

**COMMENTS BY PETER ANDERSON OF
THE CENTER FOR A COMPETITIVE WASTE INDUSTRY
ON BEHALF OF SIERRA CLUB CALIFORNIA
RELATING TO THE ICF'S PROPOSED REVISED WORK PLAN**

We greatly appreciate the opportunity to provide timely comment on the ICF's proposed revised work plan for the analysis intended to reform current inadequate financial assurance rules so that the state's taxpayers will not wind up responsible for major long term landfill liabilities.

By affording this early opportunity to comment, mid-course corrections can be undertaken while there is still time to do so. This is an excellent procedure and we commend the Board for doing so. As you may recall, most of the GeoSyntec work on the landfill data base had been done before comments were solicited, making it impossible to secure needed corrections.

In summary, if we understand what is proposed, the revised work plan would exclude from consideration the following important matters for which the Board needs detailed information with which to revise its regulations, and it makes possibly inappropriate assumptions.

① ***Financial Assurance After 40 Year Postclosure.*** In view of the fact that current financial assurance requirements – as distinguished from nominal legal liability – terminate 40 years after closure, the Board needs to know what data exists to assess the probability that the current landfill owners: (a) will be in existence 50, 100 and 200 years in the future; and, if so (b) will at that time have the financial capacity to pay for (i) minor routine maintenance, (ii) non-routine major maintenance, and (iii) remediation for corrective actions; and, if so, (c) whether the owners can be confidently relied upon to pay for these costs, which are non-revenue producing. Absent very strong evidence of all three predicates, there would be no supportable alternative but to assume through the remainder of the analysis that maintenance activity would decline and then cease at or around the end of 40 years following closure, which is when assurances end.

② ***Non-routine Maintenance.*** The routine maintenance costs for such things as mowing grass, leachate treatment and monitoring is what is contemplated in current approved assurances and appear to be what is encompassed in the references to "PCM" in the proposed revision. But, these items do not circumscribe the universe of maintenance costs that will be incurred in the future. Looming far larger are, among the major large-expenditure occurrences of concern: (a) replacement of final covers; (b) unclogging of leachate collection lines and drainage beds; and (c) deterioration of liners – which if not maintained insure massive site failures to follow.

(a) *Covers.* Because the Subtitle D rules for lined landfills allow for steep 3:1 (H:V) side slopes, 16 years after their promulgation the industry still does not know how to reliably stabilize vegetation on the critical final cover for the necessary period of time. For the same geomembrane used to provide a low permeable barrier can afford too slippery a base upon which vegetation can take root without the overlying dirt layer sliding off. This is why several states have required shallower 4:1 (H:V) sideslopes. But most are unwilling to lose airspace just to stabilize the site. Then there is the extensive problem of roots and burrowing animals tearing through the cover system, which the USEPA's Inspector General and others have documented. Without an effective barrier for longer than 100 years on the top and sides of a landfill, precipitation and runoff will enter the waste mass, reignite a second wave of gas and leachate production,

and otherwise generally threaten to destabilize the site, including catastrophic landslides. This is why the entire basis of lined landfills rests upon maintaining the integrity of the cover essentially forever, something which it is now recognized often cannot even be done effectively in the short term, which is why so few final covers have yet to be installed. Costs to recurrently replace the cover, which typically costs more than \$125,000 per acre to install (or more than \$20 million for a site) are not now accounted for in assurances, and reliable estimates of the cost and frequency of occurrence need to be made.

