Hart Exhibit 5
Part 3 of 3
Docket No. E-2, Sub 1219

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proposal from elected State and local government officials.

F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

Executive Order 13175 (65 FR 67249–67252, November 9, 2000) requires Federal agencies to provide funds to tribes, consult with tribes, and to conduct a tribal summary impact statement, for regulations and other actions which are expected to impose substantial direct compliance costs on one or more Indian tribal governments. Today's co-proposal, whether under subtitle C or subtitle D authority, is likely to impose direct compliance costs on an estimated 495 coal-fired electric utility plants. This estimated plant count is based on operating plants according to the most recent (2007) data available as of mid-2009 from the DOE's Energy Information Administration "Existing Generating Units in the United States by State, Company and Plant 2007." Based on information published by the Center for Media and Democracy,[171] three of the 495 plants are located on tribal lands, but are not owned by tribal governments: (1) Navajo Generating Station in Coconino County, Arizona owned by the Salt River Project; (2) Bonanza Power Plant in Uintah County, Utah owned by the Deseret Generation and Transmission Cooperative; and (3) Four Corners Power Plant in San Juan County, New Mexico owned by the Arizona Public Service Company. The Navajo Generating Station and the Four Corners Power Plant are on lands belonging to the Navajo Nation, while the Bonanza Power Plant is located on the Uintah and Ouray Reservation of the Ute Indian Tribe. According to this same information source, there is one additional coal-fired electric utility plant planned for construction on Navajo Nation tribal land near Farmington, New Mexico, but to be owned by a non-tribal entity (the Desert Rock Energy Facility to be owned by the Desert Rock Energy Company, a Sithe Global Power subsidiary). Because none of the 495 plants are owned by tribal governments, this action does not have tribal implications as specified in Executive Order 13175. Thus, Executive Order 13175 does not apply to this action. EPA solicits comment on the accuracy of the information used for this determination. EPA met with a Tribal President, whose Tribe owns a cement plant, and who was concerned about the adverse impact of designating coal combustion residuals as a hazardous waste and the effect that a hazardous waste designation would have on the plant's business. We assured the Tribal President that we are aware of the "stigma" concerns related to a hazardous waste listing and will be analyzing that issue throughout the rulemaking process.

G. Executive Order 13045: Protection of Children From Environmental Health & Safety Risks

Executive Order (EO) 13045 (62 FR 19885, April 23, 1997) establishes federal executive policy on children's health and safety risks. Its main provision directs federal agencies, to the greatest extent practicable and permitted by law, to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children in the United States. EPA has conducted a risk assessment which includes evaluation of child exposure scenarios, as well as has evaluated Census child population data surrounding the 495 plants affected by today's co-proposal, because today's action meets both of the two criteria for "covered regulatory actions" defined by Section 2–202 of EO 13045: (a) today's co-proposal is expected to be an "economically significant" regulatory action as defined by EO 12866, and (b) based on the risk analysis discussed elsewhere in today's notice, the environmental and safety hazards addressed by this action may have a disproportionate effect on children.

For each covered regulatory action, such as today's action, Section 5 of EO 13045 requires federal agencies (a) to evaluate the environmental health or safety effects of the planned regulation on children, and (b) to explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency. The remainder of this section below addresses both of these requirements, as well as presents a summary of the human health risk assessment findings with respect to child exposure scenarios, and the results of the child demographic data evaluation.

G1. Evaluation of Environmental Health and Safety Effects on Children

EPA conducted a risk evaluation consisting of two steps, focusing on environmental and health effects to adults and to children that may occur due to groundwater contamination. The first step, conducted in 2002, was a screening effort targeting selected hazardous chemical constituents that appeared to be the most likely to pose risks. The second step, conducted between 2003 and 2009, consisted of more detailed "probabilistic" modeling for those constituents identified in the screening as needing further evaluation. Constituents that may cause either cancer or non-cancer effects in humans (*i.e.,* both adults and children) were evaluated under modeling scenarios where they migrate from a CCR landfill or surface impoundment toward a drinking water well or nearby surface water body, and where humans ingest the constituents either by drinking the contaminated groundwater or by eating fish caught in surface water bodies affected by the contaminated groundwater.

As described elsewhere in today's notice, EPA found that for the non-cancer health effects in the groundwater-to-drinking-water pathway and in the fish consumption pathways evaluated in the probabilistic modeling, children rather than adults had the higher exposures. This result stems from the fact that while at a given exposure point (*e.g.,* a drinking water well located a certain distance and direction down-gradient from the landfill or surface impoundment), the modeled groundwater concentration is the same regardless of whether the receptor is an adult or a child. Thus the other variables in the exposure equations (that relate drinking water intakes or fish consumption rates and body weight to a daily "dose" of the constituent) mean that, on a per-kilogram-body-weight basis, children are exposed to higher levels of constituents than adults.

G2. Evaluation of Children's Population Census Data Surrounding Affected Electric Utility Plants

The RIA for today's co-proposal contains an evaluation of whether children may disproportionately live near the 495 electric utility plants potentially affected by this rulemaking. This demographic data analysis is supplemental to and separate from the risk assessment summarized above. To make this determination, the RIA compares Census demographic data on child populations residing near each of the 495 affected plants, to statewide children population data. The results of that evaluation are summarized here.

- Of the 495 electric utility plants, 383 of the plants (77%) operate CCR disposal units on-site (*i.e.,* onsite landfills or onsite surface

[171] The Center for Media and Democracy (CMD) was founded in 1993 as an independent, non-profit, non-partisan, public interest organization. Information about electric utility plants located on tribal lands is from CMD's SourceWatch Encyclopedia at: *http://www.sourcewatch.org/index.php?title=Coal_and_Native_American_tribal_lands.*

impoundments), 84 electric utility plants solely transport CCRs to offsite disposal units operated by other companies (*e.g.,* commercial waste management companies), and 28 other electric utility plants generate CCRs that are solely beneficially used rather than disposed. Child demographic data is evaluated in the RIA for all 495 plants because some regulatory options could affect the future CCR management method (*i.e.,* disposal versus beneficial use) for some plants.

- The RIA provides three complementary approaches to comparison of child populations surrounding the 495 plants to statewide child population data: (a) Plant-by-plant comparison basis, (b) state-by-state aggregation comparison basis, and (c) nationwide total comparison basis. There are year 2000 Census data for 464 (94%) of the 495 electric utility plants which the RIA used for these comparisons and extrapolated to all 495 plants. Statewide children population benchmark percentages range from 21.5% (Maine) to 30.9% (Utah), with a nationwide average of 24.7%.
- For purpose of determining the relative degree by which children may exceed these statewide percentages, the percentages are not only compared in absolute terms, but also compared as a numerical ratio whereby a ratio of 1.00 indicates that the child population percentage living near an electric utility plant is equal to the statewide average, a ratio greater than 1.00 indicates the child population percentage near the electric utility plant is higher than the statewide population, and a ratio less than 1.00 indicates the child population is less than the respective statewide average.
- Using the plant-by-plant basis, 310 electric utility plants (63%) have surrounding child populations which exceed their statewide children benchmark percentages, whereas 185 of the electric utility plants (37%) have children populations below their statewide benchmarks, which represents a ratio of 1.68 (*i.e.,* 310/185). Since this ratio is much greater than 1.00, this finding indicates that a disproportionate number of electric utility plants have surrounding child population percentages which exceed their statewide benchmark. Using the state-by-state aggregation basis, 27 of the 47 states (57%) where the 495 electric utility plants are located have disproportionate percentages of children residing near the plants compared to the statewide averages, which also indicates a disproportionate surrounding child population. Using the nationwide aggregation basis across all 495 electric utility plants in all 47 states where the plants are located, 6.08 million people reside near these electric utility plants, including 1.54 million children (25.4%). Comparison of this percentage to the national aggregate benchmark across all states of 24.7% children yields a ratio of 1.03 (*i.e.,* 25.4%/24.7%). This ratio indicates a slightly higher disproportionate child population surrounding the 495 electric utility plants.

These three alternative comparisons indicate that the current (baseline) environmental and human health hazards and risks from electric utility CCR disposal units, and the expected future benefits of the regulatory options being considered in today's co-proposal may have a disproportionately higher effect on child populations.

The public is invited to submit comments or identify peer-reviewed studies and data that assess effects of early life exposure to CCRs managed in landfills and surface impoundments.

H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use

This co-proposal, if either of the options being considered is promulgated, is not expected to be a "significant energy action" as defined in Executive Order 13211 (66 FR 28355, May 22, 2001), because the regulatory options described in today's co-proposal are not expected to have a significant adverse effect on the supply, distribution, or use of energy. This determination is based on the energy price analysis presented in EPA's Regulatory Impact Analysis (RIA) for this proposed rule. The following is the basis for this conclusion.

The Office of Management and Budget's (OMB) July 13, 2001 Memorandum M–01–27 guidance for implementing this Executive Order identifies nine numerical indicators (thresholds) of potential adverse energy effects, three of which are relevant for evaluating potential energy effects of this proposed rule: (a) Increases in the cost of energy production in excess of 1%; (b) increases in the cost of energy distribution in excess of 1%; or (c) other similarly adverse outcomes.

Because EPA does not have data on energy production costs or energy distribution costs for the 495 electric utility plants likely affected by this rulemaking, EPA in its RIA for today's action evaluated the potential impact on electricity prices (for the regulatory options) as measured relative to the 1% numerical threshold of these two Executive Order indicators to represent an "other similarly adverse outcome."

The RIA calculated the potential increase in electricity prices of affected plants that the industry might induce under each regulatory option. Because the price analysis in the RIA is based only on the 495 coal-fired electric utility plants that would likely be affected by the co-proposal (with 333,500 megawatts nameplate capacity), rather than on all electric utility and independent electricity producer plants in each state using other fuels, such as natural gas, nuclear, hydroelectric, etc. (with 678,200 megawatts nameplate capacity), the price effects estimated in the RIA are higher than would be if the regulatory costs were averaged over the entire electric utility and independent electricity producer supply (totaling 1,011,700 megawatts, not counting an additional 76,100 megawatts of combined heat and electricity producers).

The price effect calculation in the RIA involved estimating plant-by-plant annual revenues, plant-by-plant average annualized regulatory compliance costs for each regulatory option, and comparison with statewide average electricity prices for the 495 electric utility plants. In its analysis, the Agency used the May 2009 statewide average retail prices for electricity published by DOE's, Energy Information Administration; these costs ranged from $0.0620 (Idaho & Wyoming) to $0.1892 (Hawaii) per kilowatt-hour, and the nationwide average for the 495 plants was $0.0884. Based on a 100% regulatory cost pass-thru scenario representing an upper-bound potential electricity price increase for each plant, the RIA estimated the potential target electricity sales revenue needed to cover these costs for each plant. The RIA then compared the higher target revenue to recent annual revenue estimates per plant, to calculate the potential price effect of this cost pass-thru scenario on electricity prices for each of the 495 electric utility plants, as well as on a state-by-state sub-total basis and on a nationwide basis across all 495 electric utility plants.

The RIA includes a set of higher cost estimates for the regulatory options and this Executive Order 13211 evaluation is based on the higher estimates and, therefore, overestimates the potential impacts of our proposal.

The RIA indicates that on a nationwide basis for all 495 electric utility plants, compared to the estimated average electricity price of $0.0884 per kilowatt-hour, the 100% regulatory cost pass-thru scenario may increase prices for the 495 electric utility plants by 0.172% to 0.795% across the original regulatory options; the high-end is the

estimate associated with a regulatory cost pass-thru scenario increase for the 495 electric utility plants for the subtitle C "special waste" option. Based on this analysis, the Agency does not expect that either of the options being co-proposed today would have a significant adverse effect on the supply, distribution, or use of energy. However, the Agency solicits comments on our analysis and findings.

I. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 ("NTTAA"), Public Law No. 104–113, 12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (*e.g.,* materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

This proposed rulemaking does not involve technical standards. Therefore, EPA is not considering the use of any voluntary consensus standards.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order (EO) 12898 (59 FR 7629, February 16, 1994) establishes federal executive policy on environmental justice. Its main provision directs federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income (*i.e.,* below poverty line) populations in the United States.

Furthermore, Section 3–302(b) of EO 12898 states that Federal agencies, whenever practicable and appropriate, shall collect, maintain and analyze information on minority and low-income populations for areas surrounding facilities or sites expected to have substantial environmental, human health, or economic effects on the surrounding populations, when such facilities or sites become the subject of a substantial Federal environmental administrative or judicial action. While EO 12898 does not establish quantitative thresholds for this "substantial effect" criterion, EPA has collected and analyzed population data for today's co-proposal because of the substantial hazards and adverse risks to the environment and human health described elsewhere in today's notice.

The RIA for today's action presents comparisons of minority and low-income population Census data for each of the 495 electric utility plant locations, to respective statewide population data, in order to identify whether these two demographic groups may disproportionately reside near electric utility plants. The result of these comparisons indicate (a) whether existing hazards associated with CCR disposal at electric utility plants to community safety, human health, and the environment may disproportionately affect minority and low-income populations surrounding the plants, and (b) whether the expected effects (*i.e.,* benefits and costs) of the regulatory action described in today's co-proposal rule may disproportionately affect minority and low-income populations.

Of the 495 electric utility plants, 383 of the plants (77%) operate CCR disposal units onsite (*i.e.,* onsite landfills or onsite surface impoundments), 84 electric utility plants solely transport CCRs to offsite disposal units operated by other companies (*e.g.,* commercial waste management companies), and 28 of the electric utility plants generate CCRs that are solely beneficially used rather than disposed. The minority and low-income Census data evaluation is conducted for all 495 plants because some regulatory options could affect the future CCR management method (*i.e.,* disposal versus beneficial use) for some plants.

In addition to this Census data evaluation, the RIA identifies three other possible affects of the co-proposal on (a) populations surrounding offsite CCR landfills, (b) populations surrounding the potential siting of new CCR landfills and (c) populations within the customer service areas of the 495 electric utility plants who may incur electricity price increases resulting from regulatory cost pass-thru. These three Census data evaluations are also summarized below.

