Topic: **Engineering and Institutional Controls**

Description of the issue:
Historically, site remediation required the total removal of the contamination source(s) or implementing permanent means to reduce the contaminant levels to accepted Department standards. It has been found that such permanent remedies may be technically infeasible or cost prohibitive; therefore, the need for and use of non-permanent remedies has become more prevalent. To ensure vigilance in the protection of human health and the environment, a number of site-specific engineering and institutional controls must be implemented and maintained for cases where non-permanent remedies have been found to be the best available course of action.

Engineering controls are used as part of a final remedy in remediations that allow contamination to remain onsite above Department standards. These controls consist of any physical mechanism to contain or stabilize contamination while ensuring the effectiveness of a remedial action over time. Common examples of such controls include caps, covers, dikes, trenches, leachate collection systems, signs, fences, physical access controls, ground water monitoring systems and ground water containment systems, slurry walls and ground water pumping systems.

Institutional controls provide notice to the public in the form of a deed notice or classification exception area that contaminants remain in the soil and or groundwater above the Department's standard. These controls include mechanisms used to limit human activities at or near a contaminated site as well as ensuring the effectiveness of the remedial action over time. Common examples of such controls may include structure, land, and natural resource use restrictions, well restriction areas, ground water classification exception areas, deed notices, and declarations of environmental restrictions.

Although engineering and institutional controls have been found to be effective in the majority of cases, there is not a high level of confidence in the protectiveness of remedial actions employing the use of non-permanent remedies in some segments of the population. There are also concerns regarding proper notification when a property changes ownership and/or use (e.g., industrial to residential) and that information about the specified controls is adequately conveyed to the new owner. The use of engineering and institutional controls requires systems to be in place to ensure long-term monitoring and maintenance. The ongoing responsibility to monitor and maintain the controls primarily lies with the responsible party and the current property owner. In addition, the Department conducts site inspections at least once every five years to verify continued compliance.

Steps need to be taken to gain more confidence in the use of non-permanent remedies that are dependent on effective engineering and institutional controls so that the pace of cleanups and/or developments will not be negatively impacted and the resultant costs of remediations are contained to the maximum extent possible. Another critical need going forward is to find the means to ensure that the Department has the necessary resources and staffing to continue meeting its statutory obligations as the number of such sites continue to grow at an accelerated rate.

DEP's Current Authority:
The Brownfield and Contaminated Site Remediation Act (Brownfield Act), at N.J.S.A. 58:10B-12g(1), requires the Department to approve a restricted use or limited use remedial action (including the use of engineering and institutional controls), as long as the selected remedy is protective of public health and the environment. The Brownfield Act also requires, at N.J.S.A. 58:10B-13.1, monitoring and maintenance of the engineering and institutional controls by the remediating party or the current property owner and the submittal of a biennial certification to the Department verifying that the controls continue to remain protective.

Background:
In 1993, the Hazardous Discharge Site Remediation Act S1070 limited the Department's authority in the remedy selection process. The Act stated a preference for permanent remedies, however, the use of nonpermanent remedies was allowed. This effectively reduced the Department's involvement in remedy selection. S1070 limited the factors the Department could evaluate to: (1) a determination of the protectiveness of the remedy; (2) a two-fold cost differential between implementing a permanent vs. nonpermanent remedy; or (3) a 10% cost differential between implementing a residential vs. nonresidential standard remedy.

In 1998, the Brownfield Act further limited the Department's ability to select a remedy. The Brownfield Act deleted the 10 percent cost differential and the two-fold cost differential provisions. That left the Department with only the authority to determine whether or not the remedy was "protective". The Brownfield Act retained the stated preference for permanent remedies, but allowed for nonpermanent remedies (remedies with engineering and institutional controls). Both S1070 and the Brownfield Act required the placement of a deed notice (institutional control) on the property with the implementation of a nonpermanent remedy. Additionally, if a responsible party proposes a nonpermanent remedy and does not own the property, the property owner has to agree to the placement of the deed notice. If the property owner does not agree, the responsible party has to implement a permanent remedy on that particular property. As such, the use of engineering and institutional controls is consistent with current law regardless of the statutory language that references a "preference for permanent remedies".

The Brownfield Act also requires the Department to issue a covenant not to sue to the person performing the remediation whenever it issues a No Further Action (NFA) letter. The covenant remains effective for as long as the conditions of the NFA are met. The Act requires that for any remediation that involves the use of engineering or institutional controls, the person performing the remediation, or a the subsequent property owner, must monitor and maintain the controls and submit to the Department on a biennial basis a certification that the controls are being properly maintained and continue to be protective of public health and safety and of the environment. The Department's receipt of biennial certifications and monitoring reports is the only means through which the Department can ensure that long-term monitoring and maintenance occurs and that the implemented remedy remains protective over time. The Department must rely on self-monitoring and reporting by those responsible due to the volume of such sites with respect to available Departmental resources.

Monitoring the protectiveness of the remedy is critical, particularly in light of potential exposure in the event that the property use changes to one that is inconsistent with the restrictions specified in the remedy. Therefore, the Department initiated a statewide enforcement action in the Fall of 2007, targeting those who failed to submit the biennial certification report to the Department. When the action was initiated, approximately two thirds of the remediating parties or property owners had failed to submit a biennial certification. To date, almost 75% of the two thirds have submitted certifications.

Some sites remediated under the Department's publicly funded program also utilize engineering and institutional controls. Although it is the preference of the Department to institute unrestricted remedies, the Department is also required to apply a cost effective analysis when selecting a remedy. Even with operation and maintenance costs factored into the overall cost analysis, there remain times that restricted use remedies are the most cost effective.

Stakeholder comments:
Stakeholders expressed two major concerns with the use of engineering and institutional controls: reliability and proper notification. In general, the stakeholders believed that the level of oversight and enforcement for engineering and institutional controls should be increased to improve compliance and better ensure protectiveness of the remedial action over time. This oversight could be provided by the Department or by local governmental agencies.

Some stakeholders firmly believed that most caps fail; others firmly believe most are protective. It was noted that failure is a greater problem when the levels of contamination left under the cap are high. One commentor noted that institutional controls are put in place to address chronic exposure risks not acute risks. There was discussion about "hot spot" removals as one means of ensuring lower exposure risks in case of cap failure. It was noted that over 90% of the brownfield sites use some type of an engineering or institutional control.

Stakeholders expressed concerns regarding changes of use or "flipping" of properties. Any time a property undergoes a change of use (industrial to residential) there is the potential for unacceptable exposures. It was noted that there needs to be mechanisms in place to ensure changes in use over time are carefully monitored at the local level and that additional remediation occurs if a use is to change from industrial/commercial to educational or residential.

The regulated community expressed concerns that a site, remediated for an industrial use, could be converted to a residential use without the knowledge of the original responsible party and that the original responsible party would be required to pay the cost for the additional remediation.

Currently, persons responsible for monitoring the effectiveness of their engineering and institutional controls are required to perform inspections of the controls to ensure their protectiveness and submit biennial certifications to the Department that confirm the controls are being properly maintained and are protective. Many stakeholders support the

development and utilization of a permitting program to track responsible parties who are required to ensure the proper maintenance of an engineering and/or institutional control. The permit holder would be required for compliance with the permit and any associated monitoring and reporting to the NJDEP. For example, a permit program would provide the NJDEP with a mechanism to promote the proper maintenance of capped sites without mandating environmental insurance initiatives.

Stakeholders, in general felt that notification to the general public and key entities, such as landowners, municipalities, developers, and utility companies should be improved. The thought was that if these groups were better informed of the risks and the ongoing requirements for engineering and institutional controls, future exposures would be minimized. Municipal representatives also expressed the desire to be better informed of sites that have engineering and institutional controls in their towns so that they can help monitor these sites and ensure against local approvals for inappropriate uses. [See Municipal Issues paper.] One stakeholder suggested a legislative tie-in between the deed notice and "One Call" the Underground Facility Protection Act requiring the identification of underground utilities.

Concerns were expressed about the ability of certain parties, such as single family homeowners and homeowner associations, to comply with the maintenance and reporting obligations associated with engineering and institutional controls over time. Similarly, there were concerns that these entities were even aware of the fact that there was contamination controlled by engineering mechanisms on their properties.

Stakeholders agreed, in general, that there needs to be assurances in place so that, if an engineering control were to fail, there is a process and dollars to fix the problem. It was noted in situations where the engineering control fails, it is up to government and the remediating parties to identify a process that would serve as a safety net. There was some discussion related to environmental insurance or other funding mechanisms that could be made available to address problems when controls fail. (See the Environmental Insurance white paper.)

Another alternative presented by the Department was the use of products like the Sentinel Trust™ or Guardian Trust™. The Sentinel Trust™ does not assume the role of the responsible party but provides engineering and institutional control tracking and monitoring service ensuring the integrity of the controls are intact. Both of these companies use trust funds as its fiduciary source with insurance backing up the trust funds. Both operate as non-profit corporations, but use for-profit money managers. The Guardian Trust™ assumes the role of the responsible entity while the Sentinel Trust™ provides services for the responsible party. These trusts pool funds together in order to spread the risk in case of a catastrophic failure at one site. They have slightly different business models. The Guardian Trust™ requires all parties responsible for the monitoring, maintenance and reporting to contribute to the trust. This ensures that all sites are professionally managed and the risk pool is statewide. The use of this model would require legislation to require all parties to contribute to the fund. The Sentinel Trust™ is a site-specific contract, and has more flexibility than the Guardian Trust™. A party contracts with the Sentinel Trust™ as to the level of involvement of the trust

that the party wants at the site. It may or may not cover everything necessary, including remedy failure. The Sentinel Trust™ is currently available and does not require legislation to implement its use. Legislation would be required if the "model" of contracting with professional organizations were to be required for everyone. As with insurance products discussed above, the cost would be dependent on the specific remedy and the associated maintenance costs.

The regulated community expressed concerns about the use of the Sentinel Trust™ or Guardian Trusts™. For example, a party that has just purchased a property at which there is an engineering or institutional control may have used all available funds at the real estate closing and thus may not have funds available to contribute to the fund. The regulated community was also concerned about remediation standards changing by an order of magnitude or more in the future. In these cases, the Department may require a responsible entity to do additional remediation at the site to ensure that the site remains protective. The cost of the additional remediation could be the responsibility of the trust. Since it is unknown when or how often remediation standards might change in the future, the trust fund would have to exist in perpetuity. The regulated community was concerned that the Guardian Trust™ would not be implemented for some time, since its use would probably require legislation. They were also concerned that the Sentinel Trust™ would result in a lack of consistency since its terms are negotiated on a site-by-site basis, or that the cost of using the Sentinel Trust™ might be more than the cost if a responsible entity performed the remediation itself.

One stakeholder recommended that the Department consider different levels of institutional controls based on the end use or the levels/types of contamination left behind. Several stakeholders stressed that engineering controls should not be used at sites where there is a vulnerable population and/or significant risks of exposure, specifically engineering and institutional controls should not be allowed in case of certain end uses, such as residential or educational. The potential for such a policy to have adverse impacts on building new schools in urban areas and redevelopment was noted. Some stakeholders commented on the fact that urban communities have a higher number of contaminated sites already and allowing high levels of contamination to be left under caps is undesirable.

Others expressed that without the use of engineering and institutional controls, the cost to remediate many brownfield sites would be prohibitive and would slow or altogether stop economic recovery in urban areas. It was noted that housing costs in New Jersey are already high and developers are leaving for other states. Individuals expressed concerns that many of the less contaminated or less complicated brownfields sites (the low hanging fruit) have already been developed so adding more stringent requirements to future cleanups would result in less redevelopment at the remaining more contaminated/complicated sites. Some felt that doing away with controls would result in irreparable harm.

It was suggested that the Department require more stringent capping requirements when a property's end use is residential or educational. Whereas a 1-2 foot cap may be acceptable for an industrial use, it may not be protective enough for a residential use, especially in the instance of single family homes. The Department could require excavation of contaminated

materials to a greater depth for single family homes to avoid exposures associated with constructing a deck, installing a swimming pool, gardening or landscaping.

Stakeholders, in general, felt that current notification or disclosure requirements for new property owners were not adequate, even though there is a standard disclosure form (a requirement of a real estate transaction) made available to stakeholders. Stakeholders expressed the following concerns:

1) The general public's ability to understand the risks associated with the information provided;
2) The fact that the form was one piece of paper among many that are part of a real estate transaction;
3) The fact that information gets "lost" over time or is not being filed properly; and
4) Tenants who lease housing on properties that have institutional and engineering controls do not receive adequate notification of restrictions.

As such, New Jersey needs a more effective means of ensuring environmental information is disclosed every time there is a property transaction or change of ownership/lease.

Other States:
In a recent survey conducted by the Association of State and Territorial Solid Waste Management Officials (ASTSWMO), 39 of 41 states that participated in the survey acknowledged the use of institutional controls in their cleanup programs. Ninety five percent of the states use institutional controls in their voluntary cleanup programs. Eighty-three percent of responding states allowed the use of institutional controls in their Brownfield programs.

Some areas where states have taken different approaches include: the taking of easements (2/3 may, 1/3 do not), required notifications regarding the placement of institutional controls (10 States include no notification requirements at all while other states include some combination of required notifications to the local government, the state, abutters, legal notices in newspapers or other), monitoring requirements (for example, if there are any, how often its conducted and who performs the monitoring), and whether states will revisit remedies with institutional controls if cleanup standards change in the future (with 2/3 indicating that they might). Only about half of the respondents said there is some form of state oversight of institutional controls.