(b) *LCS*. Moisture will inevitably find pathways into a landfill. To prevent liquids that accumulate from causing liner failure, overflowing or landslides, leachate collection pipes are laid about every 200 feet across the bottom of the landfill in trenches. As such, these lines are mission critical for the safety of the landfill, though everything about them predisposes the systems to failure later, beginning with unrelenting biological and chemical forces causing clogging. The lines extend a distance of a quarter mile or more under hundreds of feet of garbage that has been heavily compacted to a density of more than 2,200 pounds per cubic yard. The lines themselves are usually made of 6-inch diameter perforated PVC pipe, instead of slightly more expensive HDPE, which are delivered to the site in 20 foot segments where they are glued together instead of fused like with high density pipes, and can become unglued. The lines are nested in gravel drainage beds that consist of geotextile screens, sand and gravel. Selection of the gravel and screens is controversial because in an effort to avoid one problem they then fall into another problem. Geotextile screens are advocated by some to prevent clogging of the drainage bed, while others stoutly maintain that the screens themselves will more quickly become clogged. Some argue for large diameter gravel to discourage clogging, while others deplore the risk that large pieces of gravel pose to the integrity of the collection pipes and sometimes to the liner itself. To save money, many landfills use limestone gravel, oblivious to the fact that precipitation of calcium carbonate soon becomes too hardened to be cleared out with water pressure, instead of harder granite. With all of these problems, cost cutting and uncertainties, clogging in either or both the lines and drainage bed is inevitable. An unscientific telephone survey of its regional offices by the Wisconsin Department of Natural Resources in 2005 found that at least 59 collection lines had been clogged in Wisconsin actively managed landfills to the point that the clean-out jetter's passage was obstructed, of which 50 blockages remained unresolved and uncorrected at that time. California has almost 10 times the number of landfills as Wisconsin. Unfortunately, GeoSyntec refused to document LCS blockages while they were compiling the California landfill data base, so data collection of the record of blockages of these lines will have to be done from scratch. Once estimates of the frequency of occurrence have been developed for the long term, including after annual clean outs possibly cease, then the question of how much it will cost to repair a pipe through as much as 500 feet of 10 million tons of heavily compacted trash overburden. The only report of which we are aware was a repair through 80 feet, which cost \$1.4 million, for just one obstruction. When landfill owner's dramatically scaled up in landfill size in the mid 1990's in order to capture scale efficiencies, no one thought through the fact that the facilities were being made too big to fix. Now that long term costs and assurance issues are being seriously considered, however, the cost implications of fatally short sighted design decisions will finally have to be addressed.

(c) *Liners*. The preceding shows the distinct probability that there is no way to

assure that the hydraulic head remains less than 30 cm for the foreseeable future in order to protect the liner, and this problem is compounded by the fact that there is no direct instrumentation to measure the head to know if there is a problem and if so how bad a problem there is. Throughout the period of the 1980s when the landfill rules were being developed EPA's technical staff itself repeatedly warned that even composite liners "will ultimately fail" within decades after the agency's post-closure care requirements have expired, "and when they do, "leachate will migrate out of the facility." That is to say, again, the entire design basis for MSW landfills is fatally flawed, only at best postponing, not preventing, problems. How to repair deteriorating liners under a hundred million tons of garbage, and the cost of doing so, is something that the consultant will need to confront.

③ ***Financial Means Test.*** In 1999, the CIWMB effectively ended captive assurance as an acceptable assurance mechanism because corporate IOUs provided neither third party protection by diversification of risk nor segregated funds. However, at the time, the Board did not follow this same point to the financial means test, which also provides no third party protection. There needs to be an analysis of whether corporate IOUs can survive a crash test.

④ ***Statewide Pooled Fund Not Insurance.*** If we understand the discussion in the revised work plan, there may be an intent to later hold that the pooled fund alternative can provide the equivalent assurance benefits of long-term catastrophic insurance. If this is what is adumbrated, we doubt that a case can be made for equivalence for the following reasons. First, the magnitude of potential long term liabilities for corrective action is so great that the kind of pooled premiums would not be in the same league. Second, insurance is normally risk based, while pooled funds are not. With the enormous outsized siting risks taken in California, including landfills in close proximity to active earthquake faults and drinking water supplies, as well as being located in wetlands and on the Bay, any failure to fully assign coverage of those risks to those responsible would be an incalculably grave mistake with the most profound consequences. Third, only insurance has the determination of the magnitude of risk made by trained risk assessors who have to put their own money behind their conclusions, which pooled funds do not. The history of state pooled funds, such as hurricane insurance pools, is that they are massively underfunded due to political pressures, as well as not being risk based.

⑤ ***Balancing Test Imbalanced.*** The Administrative Burden criteria seems to suggest that the evaluation should balance the capacity of a mechanism to protect California's taxpayers from costs of long-term landfill liabilities against the cost of doing so upon the landfill owner. If this is what is contemplated, that would justify providing less than adequate assurance to the taxpayer merely because of the burden on the owner. That would not be an appropriate balancing test. The only proper one would arise in which two alternative mechanisms demonstrably provided the same assurance, then the relative burdens on the owner could be considered.

⑥ ***Nuclear Decommissioning Not a Template.*** The proposed revision makes frequent reference to borrowing from the consultant's analysis of nuclear power plant decommissioning. We question whether decommissioning issues – unlike nuclear accident questions – have relevance beyond the minor set of issues here relating to routine maintenance costs. Decommissioning is far more defined than landfill corrective action because it is specified and fairly well known, unlike the probabilistic risks posed by mega-size landfills in a future which has not yet happened, especially in the case of landfills in patently inappropriate locations or cross-linked to unlined co-disposal sites. The first nuclear plant was built in 1956, and there are 22 facilities awaiting, involved with or completed decommissioning. The first mega-fills were not permitted until the mid 1990s and have yet to fill, nonetheless close or have any postclosure experience.