J.1. Findings of Environmental Justice Analysis for Electric Utility Plants

For the first comparison, the RIA provides three complementary approaches to evaluating the Census data on minority and low-income populations: (a) Itemized plant-by-plant comparisons to statewide percentages, (b) state-by-state aggregation comparisons, and (c) nationwide aggregate comparisons. There are year 2000 Census data for 464 (94%) of the 495 electric utility plants which the RIA used for these comparisons and extrapolated to all 495 plants. Statewide minority population benchmark percentages range from 3.1% (Maine) to 75.7% (Hawaii), with a nationwide average of 24.9%, and statewide low-income population percentages range from 7.3% (Maryland) to 19.3% (New Mexico), with a nationwide average of 11.9%.

For purpose of determining the relative degree by which either group may exceed these statewide percentages, in addition to a comparison of absolute percentages, the percentages are compared as a numerical ratio whereby a ratio of 1.00 indicates that the group population percentage living near an electric utility plant is equal to the statewide average, a ratio greater than 1.00 indicates the group population percentage near the electric utility plant is higher than the statewide population, and a ratio less than 1.00 indicates the group population is less than the respective statewide average.

Using the plant-by-plant comparison, 138 electric utility plants (28%) have surrounding minority populations which exceed their statewide minority benchmark percentages, whereas 357 of the electric utility plants (72%) have minority populations below their statewide benchmarks, which represents a ratio of 0.39 (*i.e.,* 138/357). Because this ratio is less than 1.00, this finding indicates a relatively small number of the electric utility plants have surrounding minority population percentages which disproportionately exceed their statewide benchmarks. On a plant zip code tabulation area basis, 256 electric utility plants (52%) have surrounding low-income populations which exceed their respective statewide benchmarks, whereas 239 plants (48%) have surrounding low-income populations below their statewide benchmarks, which represents a ratio of 1.07 (*i.e.,* 256/239). Because this ratio is above 1.00, it indicates that a slightly disproportionate higher number of electric utility plants have surrounding low-income population percentages which exceed their statewide benchmarks.

Using the state-by-state aggregation comparison, the percentages of minority and low-income populations surrounding the plants were compared to their respective statewide population benchmarks. From this analysis, state ratios revealed that 24 of the 47 states

(51%) have higher minority percentages, and 29 of the 47 states (62%) have higher low-income percentages surrounding the 495 electric utility plants, suggesting a slightly disproportionate higher minority surrounding population and a higher disproportionate, higher low-income surrounding population. However, in comparison to the other two numerical comparisons—the plant-by-plant basis and the nationwide aggregation basis, this approach does not include numerically weighting of state plant counts or state surrounding populations, which explains why this comparison method yields a different numerical result.

Using the nationwide aggregation comparison across all 495 electric utility plants in all 47 states where the plants are located, 6.08 million people reside near these plants, including 1.32 million (21.7%) minority and 0.8 million (12.9%) low-income persons. A comparison of these percentages to the national benchmark of 24.9% minority and 11.9% low-income, represents a minority ratio of 0.87 (*i.e.,* 21.7%/24.9%) and a low-income ratio of 1.08 (*i.e.,* 12.9%/11.9%). These nationwide aggregate ratios indicate a disproportionately lower minority population surrounding the 495 electric utility plants, and a disproportionately higher low-income population surrounding these plants.

These demographic data comparisons indicate that the current (baseline) environmental and human health hazards and risks from electric utility CCR disposal units, and the expected future effects (*i.e.,* benefits and costs) of the regulatory options described in today's co-proposal may have a disproportionately lower effect on minority populations and may have a disproportionately higher effect on low-income populations.

J.2. Environmental Justice Analysis for Offsite Landfills, Siting of New Landfills, and Electricity Service Area Customers

There are three other potential differential effects of the regulatory options on three other population groups: (a) Populations surrounding offsite landfills, (b) populations surrounding the potential siting of new landfills and (c) populations within the customer service areas of the 495 electric utility plants. The RIA for today's notice does not quantify these potential effects so only a qualitative discussion appears below.

The potential effect on offsite landfills as evaluated in the RIA only involves the RCRA subtitle C "special waste" based regulatory option described in today's co-proposal, whereby electric utility plants may switch the management of CCRs, in whole or in part, from current onsite disposal to offsite commercial RCRA-permitted landfills. In addition, some or all of the CCRs which are currently disposed in offsite landfills that do not have RCRA operating permits may also switch to RCRA-permitted commercial landfills. Another fraction of annual CCR generation which could also switch to offsite commercial RCRA-permitted landfills are CCRs which are currently supplied for industrial beneficial use applications if such use is curtailed.

The future addition of any or all of these three fractions of CCR generation to offsite commercial hazardous waste landfills could exceed their capacity considering that a much smaller quantity of about 2 million tons per year of existing RCRA-regulated hazardous waste is currently disposed of in RCRA subtitle C permitted landfills in the U.S. As of 2009, there are 19 commercial landfills with RCRA hazardous waste permits to receive and dispose of RCRA-regulated hazardous wastes located in 15 states (AL, CA, CO, ID, IL, IN, LA, MI, NV, NY, OH, OK, OR, TX, UT). This potential shift could have a disproportionate effect on populations surrounding these locations, and in particular, minority and low-income populations surrounding commercial hazardous waste facilities, for the reason that a recent (2007) study determined that minority and low-income populations disproportionately live near commercial hazardous waste facilities. However, the study included other types of commercial hazardous waste treatment and disposal facilities in addition to commercial hazardous waste landfills.

The siting of new landfills is another potential effect due to possible changes in the management of CCRs, especially if the switch to offsite commercial hazardous waste landfills causes a capacity shortage (as described above) under subtitle C option. However, since it is unknown where these new landfills might possibly be sited, two possibilities were examined: (a) An expansion of existing commercial subtitle C landfills offsite from electric utility plants, and (b) an expansion of existing electric utility plant onsite landfills. If an expansion of existing commercial subtitle C landfills were to occur, this potential shift could have a disproportionate effect on populations surrounding these locations, as described previously.

The other possibility is the expansion of electric utility plant onsite landfills. That is, these landfills become permitted under RCRA subtitle C and expand existing onsite landfills or build new ones onsite. If this were to occur, the environmental justice impacts could be similar to the demographic comparison findings previously discussed, which indicates that the current environmental and human health hazards and risks from electric utility CCR disposal units, and the expected future effects (*i.e.,* benefits and costs) of the regulatory options, may have a disproportionately lower effect on minority populations, but may have a disproportionately higher effect on low-income populations.

A third potential effect of the regulatory options described in today's notice is the increase in price of electricity supplied by some or all of the affected 495 electric utility plants to cover the cost of regulatory compliance (as evaluated in a previous section of today's notice). Thus, customers in electric utility service areas could experience price increases, as described above in the Federalism sub-section of today's notice. The RIA for today's action did not evaluate the demographics of the customer service area populations for the 495 electric utility plants.

Appendix to the Preamble: Documented Damages From CCR Management Practices

EPA has gathered or received through comments on the 1999 Report to Congress and the May 2000 Regulatory Determination, and through allegations, 135 possible damage cases. Six cases involved minefills and, therefore, are outside the scope of today's proposed rule. Sixty-two cases have not been further assessed because there was little or no supporting information to assess the allegations.

Of the remaining 67 cases, EPA determined that 24 were proven damage cases. Sixteen were determined to be proven damage cases to ground water and eight were determined to be proven damages cases to surface water, as a result of elevated levels of contaminants from CCRs.[172] Four of the proven ground water damage cases were from unlined landfills, five were from unlined surface impoundments, one

[172] Of the 16 proven cases of damages to ground water, the Agency has been able to confirm that corrective action has been completed in seven cases and are ongoing in the remaining nine cases. Corrective action measures at these CCR management units vary depending on site specific circumstances and include formal closure of the unit, capping, re-grading of ash and the installation of liners over the ash, ground water treatment, groundwater monitoring, and combinations of these measures.

involved a surface impoundment for which it is not clear whether the unit was lined, and the remaining six were from unlined sand and gravel pits. Another 43 alleged cases were determined to be potential damage cases to ground water or surface water. However, four of these potential damage cases were attributable to oil combustion wastes, which are outside the scope of this notice. Therefore, we have determined that there were a total of 40 potential damage cases attributable to CCRs. (The concern with wastes from the combustion of oil involved unlined surface impoundments. Prior to the May 2000 Regulatory Determination, the unlined oil ash impoundments were closed, and thus EPA decided regulatory action to address oil ash was unnecessary.) These cases are discussed in more detail in the document "Coal Combustion Wastes Damage Case Assessments" available in the docket to the 2007 NODA at *http://www.regulations.gov/fdmspublic/component/main?main=DocumentDetail&d=EPA-HQ-RCRA-2006-0796-0015*. Three proven damage cases are sites that have been listed on EPA's National Priorities List (NPL). The sites, and links to additional information are: (1) Chisman Creek, Virginia (*http://www.epa.gov/reg3hwmd/npl/VAD980712913.htm*), (2) Salem Acres, Massachusetts (*http://yosemite.epa.gov/r1/npl_pad.nsf/f52fa5c31fa8f5c885256adc0050b631/C8A4A5BEC0121F048525691F0063F6F3?OpenDocument*), and (3) U.S. Department of Energy Oak Ridge Reservation, Tennessee (*http://www.epa.gov/region4/waste/npl/npltn/oakridtn.htm*). One potential damage case has also been listed on the NPL: Lemberger Landfill, Wisconsin (*http://www.epa.gov/region5/superfund/npl/wisconsin/WID980901243.htm*). Another site has undergone remediation under EPA enforcement action: Town of Pines (*http://cfpub.epa.gov/supercpad/cursites/cactinfo.cfm?id=0508071*).

In response to the 2007 NODA (*see* section II. A.), EPA received information on 21 alleged damage cases. Of these, 18 pertain to alleged violations of state solid waste permits, and 3 to alleged violations of NPDES permits. Upon review of this information, we conclude that 13 of the alleged RCRA violations are new, and one of the alleged NPDES violations is new; the other damage cases have previously been submitted to EPA and evaluated. In addition, five new alleged damage cases have been brought to EPA's attention since February 2005 (the closure date of damage cases assessed by the NODA's companion documents). For the most part, these cases involve activities that are different from the prior damage cases and the focus of the regulatory determination on groundwater contamination from landfills and surface impoundments. Specifically:

- Two of the new alleged cases involve the structural failure of surface impoundments; *i.e.,* dam safety and structural integrity issues, which were not a consideration at the time of the May 2000 Regulatory Determination. In both cases, there were Clean Water Act violations.
- One other alleged case involves the failure of an old discharge pipe, and is clearly a regulated NPDES permit issue.
- Two other alleged cases involve the use of coal ash in large scale structural fill operations, one of which involves an unlined sand and gravel pit. The Agency is considering whether to regulate this method of disposal as a landfill or whether to address the issue separately as part of its rulemaking to address minefilling. EPA is soliciting comments on those alternatives.

The Agency has classified three of the five new cases as proven damage cases (BBBS Sand and Gravel Quarries, Martins Creek Power Plant, TVA Kingston Power Plant), one as a potential damage case (Battlefield Golf Course), and the other as not being a damage case under RCRA (TVA Widows Creek). Several of the recently submitted damage cases are discussed briefly below. The following descriptions further illustrate that there are additional risk concerns (dam safety, and fill operations) which EPA did not evaluate when it completed its the May 2000 Regulatory Determination, in which EPA primarily was concerned with groundwater contamination associated with landfills and surface impoundments and the beneficial use of CCRs. Additional information on these damage cases is included in the docket.

Recent Cases

BBBS Sand and Gravel Quarries—Gambrills, Maryland

On October 1, 2007, the Maryland Department of the Environment (MDE) filed a consent order in Anne Arundel County, Maryland Circuit Court to settle an environmental enforcement action that was taken against the owner of a sand and gravel quarry and the owner of coal fired power plants (defendants) for contamination of public drinking water wells in the vicinity of the sand and gravel quarry.

Specifically, beginning in 1995, the defendants used fly ash and bottom ash from two Maryland power plants to fill excavated portions of two sand and gravel quarries. Ground water samples collected in 2006 and 2007 from residential drinking water wells near the site indicated that, in certain locations, contaminants, including heavy metals and sulfates were present at or above ground water quality standards. The Anne Arundel County, Maryland Department of Health tested private wells in 83 homes and businesses in areas around the disposal site. MCLs were exceeded in 34 wells [arsenic (1), beryllium (1), cadmium (6), lead (20),[173] and thallium (6)]. The actual number of wells affected by fly ash and bottom ash is undetermined since some of the sample results may reflect natural minerals in the area. SMCLs were exceeded in 63 wells [aluminum (44), manganese (14), and sulfate (5)]. MDE concluded that leachate from the placement of CCRs at the site resulted in the discharge of pollutants to waters of the state. Based on these findings, as well as an MDE consent order, EPA has concluded that the Gambrills site is a proven case of damage to ground water resulting from the placement of CCRs in unlined sand and gravel quarries.

Under the terms of the consent order, the defendants are required to pay a fine, remediate the ground water in the area and provide replacement water supplies for 40 properties. A retail development is now planned for the site with a cap over the fill designed to reduce infiltration and subsequent leaching from the site. An MDE fact sheet on this site is available at *http://www.mde.state.md.us/assets/document/AA_Fly_Ash_QA.pdf*.

Battlefield Golf Course—Chesapeake, Virginia

On July 16, 2008, the City of Chesapeake, Virginia sent a letter to the EPA Region III Regional Administrator requesting assistance to perform an assessment of the Battlefield Golf Course. The 216 acre site was contoured with 1.5 million cubic yards of fly ash, amended with 1.7% to 2.3% cement kiln dust to develop the golf course. Virginia's Administrative Code allowed the use of fly ash as fill material (considered a beneficial use under Virginia's Administrative Code) without a liner as long as the fly ash was placed at least two feet above groundwater and covered by an 18-inch soil cap.

Because of ground water contamination discovered at another site where fly ash was used, the City of

[173] It is uncertain whether lead exceedances were due to CCRs or lead in plumbing and water holding tanks.

Chesapeake initiated a drinking water well sampling assessment at residences surrounding the golf course. Additionally, 13 monitoring points were installed around the site. No monitoring points were installed through the fly ash area to avoid creating an additional path of contaminant migration. EPA conducted a site investigation by reviewing analytical data from fly ash, soil, surface water, sediment, and groundwater sampling events completed in 2001, 2008 and 2009. The sampling results of the City of Chesapeake ground water and surface water sampling [174] indicated that the highest detections of metals occurred in monitoring wells located on the golf course property. The concentrations of arsenic, boron, chromium, copper, lead and vanadium detected in groundwater collected from on-site monitoring wells were considered to be significantly above background concentrations. Of these compounds, only boron has been detected in approximately 25 drinking water wells.

Although not a primary contaminant of concern, boron is suspected to be the leading indicator of fly ash migration. The highest level of boron reported in a residential well was 596 µg/L which was significantly below the health-based regional screening level for boron in tap water of 7,300 µg/L. Additionally, the secondary drinking water standard for manganese (0.05 mg/L) was exceeded in nine residential wells; however, the natural levels of both manganese and iron in the area's shallow aquifer are very high and, thus, it could not be ruled out that the elevated levels of manganese and iron are a result of the natural background levels of these two contaminants.

Metal contaminants were below MCLs and Safe Drinking Water Act (SDWA) action levels in all residential wells that EPA tested, except for lead. Lead has been detected during EPA sampling events above the action level of 15 µg/L in six residential wells. The lead in these wells, however, does not appear to come from the fly ash. Lead concentrations are lower in groundwater collected from monitoring wells on the golf course (1.1 to 1.6 µg/L) than in these residential wells; and lead concentrations in the fly ash are not higher than background concentrations of lead in soil.

The recently issued EPA Final Site Inspection Report [175] concluded that (i) Metal contaminants were below MCLs and Safe Drinking Water Act (SDWA) action levels in all residential wells that EPA tested; (2) the residential well data indicate that metals are not migrating from the fly ash to residential wells; and (iii) there are no adverse health effects expected from human exposure to surface water or sediments on the Battlefield Golf Course site as the metal concentrations were below the ATSDR standards for drinking water and soil. Additionally, the sediment samples in the ponds were below EPA Biological Technical Assistance Group screening levels and are not expected to pose a threat to ecological receptors. Based on these findings, EPA has categorized the Battlefield Golf Club site as a potential damage case, as there is a possibility that leaching could cause levels of toxic constituents to increase over time and that groundwater could become contaminated at off-site locations if due diligence is not practiced.

Martins Creek Power Plant—Martins Creek, Pennsylvania

In August 2005, a dam confining a 40 acre CCR surface impoundment in eastern Pennsylvania failed. The dam failure, a violation of the State's solid waste disposal permit, resulted in the discharge of 0.5 million cubic yards of coal-ash and contaminated water into the Oughoughton Creek and the Delaware River.

Ground-water monitoring results from approximately 20 on-site monitoring wells found selenium concentrations exceeding Pennsylvania's Statewide Health Standards and Federal primary drinking water standards. There was also one exceedance of the primary MCL for chromium and two exceedances of the secondary MCL for iron.

Surface water samples were also taken from a number of locations along the Delaware River upstream and downstream of the spill. Sampling began soon after the spill in August 2005 and continued through November 2005. Several samples exceeded the Federal Water Quality Criteria (WQC) for aluminum, copper, iron, manganese, and silver (*see http://www.epa.gov/waterscience/criteria/wqctable/index.html*). Four samples also exceeded the WQC for arsenic—three of which were taken near the outfall to the river. Lead, nickel and zinc were also detected above the WQC in samples taken near the outfall to the river. Sampling results are available from the Pennsylvania Department of Environmental Protection (PADEP) at *http://www.depweb.state.pa.us/northeastro/cwp/view.asp?a=1226&q=478264&northeastroNav=|*.

As a result of the exceedances of primary and secondary MCLs in on-site ground water, and exceedances of federal water quality criteria in off-site surface water, in addition to a PADEP consent order for clean up, the Agency considers this site to be a proven damage case.

TVA Kingston—Harriman, Tennessee

On December 22, 2008, a failure of the northeastern dike used to contain fly ash occurred at the dewatering area of the Tennessee Valley Authority's (TVA's) Kingston Fossil Plant in Harriman, Tennessee. Subsequently, approximately 5.4 million cubic yards of fly ash sludge was released over an approximately 300 acre area and into a branch of the Emory River. The ash slide disrupted power, ruptured a gas line, knocked one home off its foundation and damaged others. The state-issued NPDES permit requires that TVA properly operate and maintain all facilities and systems for collection and treatment, and expressly prohibits overflows of wastes to land or water from any portion of the collection, transmission, or treatment system other than through permitted outfalls. Therefore, the release was a violation of the NPDES permit. A root-cause analysis report developed for TVA, accessible at *http://www.tva.gov/kingston/rca/index.htm,* established that the dike failed because it was expanded by successive vertical additions, to a point where a thin, weak layer of fly ash ('slime') on which it had been founded, failed by sliding. Additional information on the TVA Kingston incident is available at *http://www.epa.gov/region4/kingston/index.html* and *http://www.tva.gov/kingston/*.

EPA joined TVA, the Tennessee Department of Environment and Conservation (TDEC), and other state and local agencies in a coordinated response. EPA provided oversight and technical advice to TVA, and conducted independent water sampling and air monitoring to evaluate public health and environmental threats.

Following the incident, EPA sampled the coal ash and residential soil to determine if the release posed an immediate threat to human health. Sampling results for the contaminated residential soil showed arsenic, cobalt, iron, and thallium levels above the residential Superfund soil screening levels.[176] Sampling results also showed

[174] *Available at http://cityofchesapeake.net/services/citizen_info/battlefieldgolfclub/index.shtml.*

[175] *http://www.epa.gov/reg3hwmd/CurrentIssues/finalr-battlefield_golf_club_site/redacted_DTN_0978_Final_Battlefield_SI_Report.pdf.*

[176] Soil screening levels (SSLs) for contaminants in soil are used to identify sites needing further

average arsenic levels above the EPA Region 4 Residential Removal Action Level (RAL) [177] of 39 mg/L, but below EPA Region 4's Industrial RAL of 177 mg/L. All residential soil results were below the Residential RAL.

Shortly after the release, samples were also collected of untreated river water, which showed elevated levels of suspended ash and heavy metals known to be associated with coal ash. Nearly 800 surface water samples were taken by TVA and TDEC, ranging from two miles upstream of the release on the Emory River to approximately eight miles downstream on the Clinch River. Sampling results of untreated river water showed elevated levels of arsenic, cadmium, chromium, and lead just after the incident. This was also observed again after a heavy rainfall. In early January 2009, the Tennessee Wildlife Resources Agency (TWRA) issued a fish advisory stating that until further notice, fishing should be avoided in the lower section of the Emory River. TWRA plans to resample fish tissue on a semiannual basis and expects that the assessment of the impact of this release on wildlife resources and habitat will require repeated sampling and evaluation over the next three to five years.

Constituent concentrations measured in drinking water on December 23, 2008, near the intake of the Kingston Water Treatment Plant, located downstream of the release, were below federal MCLs for drinking water, with the exception of elevated thallium levels. Subsequent EPA testing on December 30, 2008, of samples at the same intake found that concentration levels for thallium had fallen below the MCL. Subsequent testing of treated drinking water from the Kingston Water Treatment Plant showed that the drinking water from the treatment plant met all federal drinking water standards.

Additionally, EPA and TDEC identified and sampled potentially impacted private wells that are used as a source for drinking water. More than 100 wells have been tested to date and all have met drinking water standards.

To address potential risks from windblown ash, TVA, under EPA oversight, began air monitoring for coarse and fine particles. EPA also conducted independent monitoring to validate TVA's findings. To date, all of the more than 25,000 air samples from this area have measured levels below the NAAQS for particulates.

On January 12, 2009, TDEC issued an order to TVA to, among other things, continue to implement measures to prevent the movement of contaminated materials into waters of the state and, where feasible, minimize further downstream migration of contaminated sediments.

Than on May 11, 2009, TVA agreed to clean up more than 5 million tons of coal ash spilled from its Kingston Fossil Fuel Plant under an administrative order and agreement on consent. TVA and EPA entered into the agreement under CERCLA. The order requires TVA to perform a thorough cleanup of coal ash from the Emory River and surrounding areas and EPA will oversee the removal. Based on the consent order, EPA has identified this site as a proven damage case.

TVA Widows Creek—Stevenson, Alabama

On Friday, January 9, 2009, a cap in an unused discharge pipe became dislodged, resulting in a discharge from an FGD pond at a Tennessee Valley Authority (TVA) coal-burning power plant in Stevenson, Alabama. FGD is a residual of a process that reduces sulfur dioxide emissions from coal-fired boilers Some 5,000 cubic yards of FGD material containing water and a mixture of predominantly gypsum and some fly ash, was released from the pond into Widows Creek which flows into the Tennessee River.[178] Information on the TVA Widows Creek incident is available at *http://www.epa.gov/region4/stevenson/index.html.*

EPA joined TVA and the Alabama Department of Environmental Management (ADEM) in a coordinated response. EPA is supporting the response by coordinating environmental sampling and monitoring response operations by TVA. EPA has also collected surface water samples from both Widows Creek and the Tennessee River to determine if there have been any environmental impacts. Samples have also been taken from the FGD pond to characterize the material that was released into the creek fully. The drinking water intake for Scottsboro, Alabama, about 20 miles downstream, has also been sampled.

EPA Region 4 has received final results of its independent environmental sampling activities for the TVA Widows Creek Fossil Plant FGD pond release. Specifically, the concentrations of metals, solids and nutrients detected in samples drawn from the drinking water intake for Scottsboro, Alabama, along with samples collected from two locations in Widows Creek and three other locations in the Tennessee River, are all below national primary drinking water standards and/or other health-based levels. The pH of all these samples also fell within the standard range and no oil or grease was detected in any of the samples.

Four waste samples and one water sample collected from the bank along the ditch connecting TVA's permitted discharge outfall and the Tennessee River, and from TVA's permitted discharge outfall showed elevated pH and elevated concentrations of metals, nutrients, and suspended and dissolved solids. However, because samples drawn downstream at the drinking water intake and from locations where individuals would likely come into contact with the water were below the primary drinking water standards, EPA does not expect the release to pose a threat to the public. On July 7, 2009, TVA issued a finding of no significant impact and final environmental assessment for the Gypsum Removal Project from Widows Creek.[179] Therefore, EPA has not classified the TVA Widows Creek fly ash release as a damage case.

Summary

In summary, as discussed above, the Agency has documented evidence of proven damages to ground water or surface water in 27 cases [180]—17 cases of damage to ground water, and ten cases of damage to surface water, including ecological damages in seven of the ten. Sixteen of the 17 proven damages to ground water involved disposal in unlined units (for the remaining unit, it is unclear whether a liner was present). We have also identified 40 cases of potential damage to ground water or surface water.[181] Another two cases were determined to be potential ecological damage cases. Finally, the more recently documented damage cases also provide evidence that current management practices can pose additional risks that EPA had not

investigation. SSLs alone do not trigger the need for a response action or define "unacceptable" levels of contaminants in soil. Generally, at sites where contaminant concentrations fall below the SSLs, no further action or study is warranted under CERCLA. However, where contaminant concentrations equal or exceed the SSLs, further study or investigation, but not necessarily cleanup, is warranted.

[177] RALs are used to trigger time-critical removal actions.

[178] *http://www.tva.gov/emergency/wc_1-29-09.htm.*

[179] *http://www.tva.gov/environment/reports/widows_creek/wcf_gypsum_removal_fonsi.pdf.*

[180] The 24 cases identified in the Damage Cases Assessment report, plus Martin Creek, PA; Gambrills, MD; and Kingston/TVA, TN.

[181] The 39 cases of potential damages from CCR identified in the Damage Cases Assessment report (excludes the 4 damage cases from oil combustion wastes), plus the Battlefield Golf Course, Chesapeake, Virginia.

previously studied—that is, from catastrophic releases due to the structural failure of CCR surface impoundments.

TABLE OF EPA'S PROVEN DAMAGE CASES

Damage case, State	Affected media	Constituents of concern	Brief description	Basis for consideration as a proven damage case
Alliant Nelson Dewey Ash Landfill, WI.	Groundwater	Arsenic, Selenium, Sulfate, Boron, Flourine.	The LF [182] was originally constructed in the early 1960's as a series of settling basins for sluiced ash and permitted by the State in 1979.	*Scientific*—Although the boron standard was not health-based at the time of the exceedances, the boron levels reported for the facility would have exceeded the State's recently promulgated health-based ES for boron, and *Administrative*—The State required a groundwater investigation, and the facility took action to remediate groundwater contamination and prevent further contamination.
Dairyland Power E.J. Stoneman, WI.	Groundwater	Cadmium, Chromium, Sulfate, Manganese, Iron, Zinc.	Unlined SI [183], on permeable substrate, that managed ash, demineralizer regenerant, and sand filter backwash between the 1950'and 1987.	*Scientific*—Cadmium and chromium exceeded (health-based) primary MCLs, and contamination migrated to nearby, private drinking water wells, and *Administrative*—The State required closure of the facility.
WEPCO Cedar Sauk Ash Landfill/WEPCO, WI.	Groundwater	Selenium, Boron, Sulfate.	An abandoned sand and gravel pit that received CCW from the WEPCO Port Washington Power Plant from 1969 to 1979.	*Scientific*—Selenium in groundwater exceeded the (health-based) primary MCL, and there was clear evidence of vegetative damage, and *Administrative*—The State required remedial action.
WEPCO Highway 59 Landfill/We Energies 59, WI.	Groundwater	Arsenic, Boron, Chlorides, Iron, Manganese, Sulfate.	Located in an old sand and gravel pit that received fly ash and bottom ash between 1969 and 1978.	*Scientific*—Although the boron standard was not health-based at the time of the exceedances, the boron levels reported for the facility would have exceeded the State's recently promulgated health-based ES for boron; and contamination from the facility appears to have migrated to off-site private wells, and *Administrative*—As a result of the various PAL [184] and ES [185] exceedances, the State required a groundwater investigation.
WEPCO Port Washington Facility/ Druecker Quarry Fly Ash Site, WI.	Groundwater	Boron, Selenium	The power company placed 40–60 feet deep column of fly ash in a sand & gravel pit from 1948–1971. A well located ~250′ south of the old quarry was impacted.	*Scientific*—The off-site exceedance of a health-based standard for selenium.
SC Electric & Gas Canadys Plant, SC.	Groundwater	Arsenic, Nickel	Ash from the Canadys power plant was mixed with water and managed in a SI. The facility operated an unlined, 80-acre SI from 1974 to 1989.	*Scientific*—There are exceedances of the health-based standard for arsenic at this site. While there are no known human exposure points nearby, some recent exceedances have been detected outside an established regulatory boundary.
PEPCO Morgantown Generating Station Faulkner Off-site Disposal Facility, MD.	Groundwater	Iron, pH	LFs at this shallow groundwater site manage fly ash, bottom ash, and pyrites from the Morgantown Generating Station starting in 1970. Unlined settling ponds also are used at the site to manage stormwater runoff and leachate from the ash disposal area.	*Scientific*—Ground water contamination migrated off-site, and *Administrative*—The State required remedial action.

TABLE OF EPA'S PROVEN DAMAGE CASES—Continued

Damage case, State	Affected media	Constituents of concern	Brief description	Basis for consideration as a proven damage case
Don Frame Trucking, Inc., Fly Ash Landfill, NY.	Groundwater	Lead, Manganese	This LF has been used for disposal of fly ash, bottom ash, and other material including yard sweepings generated by the Niagara Mohawk Power Corporation's Dunkirk Steam Station. The age of the facility is unknown.	*Scientific*—The lead levels found in down-gradient wells exceed the primary MCL Action Level. *Administrative*—The State has required remedial action as a result of the contamination, and the owner was directed, by the Supreme Court of the State of New York County of Chautauqua (July 22, 1988), to cease receiving the aforementioned wastes at the facility no later than October 15, 1988.
Salem Acres, MA	Groundwater	Antimony, Arsenic, Manganese.	Fly ash disposal occurred at this site—a LF and SI, from at least 1952 to 1969.	*Scientific*—Arsenic and chromium exceeded (health-based) primary MCLs, and *Administrative*—The site was placed on the NPL list, and EPA signed a Consent Order with the owner to clean up the lagoons.
Vitale Fly Ash Pit, MA ...	Groundwater	Aluminum, Arsenic, Iron, Manganese, Selenium.	An abandoned gravel and sand pit that was used as an unpermitted LF between the 1950s and the mid-1970s. The Vitale Brothers, the site owners until 1980, accepted and disposed saltwater-quenched fly ash from New England Power Company along with other wastes.	This case was not counted as a proven damage case in the 1999 RTC [186] because it was a case of illegal disposal not representative of historical or current disposal practices. However, it otherwise meets the criteria for a proven damage case for the following reasons: *Scientific*—(i) Selenium and arsenic exceeded (health-based) primary MCLs, and (ii) there is evidence of contamination of nearby wetlands and surface waters, and *Administrative*—the facility was the subject of several citations and the State has enforced remedial actions.
Town of Pines, IN	Groundwater	Boron, Molybdenum ...	NIPSCO's Bailly and Michigan City power plants have deposited ~1 million tons of fly ash in the Town of Pines since 1983. Fly ash was buried in the LF and used as construction fill in the town. The ash is pervasive on site, visible in roads and driveways.	*Scientific*—Evidence for boron, molybdenum, arsenic and lead exceeding health-based standards in water wells away from the Pines Yard 520 Landfill site, and *Administrative*—Orders of consent signed between the EPA and IDEM with responsible parties for continued work at the site.
North Lansing Landfill, MI.	Groundwater	Lithium, Selenium	The North Lansing Landfill (NLL), an unlined, former gravel quarry pit with an elevated groundwater table, was licensed in 1974 for disposal of inert fill materials including soil, concrete, and brick. From 1980 to 1997, the NLL was used for disposal of coal ash from the Lansing Board of Water and Light electric and steam generating plants.	*Scientific*—Observation of off-site exceedances of the State's health-based standard for lithium.
Basin Electric, W.J. Neal Plant, ND.	Groundwater	Aluminum, Arsenic, Barium, Copper, Manganese, Zinc.	An unlined, 44-acre SI that received fly ash and scrubber sludge from a coal-fired power plant, along with other wastes (including ash from the combustion of sunflower seed hulls), between the 1950s and the late 1980s.	*Scientific*—Several constituents have exceeded their (health-based) primary MCLs in down-gradient groundwater, and the site inspection found documentation of releases to ground water and surface water from the site, and *Administrative*—The State required closure of the facility.

TABLE OF EPA'S PROVEN DAMAGE CASES—Continued

Damage case, State	Affected media	Constituents of concern	Brief description	Basis for consideration as a proven damage case
Great River Energy (GRE)—(formerly Cooperative Power Association/United Power) Coal Creek Station, ND.	Groundwater	Arsenic, Selenium	This site includes a number of evaporation ponds and SIs that were constructed in 1978 and 1979. Both the SIs and the evaporation ponds leaked significantly upon plant start-up. A ND DOH regulator was uncertain as to whether a liner was initially installed, although the plant may have thought they were placing some sort of liner. The surficial soils were mostly sandy materials with a high water table.	*Scientific*—Arsenic and selenium exceeded (health-based) primary MCLs, and *Administrative*—The State required remedial action.
VEPCO Chisman Creek, VA.	Groundwater	Selenium, Sulfate, Vanadium.	Between 1957 and 1974, abandoned sand and gravel pits at the site received fly ash from the combustion of coal and petroleum coke at the Yorktown Power Station. Disposal at the site ended in 1974 when Virginia Power began burning oil at the Yorktown plant. In 1980, nearby shallow residential wells became contaminated with vanadium and selenium.	Designated as a proven damage case in the 1999 RTC. *Scientific*—(i) Drinking water wells contained selenium above the (health-based) primary MCL and (ii) There is evidence of surface water and sediment contamination, and *Administrative*—The site was remediated under CERCLA.
VEPCO Possum Point, VA.	Groundwater	Cadmium, Nickel	At this site, oil ash, pyrites, boiler chemical cleaning wastes, coal fly ash, and coal bottom ash were co-managed in an unlined SI, with solids dredged to a second pond.	Damage case described in the 1999 RTC. *Administrative*—Action pursued by the State based on evidence on exceedances of cadmium and nickel, by requiring the removal of the waste.
BBBS Sand and Gravel Quarries, Gambrills, MD.	Groundwater	Aluminum, Arsenic, Beryllium, Cadmium, Lead, Manganese, Sulfate, Thallium.	As of 1995, the defendants used fly ash and bottom ash from two Maryland power plants to fill excavated portions of two unlined sand and gravel quarries. GW samples collected in 2006/07 from residential drinking water wells near the site indicated contaminants at or above GW quality standards. Testing of private wells in 83 homes and businesses in areas around the disposal site revealed MCL exceedances in 34 wells, and SMCLs exceedances in 63 wells.	*Scientific*—Documented exceedances of MCLs in numerous off-site drinking water wells. *Administrative*—On October 1, 2007, the Maryland Department of the Environment (MDE) filed a consent order in Anne Arundel County, Maryland Circuit Court to settle an environmental enforcement action against the owner of a sand and gravel quarry and the owner of coal fired power plants for contamination of public drinking water wells in the vicinity of the sand and gravel quarry.

TABLE OF EPA'S PROVEN DAMAGE CASES—Continued

Damage case, State	Affected media	Constituents of concern	Brief description	Basis for consideration as a proven damage case
Hyco Lake, Roxboro, NC.	Surface Water ...	Selenium	Hyco Lake was constructed in 1964 as a cooling water source for the Electric Plant. The lake received discharges from the plant's ash-settling ponds containing high levels of selenium. The selenium accumulated in the fish in the lake, affecting reproduction and causing declines in fish populations in the late 1970s and 1980s.	*Scientific*—Declines in fish populations were observed (1970s & 1980s). *Administrative*—The State concluded that the impacts were attributable to the ash ponds, and issued a fish consumption advisory as a result of the contamination.
Georgia Power Company, Plant Bowen, Cartersville, GA.	Surface Water ...	Ash Slurry	This unlined SI was put in service in 1968. On July 28, 2002, a sinkhole developed in the SI that ultimately reached four acres in area. An estimated 2.25 million gallons of ash/water mixture was released to a tributary of the Euharlee Creek, containing 281 tons of ash.	*Scientific*—Unpermitted discharge of water containing ash slurry into the Euharlee Creek resulting in a temporary degradation of public waters. *Administrative*—Georgia Department of Natural Resources issued a consent order requiring, among others, a fine and corrective action.
Department of Energy—Oak Ridge Y–12 Plant Chestnut Ridge Operable Unit 2, DOE Oak Ridge Reservation, Oak Ridge, TN.	Surface Water ...	Aluminum, Arsenic, Iron, Manganese.	The Filled Coal Ash Pond (FCAP) is an ash retention SI used to dispose of coal ash slurry from the Y–12 steam plant. It was constructed in 1955 by building an earthen dam across a northern tributary of Upper McCoy Branch. After the SI was filled to capacity, the slurry was released directly into Upper McCoy Branch. Erosion of both the spillway and the ash itself resulted in releases of ash into Upper McCoy Branch.	*Scientific*—Exceedances of primary and secondary MCLs were detected in on-site monitoring locations. *Administrative*—Federal RCRA and the Tennessee Department of Environmental Conservation (TDEC) requirements, including placement of the entire Oak Ridge Reservation on the NPL.
Belews Lake, NC	Surface Water ...	Selenium	This Lake was impounded in the early 1970s to serve as a cooling reservoir for a large coal-fired power plant. Fly ash was disposed in a settling basin, which released selenium-laden effluent in return flows to the Lake. Sixteen of the 20 fish species originally present in the reservoir were entirely eliminated.	*Scientific*—Evidence of extensive impacts on fish populations due to direct discharge to a surface water body. *Administrative*—The State required changes in operating practices to mitigate the contamination.

TABLE OF EPA'S PROVEN DAMAGE CASES—Continued

Damage case, State	Affected media	Constituents of concern	Brief description	Basis for consideration as a proven damage case
U.S. Department of Energy Savannah River Project, SC.	Surface Water ...	Not cited	A coal-fired power plant sluices fly ash to a series of open settling basins. A continuous flow of sluice water exits the basins, overflows, and enters a swamp that in turn discharges to Beaver Dam Creek. Bullfrog tadpoles inhabiting the site have oral deformities and impaired swimming and predator avoidance abilities, and there also is evidence of metabolic impacts on water snakes inhabiting the site.	*Scientific*—Evidence of impacts on several species in a nearby wetland caused by releases from the ash settling ponds.
Brandy Branch Reservoir, TX.	Surface Water ...	Selenium	A power plant cooling reservoir built in 1983 for Southwestern Electric Power Company's Pirkey Power Plant. The cooling reservoir received discharges from SIs containing elevated levels of selenium.	*Scientific*—Observations of impacts on fish populations were confirmed by scientific study, based on which the State concluded that the impacts were attributable to the ash ponds. *Administrative*—The State issued a fish consumption advisory as a result of the contamination.
Southwestern Electric Power Company Welsh Reservoir, TX.	Surface Water ...	Selenium	This Lake was constructed in 1976 to serve as a cooling reservoir for a power plant and receives discharges from an open SI. The Texas Parks and Wildlife Department's monitoring documents elevated levels of selenium and other metals in fish.	*Scientific*—Selenium accumulation in fish may be attributable to the ash settling ponds. *Administrative*—The State has issued a fish consumption advisory as a result of the contamination.
Texas Utilities Electric Martin Lake Reservoir, TX.	Surface Water ...	Selenium	This Lake was constructed in 1974 to serve as a cooling reservoir for a power plant and was the site of a series of major fish kills in 1978 and 1979. Investigations determined that unpermitted discharges from ash settling ponds resulted in elevated levels of selenium in the water and fish.	*Scientific*—Evidence of adverse effects on wildlife—impacts on fish populations were observed, and the State concluded that the impacts were attributable to the ash setting ponds. *Administrative*—The State has issued a fish consumption advisory as a result of the contamination.
Martins Creek Power Plant, Martins Creek, PA.	Groundwater and Surface Water.	Aluminum, Arsenic, Chromium, Copper, Iron, Lead, Manganese, Nickel, Selenium, Silver, Zinc.	In August 2005, a dam confining a 40 acre CCR SI failed. The dam failure, a violation of the State's solid waste disposal permit, resulted in the discharge of 100 million gallons of coal-ash and contaminated water into the Oughoughton Creek and the Delaware River. Ground-water monitoring found Se and Cr concentrations exceeding Pennsylvania's Statewide Health Standards and Federal primary drinking water standards, and there were also exceedances of the secondary MCL for iron.	*Scientific*—Exceedances of primary and secondary MCLs in on-site ground water, and exceedances of federal water quality criteria in off-site surface water, and *Administrative*—PA DEP issued a consent order for cleanup.

TABLE OF EPA'S PROVEN DAMAGE CASES—Continued

Damage case, State	Affected media	Constituents of concern	Brief description	Basis for consideration as a proven damage case
TVA Kingston, Harriman, TN.	Surface Water ...	Arsenic, Cobalt, Iron, Thallium.	On December 22, 2008, the northeastern dike of a SI failed. About 5.4 million cubic yards of fly ash sludge was released over about a 300 acre area and into a branch of the Emory River, disrupting power, rupturing a gas line, and destroying or damaging scores of homes. Sampling results for the contaminated residential soil showed arsenic, cobalt, iron, and thallium levels above the residential Superfund soil screening levels.	*Administrative*—On May 11, 2009, TVA agreed to clean up more than 5 million tons of spilled coal ash under an administrative order and agreement on consent under CERCLA issued by the USEPA, and In early January 2009, the Tennessee Wildlife Resources Agency (TWRA) issued a fish advisory stating that until further notice, fishing should be avoided in the lower section of the Emory River.

Abbreviations key:
1 LF—Landfill
2 SI—Surface Impoundment
3 PAL—Prevention Action Level
4 ES—Enforcement Standard
5 RTC—Report to Congress

List of Subjects

40 CFR Part 257

Environmental Protection, coal combustion products, coal combustion residuals, coal combustion waste, beneficial use, disposal, hazardous waste, landfill, surface impoundment.

40 CFR Part 261

Hazardous waste, Recycling, Reporting and recordkeeping requirements.

40 CFR Part 264

Air pollution control, Hazardous waste, Insurance, Packaging and containers, Reporting and recordkeeping requirements, Security measures, Surety bonds.

40 CFR Part 268

Hazardous waste, Reporting and recordkeeping requirements.

40 CFR Part 271

Administrative practice and procedure, Confidential business information, Hazardous materials transportation, Hazardous waste, Indians-lands, Intergovernmental relations, Penalties, Reporting and recordkeeping requirements, Water pollution control, Water supply.

40 CFR Part 302

Air pollution control, Chemicals, Hazardous substances, Hazardous waste, Intergovernmental relations, Natural resources, Reporting and recordkeeping requirements, Superfund, Water pollution control, Water supply.

Dated: May 4, 2010.

Lisa P. Jackson,

Administrator.

For the reasons set out in the preamble, title 40, chapter I of the Code of Federal Regulations is proposed to be amended as follows:

Alternative 1: Co-Proposal Under Authority of Subtitle D

PART 257—CRITERIA FOR CLASSIFICATION OF SOLID WASTE DISPOSAL FACILITIES AND PRACTICES

1. The authority citation for part 257 continues to read as follows:

Authority: 42 U.S.C., 6907(a)(3), 6912(a)(1), 6944(a), and 6949a(c); 33 U.S.C. 1345(d) and (e).

2. Section 257.1 is amended by revising the last sentence of paragraph (a) introductory text, revising paragraphs (a)(1) and (a)(2), and adding new paragraph (c)(12) to read as follows:

§ 257.1 Scope and purpose.

(a) * * * Unless otherwise provided, the criteria §§ 257.51 through 257.101 are adopted for determining which CCR Landfills and CCR Surface impoundments pose a reasonable probability of adverse effects on health or the environment under sections 1008(a)(3) and 4004(a) of the Act.

(1) Facilities failing to satisfy either the criteria in §§ 257.1 through 257.4 or §§ 257.5 through 257.30 or §§ 257.51 through 257.101 are considered open dumps, which are prohibited under section 4005 of the Act.

(2) Practices failing to satisfy either the criteria in §§ 257.1 through 257.4 or §§ 257.5 through 257.30 or §§ 257.51 through 257.101 constitute open dumping, which is prohibited under section 4005 of the Act.

* * * * *

(c) * * *

(12) Except as otherwise provided in subpart C, the criteria in subpart A of this part do not apply to CCR landfills and CCR surface impoundments subject to subpart C of this part.

3. Section 257.2 is amended by adding definitions of "CCR landfill " and "CCR surface impoundment or impoundment" to read as follows:

§ 257.2 Definitions.

* * * * *

CCR landfill means a disposal facility or part of a facility where CCRs are placed in or on land and which is not a land treatment facility, a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, an underground mine, a cave, or a corrective action management unit. For purposes of this part, landfills also include piles, sand and gravel pits, quarries, and/or large scale fill operations. Sites that are excavated so that more coal ash can be used as fill are also considered CCR landfills.

CCR surface impoundment or *impoundment* means a facility or part of a facility which is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), which is designed to hold an accumulation of CCRs containing free liquids, and which is not

an injection well. Examples of CCR surface impoundments are holding, storage, settling, and aeration pits, ponds, and lagoons. CCR surface impoundments are used to receive CCRs that have been sluiced (flushed or mixed with water to facilitate movement), or wastes from wet air pollution control devices, often in addition to other solid wastes.

* * * * *

Subpart C—[Added and Reserved]

4. Part 257 is amended by adding and reserving Subpart C.

5. Part 257 is amended by adding Subpart D to part 257 to read as follows:

Subpart D—Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments

General Provisions

Sec.

General Requirements

Location Restrictions

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Subpart D—Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments

General Provisions

§ 257.40 Disposal standards for owners/operators of CCR landfills and CCR surface impoundments.

(a) *Applicability.* (1) The requirements of this subpart apply to owners or operators of CCR landfills and CCR surface impoundments. Any CCR landfill and surface impoundment continues to be subject to the requirements in §§ 257.3–1, 257.3–2, and 257.3–3.

(2) Except as otherwise specified in this Subpart, all of the requirements in this Subpart are applicable [date 180 days after the effective date of the final rule].

(b) *Definitions.* As used in this subpart:

Acre-foot means the volume of one acre of surface area to a depth of one foot.

Active life means the period of operation beginning with the initial placement of CCRs in the landfill or surface impoundment and ending at completion of closure activities in accordance with § 257.110.

Aquifer means a geological formation, group of formations, or portion of a formation capable of yielding significant quantities of groundwater to wells.

Area-capacity curves means graphic curves which readily show the reservoir water surface area, in acres, at different elevations from the bottom of the reservoir to the maximum water surface, and the capacity or volume, in acre-feet, of the water contained in the reservoir at various elevations.

Coal Combustion Residuals (CCRs) means fly ash, bottom ash, boiler slag, and flue gas desulfurization materials. CCRs are also known as coal combustion wastes (CCWs) and fossil fuel combustion (FFC) wastes.

CCR landfill means a disposal facility or part of a facility where CCRs are placed in or on land and which is not a land treatment facility, a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, an underground mine, a cave, or a corrective action management unit. For purposes of this subpart, landfills also include piles, sand and gravel pits, quarries, and/or large scale fill operations. Sites that are excavated so that more coal ash can be used as fill are also considered CCR landfills.

CCR surface impoundment or *impoundment* means a facility or part of a facility which is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), which is designed to hold an accumulation of CCRs containing free liquids, and which is not an injection well. Examples of CCR surface impoundments are holding, storage, settling, and aeration pits, ponds, and lagoons. CCR surface impoundments are used to receive CCRs that have been sluiced (flushed or mixed with water to facilitate movement), or wastes from wet air pollution control devices, often in addition to other solid wastes.

Existing CCR landfill means a CCR landfill which was in operation on, or for which construction commenced prior to [the effective date of the final rule]. A CCR landfill has commenced construction if the owner or operator has obtained the Federal, State and local approvals or permits necessary to begin physical construction; and either:

(1) A continuous on-site, physical construction program has begun; or

(2) The owner or operator has entered into contractual obligations—which cannot be cancelled or modified without substantial loss—for physical construction of the CCR landfill to be completed within a reasonable time.

Existing CCR surface impoundment means a surface impoundment which was in operation on, or for which construction commenced prior to [the effective date of the final rule]. A CCR surface impoundment has commenced construction if the owner or operator has obtained the Federal, State and local approvals or permits necessary to begin physical construction; and either

(1) A continuous on-site, physical construction program has begun; or

(2) The owner or operator has entered into contractual obligations—which can not be cancelled or modified without substantial loss—for physical construction of the CCR surface impoundment to be completed within a reasonable time.

Facility means all contiguous land and structures, other appurtenances, and improvements on the land used for the disposal of CCRs.

Factor of safety (Safety factor) means the ratio of the forces tending to resist the failure of a structure to the forces tending to cause such failure as determined by accepted engineering practice.

Freeboard means the vertical distance between the slurry or liquid elevation in an impoundment and the lowest point on the crest of the impoundment embankment.

Groundwater means water below the land surface in a zone of saturation.

Hazard potential classification means the possible adverse incremental consequences that result from the release of water or stored contents due to failure of a dam (or impoundment) or mis-operation of the dam or appurtenances. (Note: The Hazard Potential Classification System for Dams was developed by the U.S. Army Corps of Engineers for the National Inventory of Dams.)

(1) *High hazard potential surface impoundment* means a surface impoundment where failure or mis-operation will probably cause loss of human life.

(2) *Significant hazard potential surface impoundment* means a surface impoundment where failure or mis-operation results in no probable loss of human life, but can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns.

(3) *Low hazard potential surface impoundment* means a surface impoundment where failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the surface impoundment owner's property.

Independent registered professional engineer or hydrologist means a scientist or engineer who is not an employee of the owner or operator of a CCR landfill or surface impoundment who has received a baccalaureate or post-graduate degree in the natural sciences or engineering and has sufficient training and experience in groundwater hydrology and related fields as may be demonstrated by state registration, professional certifications, or completion of accredited university programs that enable that individual to make sound professional judgments regarding the technical information for which a certification under this subpart is necessary.

Lateral expansion means a horizontal expansion of the waste boundaries of an existing CCR landfill, or existing CCR surface impoundment made after [the effective date of the final rule].

New CCR landfill means a CCR landfill in which there is placement of CCRs without the presence of free liquids, which began operation, or for which the construction commenced after [the effective date of the final rule].

New CCR surface impoundment means a CCR surface impoundment from which there is placement of CCRs with the presence of free liquids, which began operation, or for which the construction commenced after [the effective date of the final rule].

Operator means the person(s) responsible for the overall operation of a facility.

Owner means the person(s) who owns a facility or part of a facility.

Probable maximum precipitation means the value for a particular area which represents an envelopment of depth-duration-area rainfall relations for all storm types affecting that area adjusted meteorologically to maximum conditions.

Recognized and generally accepted good engineering practices means engineering maintenance or operation activities based on established codes, standards, published technical reports, recommended practice, or similar document. Such practices detail generally approved ways to perform specific engineering, inspection, or mechanical integrity activities.

Representative sample means a sample of a universe or whole (*e.g.*, waste pile, lagoon, groundwater) which can be expected to exhibit the average properties of the universe or whole.

Run-off means any rainwater, leachate, or other liquid that drains over land from any part of a CCR landfill or surface impoundment.

Run-on means any rainwater, leachate, or other liquid that drains over land onto any part of a CCR landfill or surface impoundment.

Sand and gravel pit or quarry means an excavation for the commercial extraction of aggregate for use in construction projects.

State means any of the several States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands.

Surface water means all water naturally open to the atmosphere (rivers, lakes, reservoirs, ponds, streams, impoundments, seas, estuaries, etc.).

Uppermost aquifer means the geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically interconnected with this aquifer within the facility's property boundary.

Waste boundary means a vertical surface located at the hydraulically downgradient limit of the CCR landfill or CCR surface impoundment, or lateral expansion. The vertical surface extends down into the uppermost aquifer.

§§ 257.42–257.49 [Reserved]

General Requirements

§ 257.50 Applicability of other regulations.

(a) The owner or operator of a CCR landfill or CCR surface impoundment must comply with any other applicable federal, state, tribal, or local laws or other requirements.

§§ 257.51–257.59 [Reserved]

Location Restrictions

§ 257.60 Placement above the natural water table.

(a) New CCR landfills and new CCR surface impoundments and lateral expansions must be constructed with a base that is located a minimum of two feet above the upper limit of the natural water table.

(b) For purposes of this section, natural water table means the natural level at which water stands in a shallow well open along its length and penetrating the surficial deposits just deeply enough to encounter standing water at the bottom. This level is uninfluenced by groundwater pumping or other engineered activities.

§ 257.61 Wetlands.

(a) New CCR landfills, new CCR surface impoundments, and lateral expansions shall not be located in wetlands, unless the owner or operator can make the following demonstrations, certified by an independent registered professional engineer or hydrologist. The owner or operator must place the demonstrations in the operating record and the owner's or operator's publicly accessible internet site, and notify the state of this action.

(1) Where applicable under section 404 of the Clean Water Act or applicable state wetlands laws, the presumption that a practicable alternative to the proposed landfill, surface impoundment, or lateral expansion is available which does not involve wetlands is clearly rebutted; and

(2) The construction and operation of the new CCR landfill, new CCR surface impoundment, or lateral expansion will not:

(i) Cause or contribute to violations of any applicable state water quality standard,

(ii) Violate any applicable toxic effluent standard or prohibition under Section 307 of the Clean Water Act;

(iii) Jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of a critical habitat, protected under the Endangered Species Act of 1973; and

(iv) Violate any requirement under the Marine Protection, Research, and Sanctuaries Act of 1972 for the protection of a marine sanctuary; and

(3) The new CCR landfill, new CCR surface impoundment, or lateral expansion will not cause or contribute to significant degradation of wetlands. The owner or operator must demonstrate the integrity of the new CCR landfill, new CCR surface impoundment, or lateral expansion and its ability to protect ecological resources by addressing the following factors:

(i) Erosion, stability, and migration potential of native wetland soils, muds and deposits used to support the new CCR landfill, new CCR surface impoundment, or lateral expansion;

(ii) Erosion, stability, and migration potential of dredged and fill materials used to support the landfill or surface impoundment.

(iii) The volume and chemical nature of the CCRs.

(iv) Impacts on fish, wildlife, and other aquatic resources and their habitat from release of CCRs.

(v) The potential effects of catastrophic release of CCRs to the wetland and the resulting impacts on the environment; and

(vi) Any additional factors, as necessary, to demonstrate that ecological resources in the wetland are sufficiently protected; and

(4) To the extent required under section 404 of the Clean Water Act or applicable state wetlands laws, steps have been taken to attempt to achieve no net loss of wetlands (as defined by acreage and function) by first avoiding impacts to wetlands to the maximum extent practicable as required by paragraph (a)(1) of this section, then minimizing unavoidable impacts to the maximum extent practicable, and finally offsetting remaining unavoidable wetland impacts through all appropriate and practicable compensatory mitigation actions (*e.g.,* restoration of existing degraded wetlands or creation of man-made wetlands); and

(5) Sufficient information is available to make a reasonable determination with respect to these demonstrations.

(b) For purposes of this section, *wetlands* means those areas defined in 40 CFR 232.2.

§ 257.62 Fault areas.

(a) New CCR landfills, new CCR surface impoundments and lateral expansions shall not be located within 200 feet (60 meters) of a fault that has had displacement in Holocene time unless the owner or operator demonstrates that an alternative setback distance of less than 200 feet (60 meters) will prevent damage to the structural integrity of the new CCR landfill, new CCR surface impoundment and lateral expansion and will be protective of human health and the environment. The demonstration must be certified by an independent registered professional engineer and the owner or operator must notify the state that the demonstration has been placed in the operating record and on the owner's or operator's publicly accessible Internet site.

(b) For the purposes of this section:

(1) *Fault* means a fracture or a zone of fractures in any material along which strata on one side have been displaced with respect to that on the other side.

(2) *Displacement* means the relative movement of any two sides of a fault measured in any direction.

(3) *Holocene* means the most recent epoch of the Quaternary period, extending from the end of the Pleistocene Epoch to the present.

§ 257.63 Seismic impact zones.

(a) New CCR landfills, new CCR surface impoundments and lateral expansions shall not be located in seismic impact zones, unless the owner or operator demonstrates that all containment structures, including liners, leachate collection systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site. The demonstration must be certified by an independent registered professional engineer and the owner or operator must notify the state that the demonstration has been placed in the operating record and on the owner's or operator' publicly accessible internet site.

(b) For the purposes of this section:

(1) *Seismic impact zone* means an area with a ten percent or greater probability that the maximum horizontal acceleration in lithified earth material, expressed as a percentage of the earth's gravitational pull (g), will exceed 0.10g in 250 years.

(2) *Maximum horizontal acceleration in lithified earth material* means the maximum expected horizontal acceleration depicted on a seismic hazard map, with a 98 percent or greater probability that the acceleration will not be exceeded in 50 years, or the maximum expected horizontal acceleration based on a site-specific seismic risk assessment.

(3) *Lithified earth material* means all rock, including all naturally occurring and naturally formed aggregates or masses of minerals or small particles of older rock that formed by crystallization of magma or by induration of loose sediments. This term does not include man-made materials, such as fill, concrete, and asphalt, or unconsolidated earth materials, soil, or regolith lying at or near the earth surface.

§ 257.64 Unstable areas.

(a) Owners or operators of new or existing CCR landfills, new or existing CCR surface impoundments and lateral expansions located in an unstable area must demonstrate that engineering measures have been incorporated into the landfill, surface impoundment, or lateral expansion design to ensure that the integrity of the structural components of the landfill or surface impoundment will not be disrupted. The demonstration must be certified by an independent registered professional engineer. The owner or operator must notify the state that the demonstration has been placed in the operating record and on the owner's or operator's publicly accessible internet site. The owner or operator must consider the following factors, at a minimum, when determining whether an area is unstable:

(1) On-site or local soil conditions that may result in significant differential settling;

(2) On-site or local geologic or geomorphologic features; and

(3) On-site or local human-made features or events (both surface and subsurface).

(b) For purposes of this section:

(1) *Unstable area* means a location that is susceptible to natural or human-induced events or forces capable of impairing the integrity of some or all of the CCR landfill or CCR surface impoundment or lateral expansion structural components responsible for preventing releases from a landfill or surface impoundment. Unstable areas can include poor foundation conditions, areas susceptible to mass movements, and Karst terrains.

(2) *Structural components* means liners, leachate collection systems, final covers, run-on/run-off systems, and any other component used in the construction and operation of the CCR landfill or CCR surface impoundment or lateral expansion that is necessary for protection of human health and the environment.

(3) *Poor foundation conditions* means those areas where features exist which indicate that a natural or man-induced event may result in inadequate foundation support for the structural components of a CCR landfill, CCR surface impoundment, or lateral expansion.

(4) *Areas susceptible to mass movement* means those areas of

influence (*i.e.,* areas characterized as having an active or substantial possibility of mass movement) where the movement of earth material at, beneath, or adjacent to the CCR landfill, CCR surface impoundment, or lateral expansion, because of natural or man-induced events, results in the downslope transport of soil and rock material by means of gravitational influence. Areas of mass movement include, but are not limited to, landslides, avalanches, debris slides and flows, soil fluction, block sliding, and rock fall.

(5) *Karst terranes* means areas where karst topography, with its characteristic surface and subterranean features, has developed as a result of dissolution of limestone, dolomite, or other soluble rock. Characteristic physiographic features present in karst terranes include, but are not limited to, sinkholes, sinking streams, caves, large springs, and blind valleys.

§ 257.65 Closure of existing CCR landfills and surface impoundments.

(a) Existing CCR landfills and surface impoundments that cannot make the demonstration specified in § 257.64 (a) pertaining to unstable areas, must close by [date five years after the effective date of the final rule], in accordance with § 257.100 and conduct post-closure activities in accordance with § 257.101.

(b) The deadline for closure required by paragraph (a) of this section may be extended up to two years if the owner or operator can demonstrate that:

(1) There is no available alternative disposal capacity;

(2) There is no immediate threat to human health and the environment.

(c) The demonstration in paragraph (b) of this section must be certified by an independent registered professional engineer or hydrologist.

(d) The owner or operator must place the demonstration in paragraph (b) of this section in the operating record and on the owner's or operator's publicly accessible internet site and notify the state that this action was taken.

§§ 257.66–257.69 [Reserved]

Design Criteria

§ 257.70 Design criteria for new CCR landfills and lateral expansions.

(a) New CCR landfills and lateral expansions of CCR landfills shall be constructed:

(1) With a composite liner, as defined in paragraph (a)(2) of this section and a leachate collection system that is designed and constructed to maintain less than a 30-cm depth of leachate over the liner. The design of the composite liner and leachate collection system must be prepared by, or under the direction of, and certified by an independent registered, professional engineer.

(2) For purposes of this section, *composite liner* means a system consisting of two components; the upper component must consist of a minimum 30-mil flexible membrane liner (FML), and the lower component must consist of at least a two-foot layer of compacted soil with a hydraulic conductivity of no more than 1×10^{-7} cm/sec. FML components consisting of high density polyethylene (HDPE) shall be at least 60-mil thick. The FML component must be installed in direct and uniform contact with the compacted soil component.

(3) For purpose of this section, *hydraulic conductivity* means the rate at which water can move through a permeable medium. (*i.e.,* the coefficient of permeability).

(b) [Reserved]

§ 257.71 Design criteria for existing CCR surface impoundments.

(a) No later than [five years after effective date of final rule] existing CCR surface impoundments shall be constructed:

(1) With a composite liner, as defined in paragraph (a)(2) of this section and a leachate collection system between the upper and lower components of the composite liner. The design shall be in accordance with a design prepared by, or under the direction of, and certified by an independent registered professional engineer.

(2) For purposes of this section, *composite liner* means a system consisting of two components; the upper component must consist of a minimum 30-mil flexible membrane line (FML), and the lower component must consist of at least two-foot layer of compacted soil with a hydraulic conductivity of no more than 1×10^{-7} cm/sec. FML components consisting of high density polyethylene (HDPE) shall be at least 60-mil thick. The FML component must be installed in direct and uniform contact with the compacted soil component.

(3) For purposes of this section, *hydraulic conductivity* means the rate at which water can move through a permeable medium (*i.e.,* the coefficient of permeability).

(b) The owner or operator of an existing CCR surface impoundment shall place in the operating record and on the owner's or operator's publicly accessible internet site, and provide to the state a history of construction, and any record or knowledge of structural instability if the existing surface impoundment can:

(1) Impound CCRs to an elevation of five feet or more above the upstream toe of the structure and can have a storage volume of 20 acre-feet or more; or

(2) Impound CCRs to an elevation of 20 feet or more above the upstream toe of the structure.

(c) For purposes of this subpart, *upstream toe* means, for an embankment dam, the junction of the upstream slope of the dam with the ground surface. (Federal Guidelines for Dam Safety, Glossary of Terms, Federal Emergency Management Agency, April 2004.)

(d) The history of construction specified in paragraph (b) of this section shall contain, at a minimum, the following information as may be available:

(1) The name and address of the persons owning or operating the CCR surface impoundment; the name associated with the CCR surface impoundment; and the identification number of the CCR surface impoundment if one has been assigned by the state.

(2) The location of the CCR surface impoundment indicated on the most recent USGS 7½ minute or 15 minute topographic quadrangle map, or a topographic map of equivalent scale if a USGS map is not available.

(3) A statement of the purpose for which the CCR surface impoundment is being used.

(4) The name and size in acres of the watershed affecting the CCR surface impoundment.

(5) A description of the physical and engineering properties of the foundation materials on which the CCR surface impoundment is constructed.

(6) A statement of the type, size, range, and physical and engineering properties of the materials used in constructing each zone or stage of the CCR surface impoundment; the method of site preparation and construction of each zone of the CCR surface impoundment; and the approximate dates of construction, and each successive stage of construction of the CCR surface impoundment.

(7) At a scale not to exceed 1 inch = 100 feet, detailed dimensional drawings of the CCR surface impoundment, including a plan view and cross sections of the length and width of the CCR surface impoundment, showing all zones, foundation improvements, drainage provisions, spillways, diversion ditches, outlets, instrument locations, and slope protection, in addition to the measurement of the minimum vertical distance between the crest of the CCR surface impoundment

and the reservoir surface at present and under design storm conditions, CCR slurry level and CCR waste water level, and any identifiable natural or manmade features which could affect operation of the CCR surface impoundment.

(8) A description of the type and purpose of existing or proposed instrumentation.

(9) Graphs showing area-capacity curves.

(10) The hazard potential classification for which the facility is designed and a detailed explanation of the basis for this classification.

(11) A description of the spillway and diversion design features and capacities and calculations used in their determination.

(12) The computed minimum factor of safety for slope stability of the CCR retaining structure(s) and the analyses used in their determinations.

(13) A certification by an independent registered professional engineer that the design of the CCR surface impoundment is in accordance with current, prudent engineering practices for the maximum volume of CCR slurry and CCR waste water which can be impounded therein and for the passage of runoff from the design storm which exceeds the capacity of the CCR surface impoundment; or, in lieu of the certification, a report indicating what additional investigations, analyses, or improvement work are necessary before such a certification can be made by an independent registered professional engineer, including what provisions have been made to carry out such work in addition to a schedule for completion of such work. Upon completion of such work, the owner or operator shall place the certification in the operating record and on the owner's or operator's publicly accessible internet site and provide to the state notice of such certification.

(14) The construction specifications and provisions for surveillance, maintenance, and repair of the CCR surface impoundment.

(15) General provisions for closure.

(e) A permanent identification marker, at least six feet high and showing the identification number of the existing CCR surface impoundment, if one has been assigned by the state, the name associated with the CCR surface impoundment and the name of the person owning or operating the structure, shall be located on or immediately adjacent to each existing CCR surface impoundment. This requirement becomes effective [date 60 days after the effective date of the final rule].

(f) For existing CCR surface impoundments classified as having a high or significant hazard potential, as certified by an independent registered professional engineer, the owner or operator shall develop and maintain in the operating record, and on the owner's or operator' publicly accessible internet site, an Emergency Action Plan which: defines responsible persons and the actions to be taken in the event of a dam-safety emergency; provides contact information for emergency responders; includes a map which delineates the downstream area which would be affected in the event of a dam failure; and includes provisions for an annual face-to-face meeting or exercise between representatives of the facility owner and the local emergency responders.

(g) CCR surface impoundments shall be dredged of CCRs and lined with a composite liner system, as defined in paragraph (d)(2) of this section, by [date five years after the effective date of the final rule] or closed in accordance with § 257.100.

§ 257.72 Design criteria for new CCR surface impoundments and lateral expansions.

(a) New CCR surface impoundments and lateral expansions of CCR landfills or surface impoundments shall be constructed:

(1) With a composite liner, as defined in paragraph (a)(2) of this section and a leachate collection system between the upper and lower components of the composite liner. The design of the composite liner and leachate collection system must be prepared by, or under the direction of, and certified by an independent registered, professional engineer.

(2) For purposes of this section, *composite liner* means a system consisting of two components; the upper component must consist of a minimum 30-mil flexible membrane liner (FML), and the lower component must consist of at least a two-foot layer of compacted soil with a hydraulic conductivity of no more than 1×10^{-7} cm/sec. FML components consisting of high density polyethylene (HDPE) shall be at least 60-mil thick. The FML component must be installed in direct and uniform contact with the compacted soil component.

(3) For purpose of this section, *hydraulic conductivity* means the rate at which water can move through a permeable medium (*i.e.,* the coefficient of permeability).

(b) Plans for the design, construction, and maintenance of new CCR surface impoundments and lateral expansions shall be placed in the operating record and be submitted to the state upon certification by an independent registered professional engineer, and a notice shall be placed on the owner's or operator's publicly accessible internet site that such plans have been placed in the operating record and submitted to the state, if such proposed surface impoundment or lateral expansion can:

(1) Impound CCRs to an elevation of five feet or more above the upstream toe of the structure and can have a storage volume of 20 acre-feet or more; or

(2) Impound CCRs to an elevation of 20 feet or more above the upstream toe of the structure.

(c) A permanent identification marker, at least six feet high and showing the identification number of the CCR surface impoundment, if one has been assigned by the state, the name associated with the CCR surface impoundment and the name of the person owning or operating the structure, shall be located on or immediately adjacent to each CCR surface impoundment. This requirement becomes effective [date 60 days after the effective date of the final rule].

(d) The plan specified in paragraph (b) of this section, shall contain at a minimum the following information:

(1) The name and address of the persons owning or operating the CCR surface impoundment; the name associated with the CCR surface impoundment; and the identification number of the CCR surface impoundment if one has been assigned by the state.

(2) The location of the CCR surface impoundment indicated on the most recent USGS 7½ minute or 15 minute topographic quadrangle map, or a topographic map of equivalent scale if a USGS map is not available.

(3) A statement of the purpose for which the CCR surface impoundment is being used.

(4) The name and size in acres of the watershed affecting the CCR surface impoundment.

(5) A description of the physical and engineering properties of the foundation materials on which the CCR surface impoundment is constructed.

(6) A statement of the type, size, range, and physical and engineering properties of the materials used in constructing each zone or stage of the CCR surface impoundment; the method of site preparation and construction of each zone of the CCR surface impoundment; and the approximate dates of construction, and each successive stage of construction of the CCR surface impoundment.

(7) At a scale not to exceed 1 inch = 100 feet, detailed dimensional drawings

of the CCR surface impoundment, including a plan view and cross sections of the length and width of the CCR surface impoundment, showing all zones, foundation improvements, drainage provisions, spillways, diversion ditches, outlets, instrument locations, and slope protection, in addition to the measurement of the minimum vertical distance between the crest of the CCR surface impoundment and the reservoir surface at present and under design storm conditions, CCR slurry level and CCR waste water level, and any identifiable natural or manmade features which could affect operation of the CCR surface impoundment.

(8) A description of the type and purpose of existing or proposed instrumentation.

(9) Graphs showing area-capacity curves.

(10) The hazard potential classification for which the facility is designed and a detailed explanation of the basis for this classification.

(11) A description of the spillway and diversion design features and capacities and calculations used in their determination.

(12) The computed minimum factor of safety for slope stability of the CCR retaining structure(s) and the analyses used in their determinations.

(13) The construction specifications and provisions for surveillance, maintenance, and repair of the CCR surface impoundment.

(14) General provisions for closure.

(15) A certification by an independent registered professional engineer that the design of the CCR surface impoundment is in accordance with generally accepted engineering standards for the maximum volume of CCR slurry and CCR waste water which can be impounded therein and for the passage of runoff from the design storm which exceeds the capacity of the CCR surface impoundment. The owner or operator shall place the certification in the operating record and on the owner's or operator's publicly accessible internet site and notify the state that these actions have been taken.

(e) Any changes or modifications to the plans for CCR surface impoundments shall be certified by an independent registered professional engineer and provided to the state prior to the initiation of such changes or modifications. The certification required in this paragraph shall be placed on the owner's or operator's publicly accessible internet site.

(f) For CCR surface impoundments classified by as having a high or significant hazard potential, as certified by an independent registered professional engineer, the owner or operator shall develop and maintain in the operating record and on the owner's or operator's publicly accessible internet site, an Emergency Action Plan which: Defines responsible persons and the actions to be taken in the event of a dam-safety emergency; provides contact information for emergency responders; includes a map which delineates the downstream area which would be affected in the event of a dam failure; and includes provisions for an annual face-to-face meeting or exercise between representatives of the facility owner and the local emergency responders.

§§ 257.73–257.79 [Reserved]

Operating Criteria

§ 257.80 Air criteria.

(a) CCR surface impoundments and CCR landfills must be managed in a manner that fugitive dusts do not exceed 35 $\mu g/m^3$, unless some alternative standard has been established pursuant to applicable requirements developed under a State Implementation Plan (SIP) approved or promulgated by the Administrator pursuant to section 110 of the Clean Air Act, as amended.

(b) CCR surface impoundments must be managed to control wind dispersal of dusts, consistent with the standard in paragraph (a) of this section.

(c) CCR landfills must be managed to control wind dispersal of dusts, consistent with the standard in paragraph (a). CCRs must be emplaced as conditioned CCRs as defied in paragraph (d) of this section.

(d) For purposes of this section, conditioning means wetting CCRs with water to a moisture content that will prevent wind dispersal, but will not result in free liquids.

(e) Documentation of the measures taken to comply with the requirements of this section must be certified by an independent registered professional engineer and notification provided to the state that the documentation has been placed in the operating record and on the owner's or operator's publicly accessible internet site.

§ 257.81 Run-on and run-off controls.

(a) Owners or operators of all CCR landfills and surface impoundments must design, construct, and maintain:

(1) A run-on control system to prevent flow onto the active portion of the CCR landfill or surface impoundment during the peak discharge from a 24-hour, 25-year storm;

(2) A run-off control system from the active portion of the CCR landfill or surface impoundment to collect and control at least the water volume resulting from a 24-hour, 25-year storm.

(b) The design required in paragraph (a) of this section must be certified by an independent registered professional engineer that the design meets the requirements of this section. The owner or operator must notify the state that the design has been placed in the operating record and on the owner's or operator's publicly accessible internet site.

(c) The owner or operator must prepare a report, certified by an independent registered professional engineer, that documents how relevant calculations were made, and how the control systems meet the requirements of this subpart and notify the state that the report has been placed in the operating record and made available to the public on the owner's or operator's publicly accessible internet site.

(d) Run-off from the active portion of the CCR landfill or surface impoundment must be handled in accordance with § 257.3–3.

§ 257.82 Surface water requirements.

(a) CCR landfills and surface impoundments shall not:

(1) Cause a discharge of pollutants into waters of the United States, including wetlands, that violates any requirements of the Clean Water Act, including, but not limited to, the National Pollutant Discharge Elimination System (NPDES) requirements, pursuant to section 402 of the Clean Water Act.

(2) Cause the discharge of a nonpoint source of pollution to waters of the United States, including wetlands, that violates any requirement of an area-wide or State-wide water quality management plan that has been approved under section 208 or 319 of the Clean Water Act, as amended.

(b) [Reserved]

§ 257.83 Surface impoundment inspection requirements.

(a) All existing CCR surface impoundments shall be examined as follows:

(1) At intervals not exceeding 7 days for appearances of structural weakness and other hazardous conditions.

(2) At intervals not exceeding 7 days all instruments shall be monitored.

(3) All inspections required by paragraphs (a)(1) and (2) of this section shall be performed by a qualified person, as defined in paragraph (e) of this section, designated by the person owning or operating the CCR surface impoundment.

(4) All existing CCR surface impoundments shall be inspected

annually by an independent registered professional engineer to assure that the design, operation, and maintenance of the surface impoundment is in accordance with generally accepted engineering standards. The owner or operator must notify the state that a certification by the independent registered professional engineer that the design, operation, and maintenance of the surface impoundment is in accordance with generally accepted engineering standards has been placed in the operating record and on the owner's or operator's publicly accessible internet site.

(b) When a potentially hazardous condition develops, the person owning or operating the CCR surface impoundment shall immediately:

(1) Take action to eliminate the potentially hazardous condition;

(2) Notify potentially affected persons and state and local first responders;

(3) Notify and prepare to evacuate, if necessary, all personnel from the owner or operator's property which may be affected by the potentially hazardous conditions; and

(4) Direct a qualified person to monitor all instruments and examine the structure at least once every eight hours, or more often as required by an authorized representative of the state.

(c) After each inspection and instrumentation monitoring referred to in paragraphs (a) and (b) of this section, each qualified person who conducted all or any part of the inspection or instrumentation monitoring shall promptly record the results of such inspection or instrumentation monitoring in a book which shall be available in the operating record and such qualified person shall also promptly report the results of the inspection or monitoring to the state. A report of each inspection and instrumentation monitoring shall also be placed on the owner's or operator's publicly accessible internet site.

(d) All inspection and instrumentation monitoring reports recorded in accordance with paragraph (c) of this section shall include a report of the action taken to abate hazardous conditions and shall be promptly signed by the person designated by the owner or operator as responsible for health and safety at the owner or operator's facility.

(e) The qualified person or persons referred to in this section shall be trained to recognize specific signs of structural instability and other hazardous conditions by visual observation and, if applicable, to monitor instrumentation.

§ 257.84 Recordkeeping requirements.

(a) The owner or operator of a CCR landfill or surface impoundment must record and retain near the facility in an operating record and on the owner's or operator's publicly accessible internet site, all records, reports, studies or other documentation required to demonstrate compliance with §§ 257.60 through 257.83 and 257.90 through 257.101.

(b) Except as provided in paragraph (c) of this section, every twelfth month following [the effective date of the final rule] for CCR surface impoundments addressed under § 257.71, and every twelfth month following the date of the initial plan for the design (including lateral expansions), construction, and maintenance of the surface impoundments addressed under § 257.72(b), the owner or operator of such CCR surface impoundments that have not been closed in accordance with § 257.100 shall place in the operating record and on the owner's or operator's publicly accessible internet site, a report containing the following information. The owner or operator shall notify the state that the report has been placed in the operating record and on the owner's or operator's publicly accessible internet site.

(1) Changes in the geometry of the impounding structure for the reporting period.

(2) Location and type of installed instruments and the maximum and minimum recorded readings of each instrument for the reporting period.

(3) The minimum, maximum, and present depth and elevation of the impounded water, sediment, or slurry for the reporting period.

(4) Storage capacity of the impounding structure.

(5) The volume of the impounded water, sediment, or slurry at the end of the reporting period.

(6) Any other change which may have affected the stability or operation of the impounding structure that has occurred during the reporting period.

(7) A certification by an independent registered professional engineer that all construction, operation, and maintenance were in accordance with the approved plan.

(c) A report is not required under this section when the owner or operator provides the state with a certification by an independent registered professional engineer that there have been no changes under paragraphs (b)(1) through (b)(6) of this section to the surface impoundment. However, a report containing the information set out in paragraph (b) of this section shall be placed in the operating record and on the owner's or operator's publicly accessible internet site and notification submitted to the state at least every 5 years.

§§ 257.85–257.89 [Reserved]

Groundwater Monitoring and Corrective Action

§ 257.90 Applicability.

(a) Owners and operators of all CCR landfills, surface impoundments subject to this subpart must comply with the groundwater monitoring requirements according to the following schedule:

(1) Existing CCR landfills and surface impoundments must comply with the groundwater monitoring requirements specified in §§ 257.91 through 257.95 within [one year after the effective date of the final rule];

(2) New CCR landfills and surface impoundments must comply with the groundwater monitoring requirements specified in §§ 257.91 through 257.95 before CCR can be disposed of in the CCR landfill or surface impoundment.

(b) The owner or operator must notify the state once each year throughout the active life and post-closure care period that the CCR landfill or surface impoundment is in compliance with the groundwater monitoring and corrective action provisions of this subpart.

(c) Once established at a CCR landfill or surface impoundment, groundwater monitoring shall be conducted throughout the active life and post-closure care period of that CCR landfill or surface impoundment as specified in § 257.101.

§ 257.91 Groundwater monitoring systems.

(a) A groundwater monitoring system must be installed that consists of a sufficient number of wells, installed at appropriate locations and depths, to yield groundwater samples from the uppermost aquifer (as defined in § 257.41) that:

(1) Represent the quality of background groundwater that has not been affected by leakage from a CCR landfill or surface impoundment. A determination of background quality may include sampling of wells that are not hydraulically upgradient of the CCR management area where:

(i) Hydrogeologic conditions do not allow the owner or operator to determine what wells are hydraulically upgradient; or

(ii) Sampling at other wells will provide an indication of background groundwater quality that is as representative or more representative than that provided by the upgradient wells; and

(2) Represent the quality of groundwater passing the waste

boundary. The downgradient monitoring system must be installed at the waste boundary that ensures detection of groundwater contamination in the uppermost aquifer.

(b) The groundwater monitoring system must include at a minimum one up gradient and three downgradient wells.

(c) A multiunit groundwater monitoring system may be installed instead of separate groundwater monitoring systems for each CCR landfill or surface impoundment when the facility has several units, provided the multi-unit groundwater monitoring system meets the requirement of § 257.91(a) and will be as protective of human health and the environment as individual monitoring systems for each CCR landfill or surface impoundment, based on the following factors:

(1) Number, spacing, and orientation of the CCR landfill or surface impoundment;

(2) Hydrogeologic setting;

(3) Site history;

(4) Engineering design of the CCR landfill or surface impoundment; and

(d) Monitoring wells must be cased in a manner that maintains the integrity of the monitoring well bore hole. This casing must be screened or perforated and packed with gravel or sand, where necessary, to enable collection of groundwater samples. The annular space (*i.e.,* the space between the bore hole and well casing) above the sampling depth must be sealed to prevent contamination of samples and the groundwater.

(1) The owner or operator of the CCR landfill or surface impoundment must notify the state that the design, installation, development, and decommission of any monitoring wells, piezometers and other measurement, sampling, and analytical devices documentation has been placed in the operating record and on the owner's or operator's publicly accessible internet site; and

(2) The monitoring wells, piezometers, and other measurement, sampling, and analytical devices must be operated and maintained so that they perform to design specifications throughout the life of the monitoring program.

(e) The number, spacing, and depths of monitoring systems shall be:

(1) Determined based upon site-specific technical information that must include thorough characterization of:

(i) Aquifer thickness, groundwater flow rate, groundwater flow direction including seasonal and temporal fluctuations in groundwater flow; and

(ii) Saturated and unsaturated geologic units and fill materials overlying the uppermost aquifer, materials comprising the uppermost aquifer, and materials comprising the confining unit defining the lower boundary of the uppermost aquifer; including, but not limited to: thicknesses, stratigraphy, lithology, hydraulic conductivities, porosities and effective porosities.

(2) Certified by an independent registered professional engineer or hydrologist. Within 14 days of this certification, the owner or operator must notify the state that the certification has been placed in the operating record and on the owner's or operator's publicly accessible internet site.

§ 257.92 [Reserved]

§ 257.93 Groundwater sampling and analysis requirements.

(a) The groundwater monitoring program must include consistent sampling and analysis procedures that are designed to ensure monitoring results that provide an accurate representation of groundwater quality at the background and downgradient wells installed in compliance with § 257.91. The owner or operator of the CCR landfill or surface impoundment must notify the State that the sampling and analysis program documentation has been placed in the operating record and on the owner's or operator's publicly accessible internet site and the program must include procedures and techniques for:

(1) Sample collection;

(2) Sample preservation and shipment;

(3) Analytical procedures;

(4) Chain of custody control; and

(5) Quality assurance and quality control.

(b) The groundwater monitoring program must include sampling and analytical methods that are appropriate for groundwater sampling and that accurately measure hazardous constituents and other monitoring parameters in groundwater samples. Groundwater samples shall not be field-filtered prior to laboratory analysis.

(c) The sampling procedures and frequency must be protective of human health and the environment.

(d) Groundwater elevations must be measured in each well immediately prior to purging, each time groundwater is sampled. The owner or operator of the CCR landfill or surface impoundment must determine the rate and direction of groundwater flow each time groundwater is sampled. Groundwater elevations in wells which monitor the same CCR management area must be measured within a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater flow rate and direction.

(e) The owner or operator of the CCR landfill or surface impoundment must establish background groundwater quality in a hydraulically upgradient or background well(s) for each of the monitoring parameters or constituents required in the particular groundwater monitoring program that applies to the CCR landfill or surface impoundment, as determined under § 257.94(a) or § 257.95(a). Background groundwater quality may be established at wells that are not located hydraulically upgradient from the CCR landfill or surface impoundment if it meets the requirements of § 257.91(a)(1).

(f) The number of samples collected to establish groundwater quality data must be consistent with the appropriate statistical procedures determined pursuant to paragraph (g) of this section. The sampling procedures shall be those specified under § 257.94(b) for detection monitoring, § 257.95(b) and (c) for assessment monitoring, and § 257.96(b) for corrective action.

(g) The owner or operator of the CCR landfill or surface impoundment must specify in the operating record and on the owner's or operator's publicly accessible Internet site, one of the following statistical methods to be used in evaluating groundwater monitoring data for each hazardous constituent. The statistical test chosen shall be conducted separately for each hazardous constituent in each well.

(1) A parametric analysis of variance (ANOVA) followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's mean and the background mean levels for each constituent.

(2) An analysis of variance (ANOVA) based on ranks followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's median and the background median levels for each constituent.

(3) A tolerance or prediction interval procedure in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the upper tolerance or prediction limit.

(4) A control chart approach that gives control limits for each constituent.

(5) Another statistical test method that meets the performance standards of paragraph (h) of this section. The owner or operator of the CCR landfill or surface impoundment must place a justification for this alternative in the operating record and on the owner's or operator's publicly accessible internet site and notify the state of the use of this alternative test. The justification must demonstrate that the alternative method meets the performance standards of paragraph (h) of this section.

(h) Any statistical method chosen under paragraph (g) of this section shall comply with the following performance standards, as appropriate:

(1) The statistical method used to evaluate groundwater monitoring data shall be appropriate for the distribution of chemical parameters or hazardous constituents. If the distribution of the chemical parameters or hazardous constituents is shown by the owner or operator of the CCR landfill or surface impoundment to be inappropriate for a normal theory test, then the data should be transformed or a distribution-free theory test should be used. If the distributions for the constituents differ, more than one statistical method may be needed.

(2) If an individual well comparison procedure is used to compare an individual compliance well constituent concentration with background constituent concentrations or a ground-water protection standard, the test shall be done at a Type I error level no less than 0.01 for each testing period. If a multiple comparison procedure is used, the Type I experiment wise error rate for each testing period shall be no less than 0.05; however, the Type I error of no less than 0.01 for individual well comparisons must be maintained. This performance standard does not apply to tolerance intervals, prediction intervals, or control charts.

(3) If a control chart approach is used to evaluate groundwater monitoring data, the specific type of control chart and its associated parameter values shall be protective of human health and the environment. The parameters shall be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentration values for each constituent of concern.

(4) If a tolerance interval or a predictional interval is used to evaluate groundwater monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval must contain, shall be protective of human health and the environment. These parameters shall be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentration values for each constituent of concern.

(5) The statistical method shall account for data below the limit of detection with one or more statistical procedures that are protective of human health and the environment. Any practical quantitation limit (pql) that is used in the statistical method shall be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility.

(6) If necessary, the statistical method shall include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.

(i) The owner or operator of the CCR landfill or surface impoundment must determine whether or not there is a statistically significant increase over background values for each parameter or constituent required in the particular groundwater monitoring program that applies to the CCR landfill or surface impoundment, as determined under §§ 257.94(a) or 257.95(a).

(1) In determining whether a statistically significant increase has occurred, the owner or operator must compare the groundwater quality of each parameter or constituent at each monitoring well designated pursuant to § 257.91(a)(2) to the background value of that constituent, according to the statistical procedures and performance standards specified under paragraphs (g) and (h) of this section.

(2) Within a reasonable period of time after completing sampling and analysis, the owner or operator of the CCR landfill or surface impoundment must determine whether there has been a statistically significant increase over background at each monitoring well.

§ 257.94 Detection monitoring program.

(a) Detection monitoring is required at CCR landfills and surface impoundments at all groundwater monitoring wells. At a minimum, a detection monitoring program must include monitoring for the parameters listed in Appendix III to this part.

(b) The monitoring frequency for all parameters listed in Appendix III to this part shall be at least semiannual during the active life of the CCR landfill or surface impoundment (including closure) and the post-closure period. A minimum of four independent samples from each background and downgradient well must be collected and analyzed for the Appendix III parameters during the first semiannual sampling event.

(c) At least one sample from each background and downgradient well must be collected and analyzed during subsequent semiannual sampling events.

(d) If the owner or operator of the CCR landfill or surface impoundment determines, pursuant to § 257.93(g) that there is a statistically significant increase over background for one or more of the parameters listed in Appendix III to this part at any monitoring well at the waste boundary specified under § 257.91(a)(2), the owner or operator:

(1) Must, within 14 days of this finding, place a notice in the operating record and on the owner's or operator's publicly accessible internet site indicating which parameters have shown statistically significant changes from background levels, and notify the state that this notice was placed in the operating record and on the owner's or operator's publicly accessible internet site; and

(2) Must establish an assessment monitoring program meeting the requirements of § 257.95 of this part within 90 days except as provided for in paragraph (c)(3) of this section.

(3) The owner/operator may demonstrate that a source other than the CCR landfill or surface impoundment caused the statistically significant increase or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. A report documenting this demonstration must be certified by an independent registered professional engineer or hydrologist and be placed in the operating record and on the owner's or operator's publicly accessible internet site and the state notified of this finding. If a successful demonstration is made and documented, the owner or operator of the CCR landfill or surface impoundment may continue detection monitoring as specified in this section. If, after 90 days, a successful demonstration is not made, the owner or operator of the CCR landfill or surface impoundment must initiate an assessment monitoring program as required in § 257.95.

§ 257.95 Assessment monitoring program.

(a) Assessment monitoring is required whenever a statistically significant increase over background has been detected for one or more of the

constituents listed in the Appendix III to this part.

(b) Within 90 days of triggering an assessment monitoring program, and annually thereafter, the owner or operator of the CCR landfill or surface impoundment must sample and analyze the groundwater for all constituents identified in Appendix IV to this part. A minimum of one sample from each downgradient well must be collected and analyzed during each sampling event. For any constituent detected in the downgradient wells as a result of the complete Appendix IV analysis, a minimum of four independent samples from each well (background and downgradient) must be collected and analyzed to establish background for the constituents.

(c) After obtaining the results from the initial or subsequent sampling events required in paragraph (b) of this section, the owner or operator of the CCR landfill or surface impoundment must:

(1) Within 14 days, place a notice in the operating record and on the owner's or operator's publicly accessible internet site identifying the Appendix IV constituents that have been detected and notify the state that this notice has been placed in the operating record and on the owner's or operator's publicly accessible internet site;

(2) Within 90 days, and on at least a semiannual basis thereafter, resample all wells specified by § 257.91(a), conduct analyses for all parameters in Appendix III to this part and for those constituents in Appendix IV to this part that are detected in response to paragraph (b) of this section, and record their concentrations in the facility operating record and place the results on the owner's or operator's publicly accessible internet site. At least one sample from each well (background and downgradient) must be collected and analyzed during these sampling events.

(3) Establish background concentrations for any constituents detected pursuant to paragraph (b) or (c)(2) of this section; and

(4) Establish groundwater protection standards for all constituents detected pursuant to paragraph (b) or (c) of this section. The groundwater protection standards shall be established in accordance with paragraphs (g) or (h) of this section.

(d) If the concentrations of all Appendix IV constituents are shown to be at or below background values, using the statistical procedures in § 257.93(g), for two consecutive sampling events, the owner or operator of the CCR landfill or surface impoundment must place that information in the operating record and on the owner's or operator's publicly accessible internet site and notify the state of this finding and may return to detection monitoring.

(e) If the concentrations of any Appendix IV constituents are above background values, but all concentrations are below the groundwater protection standard established under paragraphs (g) or (h) of this section, using the statistical procedures in § 257.93(g), the owner or operator must continue assessment monitoring in accordance with this section.

(f) If one or more Appendix IV constituents are detected at statistically significant levels above the groundwater protection standard established under paragraphs (g) or (h) of this section in any sampling event, the owner or operator must, within 14 days of this finding, place a notice in the operating record and on the owner's or operator's publicly accessible internet site identifying the Appendix IV constituents that have exceeded the groundwater protection standard and notify the state and all appropriate local government officials that the notice has been placed in the operating record and on the owner's or operator's publicly accessible internet site. The owner or operator of the CCR landfill or surface impoundment also must:

(1)(i) Characterize the nature and extent of the release by installing additional monitoring wells as necessary;

(ii) Install at least one additional monitoring well at the facility boundary in the direction of contaminant migration and sample this well in accordance with paragraph (c)(2) of this section;

(iii) Notify all persons who own the land or reside on the land that directly overlies any part of the plume of contamination if contaminants have migrated off-site if indicated by sampling of wells in accordance with paragraph (f)(1) of this section; and

(iv) Initiate an assessment of corrective measures as required by § 257.96 of this part within 90 days; or

(2) May demonstrate that a source other than the CCR landfill or surface impoundment caused the contamination, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. A report documenting this demonstration must be certified by an independent registered professional engineer or hydrologist and placed in the operating record and on the owner's or operator's publicly accessible internet site, and the state notified of this action. If a successful demonstration is made the owner or operator of the CCR landfill or surface impoundment must continue monitoring in accordance with the assessment monitoring program pursuant to this section, and may return to detection monitoring if the Appendix IV constituents are at or below background as specified in paragraph (d) of this section. Until a successful demonstration is made, the owner or operator of the CCR landfill or surface impoundment must comply with paragraph (f) of this section including initiating an assessment of corrective measures.

(g) The owner or operator of the CCR landfill or surface impoundment must establish a groundwater protection standard for each Appendix IV constituent detected in the groundwater. The groundwater protection standard shall be:

(1) For constituents for which a maximum contaminant level (MCL) has been promulgated under section 1412 of the Safe Drinking Water Act (codified) under 40 CFR part 141, the MCL for that constituent;

(2) For constituents for which MCLs have not been promulgated, the background concentration for the constituent established from wells in accordance with § 257.91(a)(1); or

(3) For constituents for which the background level is higher than the MCL identified under paragraph (g)(1) of this section or health based levels identified under paragraph (h)(1) of this section, the background concentration.

(h) The owner or operator may establish an alternative groundwater protection standard for constituents for which MCLs have not been established provided that the alternative groundwater protection standard has been certified by an independent registered professional engineer and the state has been notified that the alternative groundwater protection standard has been placed in the operating record and on the owner's or operator's publicly accessible internet site. These groundwater protection standards shall be appropriate health based levels that satisfy the following criteria:

(1) The level is derived in a manner consistent with Agency guidelines for assessing the health risks of environmental pollutants;

(2) The level is based on scientifically valid studies conducted in accordance with the Toxic Substances Control Act Good Laboratory Practice Standards (40 CFR part 792) or equivalent;

(3) For carcinogens, the level represents a concentration associated with an excess lifetime cancer risk level

(due to continuous lifetime exposure) within the 1×10^{-4} to 1×10^{-6} range; and

(4) For systemic toxicants, the level represents a concentration to which the human population (including sensitive subgroups) could be exposed to on a daily basis that is likely to be without appreciable risk of deleterious effects during a lifetime. For purposes of this subpart, *systemic toxicants* include toxic chemicals that cause effects other than cancer or mutation.

(i) In establishing groundwater protection standards under paragraph (h) of this section, the owner or operator of the CCR landfill or surface impoundment may consider the following:

(1) Multiple contaminants in the groundwater;

(2) Exposure threats to sensitive environmental receptors; and

(3) Other site-specific exposure or potential exposure to groundwater.

§ 257.96 Assessment of corrective measures.

(a) Within 90 days of finding that any of the constituents listed in Appendix IV to this part have been detected at a statistically significant level exceeding the groundwater protection standards defined under § 257.95 (g) or (h) of this part, the owner or operator of the CCR landfill or surface impoundment must initiate an assessment of corrective measures. Such an assessment must be completed within 90 days.

(b) The owner or operator of the CCR landfill or surface impoundment must continue to monitor in accordance with the assessment monitoring program as specified in § 257.95.

(c) The assessment shall include an analysis of the effectiveness of potential corrective measures in meeting all of the requirements and objectives of the remedy as described under § 257.97, addressing at least the following:

(1) The performance, reliability, ease of implementation, and potential impacts of appropriate potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination;

(2) The time required to begin and complete the remedy;

(3) The costs of remedy implementation; and

(4) The institutional requirements such as state or local permit requirements or other environmental or public health requirements that may substantially affect implementation of the remedy(s).

(d) The owner or operator of the CCR landfill or surface impoundment must provide notification of the corrective measures assessment to the state and the public.

(e) The owner or operator must discuss the results of the corrective measures assessment, prior to the selection of remedy, in a public meeting with interested and affected parties.

§ 257.97 Selection of remedy.

(a) Based on the results of the corrective measures assessment conducted under § 257.96, the owner or operator of the CCR landfill or surface impoundment must select a remedy that, at a minimum, meets the standards listed in paragraph (b) of this section. The owner or operator of the CCR landfill or surface impoundment must notify the state and the public within 14 days of selecting a remedy, that a report certified by an independent registered professional engineer or hydrologist describing the selected remedy, has been placed in the operating record and on the owner's or operator's publicly accessible internet site, and how it meets the standards in paragraph (b) of this section.

(b) Remedies must:

(1) Be protective of human health and the environment;

(2) Attain the groundwater protection standard as specified pursuant to §§ 257.95 (g) or (h);

(3) