Guidance for Beneficial Use of Soil and Non-Soil Material in the Remediation of Contaminated Sites and Closure of Solid Waste Landfills

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I. Goal

The purpose of this document is to provide guidance for the Site Remediation Program (SRP) regarding the beneficial use of contaminated soil and non-soil materials, that might otherwise become solid waste, in a way that is protective of human health, safety and the environment. Certain waste types including, but not limited to, "RCRA hazardous wastes" and certain PCB wastes regulated under the Toxic Substance Control Act are prohibited for use or reuse under this guidance document. Also, in no way is this guidance to be construed as endorsing the use of contaminated material when uncontaminated material is required to be protective of human health and/or the environment. The goal of this guidance is to provide alternative choices for fill where appropriate, but to ultimately follow the mandate to not make a given site worse than it currently is.

II. General Information

For the purposes of this guidance document, the term "beneficial use" means the use or reuse of a contaminated soil or non-soil material, exhibiting contaminant concentrations above the most restrictive soil standard or guidance value, for fill and/or capping material, as an effective alternative for a commercial product. Beneficial use material may be used at a contaminated site or a landfill as a constructive part of a remedial action or closure with written approval of the New Jersey Department of Environmental Protection (Department) pursuant to Solid Waste Regulations at N.J.A.C. 7:26-1.7(g). Use of such contaminated material would not be for final capping purposes, as only material below all regulatory concern shall be used for this purpose.

Purposes where filling would be considered as an allowable part of the remediation include the following:

Leveling of the grade where insufficient material is on site and where reasonable changes in design will not eliminate the need for the material or where the Department approves the proposed design.

With Department approval, raising the elevation of the site in order to preclude flooding that might compromise the integrity of the selected remedial alternative, provided compliance with regulations including storm water control, flood hazard, and/or soil erosion area are achieved as well as any relevant permitting requirements to include those under the jurisdiction of the Land Use Regulation Program.

Material needs dictated by a cap design that is approved by the Department.

Exceptions approved by the Department on a case by case basis following a full review by the Department of the potential negative impacts and benefits.

“Soil” is defined within the Technical Requirements for Site Remediation, N.J.A.C. 7:26E-1.8 as "unconsolidated mineral or organic matter on the surface of the earth that has been subjected to and influenced by geologic and other environmental factors.”

“Non-soil”, for purposes of this guidance document, are those types of material that do not meet the definition of a "soil". Examples of non-soil material include, but are not limited to, coal ashes, asphalt millings, masonry fines, construction site fill, and construction and demolition screenings.

Dredged material and amended (or processed) dredged material are exempt from this guidance and will be subject to a separate guidance document to be drafted by the Department’s Office of Dredging and Sediment Technology (ODST). The use of dredged material and amended dredged material at contaminated sites/solid waste landfills will

continue to be evaluated on a case-by-case basis by the ODST and appropriate SRP personnel (i.e., Case Manager). Approval of the use of dredged material and amended dredged material at contaminated sites/solid waste landfills shall be issued in writing by SRP, in conjunction with an Acceptable Use Determination (AUD) from the ODST.

For purposes of this document, the term "site of origin" means the site from where the soil and non-soil material proposed to be utilized for beneficial use comes from or originates. The term "receiving site" means the existing contaminated site or solid waste landfill (collectively "site/ landfill") where the material will be used.

Soils proposed for re-use at a contaminated site or a solid waste landfill (a subset of contaminated sites), with contamination exceeding the Department's applicable soil standard or guidance (http://www.nj.gov/dep/srp/regs/rs/), shall not impact ground water or surface water quality or present a risk from direct contact or vapor intrusion into buildings. Therefore, sites that contain soils with contamination exceeding the applicable soil standard or guidance value shall have appropriate containment systems/engineering controls, (e.g., have an appropriate cap and barrier wall and gas control and leachate control systems), as approved by the Department. The installation of engineering controls/containment systems is also warranted due to the fact that contaminant mass will increase at the site/landfill when contaminated materials from an off-site source are used for beneficial reuse. The Department must ensure that these engineering controls/containment systems are installed at the site prior to the placement of the proposed reuse materials, to the extent practicable.

The use of any engineering controls shall include an approved long-term operation, maintenance, and monitoring program. Specific requirements for establishing and maintaining engineering and institutional controls (Deed Notices and Classification Exception Areas) are provided at N.J.A.C. 7:26E-6.1(e); -6.2(a) 18; and -8 et seq.

SRP will not approve the use of contaminated soil or non-soil material at an uncontaminated property/landfill as part of site remediation/landfill closure. This limitation shall also apply to sites that have previously been remediated and issued an unconditional No Further Action

Letter. The purpose of this restriction is to eliminate the potential for creating "new" contaminated sites and discharges to ground water as part of the remediation/closure process. Furthermore, the placement of material in areas also under the jurisdiction of the Pinelands Commission is unique because of the applicable non-degradation policy. The non-degradation policy shall be addressed appropriately by a proposal for material use or reuse. The probable outcome is the prohibition of the placement of the contaminated material.

Please note that the guidance will handle typical site remediation sites and landfills differently. The process for evaluating beneficial reuse proposals is the same for both types of sites. However, the two types of sites differ in that the extent to which the contaminant distribution present can be determined. Site remediation sites are generally delineated for the purpose of determining the best remedial options, and consequently, the contaminant distribution is relatively well defined. Furthermore, in many cases remedies (excavation, treatment, etc.) are applied which permanently reduce the threat posed by contaminants. Landfills are more typically characterized (rather than delineated) because many different contaminants are potentially present and their distribution pattern is likely more random. This approach to characterize landfills is largely justified by the presumption that a site-wide containment system will be employed that will be protective of any end use. Because of these differences, the approach to evaluating the receiving sites will necessarily differ between landfills and other more typical contaminated sites.

The last aspect of this guidance deals with the evaluation of the material that is being placed. It is recognized that there is greater uncertainty regarding contaminant presence and distribution at landfills and this makes risk evaluation more difficult. While it is acknowledged that not all landfills are worst case situations, actions that may unknowingly increase the contaminant concentrations of concern present certainly add to the potential issues. Because the evaluation of the material to be placed at landfills in part reflects the inability to delineate contamination at landfills, less detail will be available to determine the suitability of material to be placed. However, there is the expectation that all of this will be compensated for by the requirement of more protective remedial actions (full horizontal and vertical containment). Nevertheless, to be conservative, those landfill areas where receptors

are potentially in close proximity to significant contamination are not recommended at all for single family, residential construction. Facilities such as day cares, schools, etc., where the receptor may be of particular concern, should also be precluded. Furthermore, non-residential use, in general, is preferable to residential use because the differences in exposure reduce the potential adverse impacts of the contamination present.

The most preferred use is for open space such as for parks or "green projects" such as alternative energy generation projects (solar power is one example). Again such use minimizes the contaminant exposure concerns. It also reflects the position that it is much more difficult to construct buildings on landfills. The engineering properties of the underlying material present challenges and in the opinion of many, are not worth the potential liability incurred. This guidance will not try to resolve this issue, but instead will defer all responsibility to those certified experts in the design and engineering professions, who develop and will be required to warrant such construction. Please note that any such warranty must include a written justification that includes appropriate data and an evaluation of why construction should be permitted from a structural and geotechnical basis.

III. Document Organization

The subsequent sections of this document are organized in a manner to allow the reader to identify the pertinent sections and obtain the needed direction to implement a beneficial reuse plan. A section by section description follows.

Section IV, Parts A, B, and C are similar in structure and describe the steps needed to implement a beneficial reuse plan for the three material sources this guidance covers. Each of Part A, B, and C deals with soil materials that strictly originate from on-site; soil materials that strictly originate from off-site, and all non-soil materials, respectively.

Section V describes the evaluation of the proposed receiving site. Part A is for contaminated sites typically remediated by the Department. Part B is applicable to the evaluation of landfill type sites.

Section VI describes the evaluation of the material proposed for placement at the receiving sites. Section VI, Part A is most applicable to material that has been delineated as part of the remedial investigation process. The maximum concentration of the material to be placed (derived in Section IV) is compared to the 75th percentile of all the data from the receiving site for any given contaminant (from Section V). Section VI, Part B is where composite data are the basis of the evaluation of the material to be placed. In this case, for a given contaminant, the mean of all the data at the receiving sites (from Section V) is compared to the mean of all the data for the material being proposed for placement (from Section IV).

ATTACHMENT A describes the collection and analysis of material being proposed for placement where discrete data are not available for the evaluation. The resulting data are considered to be composite data.

IV. Process for Evaluating Beneficial Reuse Proposals

A. Contaminated soil from on-site reused on the same remediation site (including landfills)

1. The person responsible for conducting the site remediation/landfill closure, who wants to use contaminated soil and/or historic fill (as defined in N.J.A.C. 7:26E-1.8) from on-site, shall prepare a soil reuse proposal (SRUP) consistent with the intent of the Technical Requirements for Site Remediation, N.J.A.C. 7:26E-6.4(d) and submit the SRUP to the assigned SRP Case Manager.

2. The SRP Case Manager shall, in concert with a Case Team and/or the Section Chief of the lead element, evaluate the SRUP utilizing all applicable Department regulations and policies (e.g., Technical Requirements for Site Remediation, Guidance Document for the Remediation of Contaminated Soils (June 1996, Revised 1998), the Solid Waste Rules at N.J.A.C. 7:26-2A.8b.13-18 (when appropriate), etc.) as well as evaluate the quality of the soil pursuant to the guidance in this document. The proposed reuse should not be approved if it is likely to result in a new area of concern

or the potential for a new discharge to ground water or surface water. The proposed reuse shall also not be approved if doing so is counter to the site remedial goals as determined by the Department.

3. As per the current Technical Requirements for Site Remediation (N.J.A.C. 7:26E-1.4), the party responsible for conducting the remediation, excluding remediations of underground storage tanks storing heating oil for on-site consumption in a one to four family residential building, is required to make certain notifications prior to beginning remedial activities. This requirement is still applicable. However, approval by non-Departmental entities notified of the proposed actions would not be required for work to be initiated. This notification process should occur following Department approval of the SRUP.

4. Under the proposed rule, Notification of the Remediation of Contaminated Sites and Public Outreach (See 39 N.J.R. 2687(a), August 6, 2007 for proposal), there may be changes to the above. If adopted as anticipated, the notification would be by the person responsible for the remediation and would be by sign or letter at least two weeks prior to the initiation of remedial investigation and/or remediation. If the notification is by letter, there will be a specified list of recipients. Please note that requirements beyond this are likely and the source that needs to be ultimately consulted is the rule in its adopted form.

B. Contaminated soil from off-site source used on the remediation site (including landfills)

1. The person responsible for conducting the site remediation/landfill closure who wants to use contaminated soil and/or historic fill (as defined in N.J.A.C. 7:26E-1.8) from off-site at the receiving site, shall prepare a SRUP consistent with the intent of the Technical Requirements for Site Remediation, N.J.A.C. 7:26E-6.4(d) and submit the SRUP to the assigned SRP Case Manager.

2. The SRP Case Manager shall, in concert with a Case Team and/or the Section Chief of the lead element evaluate the SRUP utilizing all applicable Department regulations

and policies (e.g., Technical Requirements for Site Remediation, Guidance Document for the Remediation of Contaminated Soils (June 1996, Revised 1998), the Solid Waste Rules at N.J.A.C. 7:26-2A.8b.13-18 (when appropriate), etc.) as well as evaluate the quality of the soil pursuant to the guidance in this document. The proposed reuse should not be approved if it is likely to result in a new area of concern or the potential for a new discharge to ground water or surface water. The proposed reuse shall also not be approved if doing so is counter to the site remedial goals as determined by the Department. After consultation with the Case Team and/or the Section Chief of the lead element in SRP, the Case Manager will provide a written recommendation to the Bureau Chief of the lead element or the assigned representative regarding the SRUP approval.

3. As per the current Technical Requirements for Site Remediation (N.J.A.C. 7:26E-1.4), the party responsible for conducting the remediation, excluding remediations of underground storage tanks storing heating oil for on-site consumption in a one to four family residential building, is required to make certain notifications prior to beginning remedial activities. This requirement is still in force. However, approval by non-Departmental entities notified of the proposed actions would not be required for work to be initiated. This notification process should occur following Department approval of the SRUP. The exception to this would be if there were fill amounts proposed beyond that required to remediate the site in the judgement of the Department.

4. Under the proposed rule, Notification of the Remediation of Contaminated Sites and Public Outreach (See 39 N.J.R. 2687(a), August 6, 2007 for proposal), there may be changes to the above. If adopted as anticipated, the notification would be by the person responsible for the remediation and would be by sign or letter at least two weeks prior to the initiation of remedial investigation and/or remediation. If the notification is by letter, there will be a specified list of recipients. Please note that requirements beyond this are likely and the source that needs to be ultimately consulted is the rule in its adopted form.

5. If the amount of fill, in the judgement of the Department, being proposed for placement is in excess of that needed to construct the remediation/engineering controls approved within the Remedial Action Workplan and/or Landfill Closure Plan, the person responsible for the remediation shall no later than two weeks prior to initiating field activities:

   a. Send a notification by certified mail to:
      (1) Each owner of all real property and tenants of those properties located within 200 feet of the site boundary;
      (2) The mayor of each municipality where the site located;
      (3) The county designated solid waste coordinator;
      (4) The local health official, and
      (5) The assigned case manager or designated alternate.

   b. Include the following in the notification:
      (1) A description of the proposed use of contaminated material at the site;
      (2) The anticipated contaminant concentrations of the material;
      (3) The amount of material proposed to be brought on to the site;
      (4) The controls designed to reduce or eliminate exposure to the contamination; and
      (5) A tentative schedule for the activity.

   The concern about excess fill is that it potentially represents de facto landfill operation without a permit and consequently without the benefit of public input. Furthermore, it can be seen as in contradiction of the current solid waste regulations and the placement of the fill may result in adverse impacts incurred by the general public through remediation liabilities if development can not be completed.

6. The Bureau Chief of the lead element or the assigned representative will approve or deny the SRUP following evaluation of any received comments provided under the above items. Any resolution of the concerns raised that are subsequently provided by the person responsible for the remediation may also be considered. The evaluation of

the fill placement in excess of remedial needs will emphasize the examination of the nature and distribution of the contamination relative to the type and proximity of any receptors present currently or present under a potential future use. This is a mandatory part of the approval process. This will ensure any potential negative impacts are fully assessed. The person responsible for the remediation is required to notify the same parties (those initially notified) of the Department's final determination.

C. Contaminated non-soil material to be used on the remediation site (including landfills)

1. The person responsible for conducting the site remediation/landfill closure who wants to use non-soil material at a contaminated site/landfill site shall first apply for a certificate of authority to operate a beneficial reuse project (BUD) from the Solid and Hazardous Waste Program for a determination as to whether the non-soil material meets the beneficial use criteria pursuant to N.J.A.C. 7:26-1.7(g) and the guidance in this document.

2. Upon receipt of written approval from the Solid and Hazardous Waste Program stating that the non-soil material meets the beneficial use criteria of N.J.A.C. 7:26-1.7(g) and the guidance in this document, the person shall submit the BUD to the SRP Case Manager to determine, pursuant to the Technical Rules and N.J.A.C. 7:26-2A.8(b) 13-18, if the use of non-soil material is consistent with the remediation/landfill closure goals established for the site/landfill.

3. As per the current Technical Requirements for Site Remediation (N.J.A.C. 7:26E-1.4), the party responsible for conducting the remediation, excluding remediations of underground storage tanks storing heating oil for on-site consumption in a one to four family residential building, is required to make certain notifications prior to beginning remedial activities. This requirement is still in force. However, approval by non-Departmental entities notified of the proposed actions would not be required for work to be initiated. This notification process should occur following Department approval

of the BUD. The exception to this would be if there are fill amounts proposed beyond that required to remediate the site in the judgement of the Department.

4. Under the proposed rule, Notification of the Remediation of Contaminated Sites and Public Outreach (See 39 N.J.R. 2687(a), August 6, 2007 for proposal), there may be changes to the above. If adopted as anticipated, the notification would be by the person responsible for the remediation and would be by sign or letter at least two weeks prior to the initiation of remedial investigation and/or remediation. If the notification is by letter, there will be a specified list of recipients. Please note that requirements beyond this are likely and the source that needs to be ultimately consulted is the rule in its adopted form.

5. If in fact the amount of fill, in the judgement of the Department, being proposed for placement is in excess of that needed to construct the remediation/engineering controls approved within the Remedial Action Workplan and/or Landfill Closure Plan, the person responsible for the remediation shall no later than two weeks prior to initiating field activities:

   a. Send a notification by certified mail to:
      (1) Each owner of all real property and tenants of those properties located within 200 feet of the site boundary;
      (2) The mayor of each municipality where the site located;
      (3) The county designated solid waste coordinator;
      (4) The local health official, and
      (5) The assigned case manager or designated alternate

   b. Include the following in the notification:
      (1) A description of the proposed use of contaminated material at the site;
      (2) The anticipated contaminant concentrations of the material;
      (3) The amount of material proposed to be brought on to the site;

(4) The controls designed to reduce or eliminate exposure to the contamination; and

(5) A tentative schedule for the activity.

The concern about excess fill is that it potentially represents de facto landfill operation without a permit and consequently without the benefit of public input. Furthermore, it can be seen as in contradiction of the current solid waste regulations and the placement of the fill may result in adverse impacts incurred by the general public through remediation liabilities if development can not be completed.

6. The Bureau Chief of the lead element or the assigned representative will approve or deny the BUD following receipt of any comments provided under the above items. Any resolution of the concerns raised that are subsequently provided by the person responsible for the remediation may also be considered. The evaluation of the fill placement in excess of remedial needs will emphasize the examination of the nature and distribution of the contamination relative to the type and proximity of any receptors present currently or present under a potential future use. This is a mandatory part of the approval process. This will ensure any potential negative impacts are fully assessed. The person responsible for the remediation is then required to notify the same parties (those initially notified) of the Department's final determination.

V. Evaluating the Site Receiving the Beneficial Reuse Material

A. Site Remediation Sites

For site remediation sites, SRUPs; BUDs; and/or AUDs should not be formally considered until there is sufficient site investigation data to determine the extent and nature of the site contamination. Typically this would be after the remedial investigation and prior to the remedial action. The data available for the receiving site shall be evaluated to determine the contaminants and levels of concentration at the site. The Department will not approve material for beneficial use that contains contaminants different than what is presently on the receiving

site, except as noted in Section VI below. In addition, concentrations for a given contaminant in the beneficial use material cannot exceed the concentrations in the receiving site except as described in Section VI below. This provision applies to materials from on-site and off-site sources that exceed an unrestricted use standard as defined by N.J.A.C. 7:26E-1.8. Furthermore, reuse of contaminated soils within uncontaminated areas of the site or areas previously remediated to the most restrictive, applicable soil standard or guidance value shall not be approved.

B. Landfills

For landfills, the contaminants and levels of concentration will be instead characterized rather than delineated. The level of characterization will directly reflect the proposed end use. The recommended sampling default levels are as follows:

Exposure Scenario	Sample Locations
Trespass	1 per 2 acres with a minimum of 1 per site if less than 2 acres
Nonresidential	2 per 1 acre with a minimum of 1 per site if less than one half acre
Residential	4 per 1 acre with a minimum of 4 per site if less than 1 acre

Sampling at each location is to be conducted at the top and bottom of the waste (not to include clean capping material if present). If possible, the bottom sample is to be substituted by a sample from the soil column biased to the worst case situation based on site-specific visual observations and/or instrument readings. If deemed necessary, additional discrete sampling may be required by the Case Team/Department. Also, investigations (test pits, geophysical

surveys, etc.) for buried drums and/or free liquid product must be accomplished at landfills where the end use is planned or may be residential in nature. In all cases, liquid free product and buried drums must be appropriately addressed with removal being the default option.

For both typical contaminated sites and landfills, existing data of suitable quality may be used in this evaluation. If nothing is known about the site, full analytical suite testing is the default choice. This means the samples shall be analyzed for the Target Compound List + 30/Target Analyte List analytes. With appropriate justification a more focused suite of contaminants can be employed rather than a full analytical suite. For example, if a site has been inactive for an extended period of time and there is no evidence to suggest volatile organic contaminants or free product are a concern, then volatile organic contaminants may be omitted from the targeted compound list. A suitable proposed end use would also influence this decision as well.

For all the above, Department discretion is allowed.

VI. Evaluating the Beneficial Use Material Prior to Placement

A. Discrete Data

For site remediation sites, the person responsible for conducting the site remediation may use the data gathered at the receiving site as part of a remedial investigation (RI) at the receiving site, conducted pursuant to N.J.A.C. 7:26E-4, to determine if the criteria listed in 1. through 4. below have been met. If an RI has not been completed (at the originating site), the material from the originating site must be sampled in accordance with the Attachment A, "Sample Characterization Requirements".

Only non-hazardous material may be used for beneficial use at any site. The person responsible for conducting the remediation shall determine whether the material proposed for beneficial use is non-hazardous waste pursuant to N.J.A.C. 7:26G, and shall submit a statement of classification to the Department which states that the material is non-hazardous. Similarly, material that contains dioxin expressed as total equivalents for 2, 3, 7, 8 TCDD at

concentrations above the accepted remediation/action levels is not to be used as fill. Polychlorinated biphenyls containing material must be below 10 milligrams per kilogram in order to be used unless site specific approval from EPA Region II relative to TSCA is obtained. Such material is not exempt from any capping requirements in order to provide the needed level of receptor protection deemed appropriate based on the relevant soil standard or guidance value.

In general, beneficial use material can only contain the same contaminants as those found at the receiving site. However, contaminants that are similar to those found in the receiving site, such as different types of phthalates, can be beneficially used with SRP approval on a site-specific basis after review by the SRP Case Manager/Case Team.

For the evaluation of discrete sample data, the maximum concentration of a contaminant in the beneficial use material from the originating site cannot exceed the 75^{th} percentile of the contaminant concentration at the receiving site. The 75^{th} percentile was selected to provide a measure of conservatism and yet allow some exceedance of the average at the receiving site by individual values in the imported material. Use of the 75^{th} percentile means that outliers and the most extreme values at the receiving site are excluded from the evaluation of whether or not the material from the site of origin is acceptable. The net result is that the most extreme value found in the material to be placed must be less than 75% of all the concentrations at the receiving site. This ensures that the concentration at the receiving site does not increase. It is also protective of potential omissions due to limited sampling of the material to be placed.

To determine if the beneficial use material from the originating site does not exceed the 75^{th} percentile limit:

1. Determine the 75^{th} percentile of the receiving site data for each contaminant.

2. For an even number of samples when the 75^{th} percentile falls between two data points, determine the average of the two data points. For example, if there are 10 samples, average the values of the 7^{th} and 8^{th} data points to determine the 75^{th} percentile.

3. Determine the highest concentration of each contaminant in the data set from the originating site.

4. Compare the highest concentration of each contaminant in the data set from the receiving site with the 75th percentile concentration for each contaminant in the data set from the originating site.

B. Composite Data

Composite data will generally result from the evaluation of material for placement using Attachment A. For composite sample data[1], if any of the data to be compared are not derived from discrete samples, averages of the two sets of data are to be the basis for determining whether or not the material can be used at the receiving site. Composite data are more typical of landfill situations. Averages are appropriate because the analytical results of the composite samples represent the mixture of the discrete samples being evaluated. Such a result reflects the blending of the original discrete samples and is, therefore, more equivalent to a mean than a distinct data point. The average contaminant concentration of the originating site material can not exceed the average contaminant concentration of the material at the receiving site. Again, this reflects the concept of not making the receiving site more contaminated as a result of the importation of material.

If materials contaminated with volatile compounds are proposed for placement at a site, appropriate sampling is essential. Under the Technical Requirements, volatile compound contaminated samples can not be physically homogenized and must be handled as discrete samples. The individual analytical results can be evaluated through a mathematical average of the discrete data points.

[1]Composite sampling generally typifies an effort where characterization rather than delineation or clean zone determination is the goal. The presumption is that the material proposed for placement will likely be extensively mixed during the excavation, handling, and placement processes. As such, an average will more likely reflect the final situation rather than the initial data from the originating site. It is also important to note that the expected mixing also serves to reduce the concern about "hot spot" concentrations at the originating site. It is not unreasonable to expect a reduction of higher concentrations in the post-placement situation commensurate with the mixing as represented by the calculated average. This of course assumes the material is accurately characterized and that it is a reasonable expectation that the volume of material being evaluated will be mixed.

The case team is to provide the initial or preliminary acceptance or rejection of this material. The goal is not to make the site more contaminated from a concentration perspective. Similarly, contaminating clean or cleaner areas of the same site is not desired. In addition, the remedial actions must be modified to appropriately address the increased mass of contaminants that will be present. This would include precluding vapor intrusion as well as impacts to ground water. This guidance is not intended to focus only on disposal of contaminated material to the detriment of the solid waste regulations, but primarily as a means to remediate sites in a more efficient manner that leads to other sites being closed out at levels below those of any regulatory concern resulting in an overall environmental benefit.

Please note that this guidance is not intended to contravene or preclude any actions required by other Federal, State, or local laws or regulations.

ATTACHMENT A

Sample Characterization Requirements

The following is the sample characterization protocol for **soil and non-soil material being proposed for beneficial use from an originating site at which a remedial investigation has not been completed.** All materials originating from sites that have not been properly evaluated (Remedial Investigation), must be sampled in accordance with the following protocol prior to their reuse at remediation and landfill sites[2]. The samples collected pursuant to this protocol shall be analyzed for Target Compound List + 30/Target Analyte List analytes and the results compared with sampling data from the receiving site to determine if the criteria for beneficial use of the material have been met. With Department concurrence, the full analytical suite may be reduced provided sufficient justification is provided. This includes the evaluation of data collected previously assuming it is of adequate quality.

The sample collection design is the same as that used for hazardous waste characteristic testing. This was purposely done to potentially avoid redundant sampling efforts for the same material. The use of this scheme was not intended to be applied exclusively and can be varied from with Department approval. This would potentially include the use of an evaluation pursuant to N.J.A.C. 7:26E-6.4(d).

If materials contaminated with volatile compounds are proposed for placement at a site, appropriate sampling is essential. Under the Technical Requirements, volatile compound contaminated samples can not be physically homogenized and must be handled as discrete samples. The individual analytical results can be evaluated via the mathematical average of the discrete data points.

Note that the Department reserves the right to amend this protocol.

I. Determining the proper number of samples for soils to be brought onto the site

[2] To the extent that composite samples are used, the comments made in the first footnote also apply here.

A. For fill volume up to and including 900 cubic yards:

1. Divide the fill material into grids representing no more than 20 cubic yards.
2. Collect 1 sample from each grid.
3. If the fill material appears relatively homogeneous, up to 5 adjacent grid samples may be composited on an equal basis, at the laboratory, to make an "area composite" sample.
4. Relative to large, non-homogeneous material, sampling guidance in the Field Sampling Procedures Manual and/or the analytical method would constitute the initial basis of how to proceed. Where not specified, sampling would be biased to the worst case situation.

B. For fill volume greater than 900 and up to and including 9,000 cubic yards:

1. Divide the fill material into 45 equal grids.

    a. If the volume of each grid is less than 100 cubic yards, collect a "grid composite" by taking 1 sample for each 20 cubic yards within the grid.

    b. If the grids are greater than or equal to 100 cubic yards, collect a "grid composite" by taking and compositing 5 random samples within the grid.

2. If the waste appears relatively homogeneous, composite up to 5 adjacent "grid composites" on an equal weight basis, at the laboratory to make each "area composite".

3. Relative to large, non-homogeneous material, sampling guidance in the Field Sampling Procedures Manual and/or the analytical method would constitute the initial basis of how to proceed. Where not specified, sampling would be biased to the worst case situation.

C. For fill volume greater than 9000 and up to and including 45,000 cubic yards:

1. Divide the fill material into 45 equal grids and collect a “grid composite” by taking and compositing 5 random samples within the grid.

2. Do not composite the “grid composites”.

3. If the material is large and non-homogeneous in nature, also do not composite to make a grid composite. On a case-specific basis, the case team may decide to use instead the worst case sampling result in combination with a lesser rate of compositing relative to the large size fraction.

B. For volumes larger than 45,000 cubic yards, lower sample per volume rates may be utilized. The Department should be consulted for the determination of the appropriate rate.

II. Sample collection

Sample collection, preservation and handling must be performed in accordance with N.J.A.C. 7:26E-2 and with the latest edition of the “New Jersey Department of Environmental Protection, Field Sampling Procedures Manual”, as amended.