pdf?version_3_0).

Restricted-use fill also may be beneficially used at non-remediation sites, subject to DEP review and prior written authorization. Authorization to use restricted-use fill, for beneficial use, requires submission of an application by the generator of the fill (property owner, developer, general contractor, etc. who controls the material when and where first generated) and issuance of a Certificate of Authority to Operate a Beneficial Use Determination (CAO/BUD) project by DEP. Note that any CAO/BUD must be obtained prior to transporting the fill from the generator's site. Guidance regarding Beneficial Use Projects can be found at www.nj.gov/dep/dshw/rntp/bud.htm.

A copy of the CAO/BUD Application Form and instructions for completing the form can be found at www.nj.gov/dep/dshw/rntp/benuseap.htm. To ensure all information needed to complete the review is included, a CAO/BUD Application Review Checklist is provided at www.nj.gov/dep/dshw/rntp/benuse/budchklist.pdf. For further information regarding the CAO approval process – including assistance with sampling and analytical plans, application requirements, beneficial use project evaluations and status of project reviews – please contact the DEP’s Beneficial Use Section at (609) 984-6985.

Approved dredge materials may be used as fill, provided they comply with Coastal Zone Management Rules (www.nj.gov/dep/rules/rules/njac7_7.pdf), specifically N.J.A.C. 7:7-15.12 Dredged material placement on land.

The DEP regulates restricted-use fill and filling activities occurring on or in areas subject to its jurisdiction and authority (wetlands, tidal areas, etc.). Placement of acceptable fill (fill not containing debris and with contaminant levels below NJRDCSRS or NJNRDCSRS, as applicable) in other areas must be conducted in accordance with the destination site’s municipal and county rules, regulations, ordinances and policies, including compliance with any local soil importation ordinance.

To help assure regulatory compliance and avoid potential liability (including fill removal and remediation costs) and penalty exposure for violations under the Solid Waste Rules and the Discharges of Petroleum and Other Hazardous Substances rules, generators, brokers and transporters of fill, and property owners receiving fill, should ensure the fill does not contain debris and that the fill is not contaminated above the NJRDCSRS or NJNRDCSRS, as applicable. Attached Appendix 1 provides guidance on general sampling and data analysis information to assist in ensuring fill is not contaminated above standards. The appendix also includes information and corresponding rules addressing restricted-use fill.

Disclaimer

Readers of this information should not consider this easy reference document as the sole source of information sufficient in itself to dictate any outcome or decision on the use and or placement of soil and fill material. Readers should refer to the Department's rules and guidance provided throughout this document.

APPENDIX 1

GENERAL SAMPLING AND DATA ANALYSIS INFORMATION FOR ACCEPTABLE (UNRESTRICTED) FILL

- Analyses to determine contaminant levels in fill material generated either in-state or out-of-state must be performed by a New Jersey Certified Laboratory. Lists of Certified Laboratories are available from the Department’s Data Miner website at www13.state.nj.us/DataMiner.
- Fill samples taken shall be analyzed for Total Metals (incl. mercury), Semi-Volatiles, Total Volatiles, Pesticides and PCBs in accordance with the Technical Requirements for Site Remediation, N.J.A.C. 7:26E-2, and the results compared to the maximum acceptable contaminant concentrations for unrestricted use table below. The table below contains the Residential Direct Contact Soil Remediation Standards including the standards where the Non-Residential Direct Contact Soil Remediation Standards exceed the Residential Direct Contact Soil Remediation Standards. Please note these standards may be updated periodically and can be found at www.nj.gov/dep/rules/rules/njac7_26d.pdf
- Generally, one (1) composite sample, taken at the point of fill origin, is sufficient for every 20 cy of fill generated (1½ to 2 dump trucks) or less, unless a soil sampling plan with reduced sampling frequency is reviewed and approved by NJDEP.

Contaminant	Maximum acceptable contaminant concentrations for fill based on DEP Soil Remediation Standards (mg/kg). Fill with contaminant levels exceeding any of these standards is regulated as solid waste unless its use is specifically authorized through the DEP CAO/BUD process, used at a DEP authorized remediation site or used as approved landfill cover material. <small>Note: 1mg/kg = 1 ppm</small>
Metals	
Aluminum	78,000
Antimony	31
Arsenic	19
Barium	16,000
Beryllium	16
Cadmium	78
Cobalt	590
Copper	3,100

Cyanide	47
Lead	400
Manganese	11,000
Mercury	23
Nickel (Soluble salts)	1,600
Selenium	390
Silver	390
Vanadium	78
Zinc	23,000
Pesticides	
Acrolein	0.5
Acrylonitrile	0.9
Aldrin	0.04
Chlordane (alpha and gamma)	0.2
4,4'-DDD	3
4,4'-DDE	2
4,4'-DDT	2
1,3-Dichloropropene (cis and trans)	2
Dieldrin	0.04
Endosulfan I and Endosulfan II (alpha and beta)	470
Endosulfan sulfate	470
Endrin	23
Ethyl benzene	7,800
alpha-HCH (alpha-BHC)	0.1
beta-HCH (beta-BHC)	0.4
Heptachlor	0.1
Heptachlor epoxide	0.07
Lindane (gamma-HCH) (gamma-BHC)	0.4
Methoxychlor	390
Toxaphene	0.6
Semi-volatiles	
Acenaphthene	3,400
Acenaphthylene	300,000
Acetophenone	2
Anthracene	17,000
Atrazine	210
Benzaldehyde	6100
Benzidine	0.7

Benzo(a)anthracene (1,2-Benzanthracene)	5
Benzo(a)pyrene	0.5
Benzo(b)fluoranthene (3,4-Benzofluoranthene)	5
Benzo(ghi)perylene	30,000
Benzo(k)fluoranthene	45
1,1'-Biphenyl	61
Bis(2-chloroethyl)ether	0.4
Bis(2-chloroisopropyl)ether	23
Bis(2-ethylhexyl) phthalate	35
Butyl benzyl phthalate	1,200
Caprolactam	31,000
Carbazole	24
2-Chlorophenol (o-Chlorophenol)	310
Chrysene	450
Dibenz(a,h)anthracene	0.5
3,3'-Dichlorobenzidine	1
2,4-Dichlorophenol	180
Diethyl phthalate	49,000
2,4-Dimethyl phenol	1,200
Di-n-butyl phthalate	6,100
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)	6
2,4-Dinitrophenol	120
2,4-Dinitrotoluene	0.7
2,6-Dinitrotoluene	0.7
2,4-Dinitrotoluene/2,6-Dinitrotoluene (mixture)	0.7
Di-n-octyl phthalate	2,400
1,2-Diphenylhydrazine	0.7
Fluoranthene	2,300
Fluorene	2,300
Hexachlorobenzene	0.3
Hexachloro-1,3-butadiene	6
Hexachlorocyclopentadiene	45
Hexachloroethane	12
Indeno(1,2,3-cd)pyrene	5
Isophorone	510
2-Methylnaphthalene	230
2-Methylphenol (o-Creosol)	310
4-Methylphenol (p-Creosol)	31

Naphthalene	6
2-Nitroaniline	39
Nitrobenzene	5
N-Nitrosodimethylamine	0.7
N-Nitrosodi-n-propylamine	0.2
N-Nitrosodiphenylamine	99
Pentachlorophenol	0.9
Phenanthrene	300,000
Phenol	18,000
Pyrene	1,700
2,4,5-Trichlorophenol	6,100
2,4,6-Trichlorophenol	19
Volatiles	
Acetone (2-Propanone)	70,000
Benzene	2
Bromodichloromethane (Dichlorobromomethane)	1
Bromoform	81
Bromomethane (Methyl bromide)	25
2-Butanone (Methyl ethyl ketone) (MEK)	3,100
Carbon disulfide	7,800
Carbon tetrachloride	2
Chlorobenzene	510
Chloroethane (Ethyl chloride)	220
Chloroform	0.6
Chloromethane (Methyl chloride)	4
Dibromochloromethane (Chlorodibromomethane)	3
1,2-Dibromo-3-chloropropane	0.08
1,2-Dibromoethane	0.008
1,2-Dichlorobenzene (o- Dichlorobenzene)	5,300
1,3-Dichlorobenzene (m- Dichlorobenzene)	5,300
1,4-Dichlorobenzene (p- Dichlorobenzene)	5
Dichlorodifluoromethane	490
1,1-Dichloroethane	8
1,2-Dichloroethane	0.9
1,1-Dichloroethene	11

1,2-Dichloroethene (cis) (c-1,2-Dichloroethylene)	230
1,2-Dichloroethene (trans) (t-1,2-Dichloroethylene)	300
1,2-Dichloropropane	2
Methyl acetate	78,000
Methylene chloride (Dichloromethane)	46
Methyl tert-butyl ether (MTBE)	110
Styrene	90
Tertiary butyl alcohol (TBA)	1,400
1,1,2,2-Tetrachloroethane	1
Tetrachloroethene (PCE) (Tetrachloroethylene)	43
Toluene	6,300
1,2,4-Trichlorobenzene	73
1,1,1-Trichloroethane	160,000
1,1,2-Trichloroethane	2
Trichloroethene (TCE) (Trichloroethylene)	3
Trichlorofluoromethane	23,000
Vinyl chloride	0.7
Xylenes	12,000
Polychlorinated biphenyls (PCBs)	
= Total of the following compounds. Aroclor-1016 Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248 Aroclor-1254 Aroclor-1260 Aroclor-1262 Aroclor-1268	0.2

GENERAL SAMPLING AND DATA ANALYSIS INFORMATION FOR RESTRICTED-USE FILL

- Determining the suitability of restricted-use fill is significantly more complex and depends not only on the concentrations of contaminants in the origin fill but also on the existing characteristics of the deposition site.

The following regulations must be followed:

- N.J.A.C. 7:26C et seq. – The Administrative Requirements for the Remediation of Contaminated Sites
- N.J.A.C. 7:26D et seq. – Remediation Standards
- N.J.A.C. 7:26E et seq. – The Technical Requirements for Site Remediation

Additionally, the following guidance documents should be consulted:

- NJDEP Field Sampling Procedures Manual
- NJDEP Guidance Document: Fill Material Guidance for SRP Sites

All these references and documents are also updated periodically, please check the DEP web site at www.nj.gov/dep/srp/ for the most recent versions.

- Due to the complexities regarding the use of restricted fill, the DEP recommends that you seek professional advice from LSRPs who understand these requirements and routinely interact with the DEP's Site Remediation and Waste Management Programs. A listing of LSRPs can be found at www13.state.nj.us/DataMiner/Search/SearchByCategory?isExternal=y&getCategory=y&catName=Site+Remediation.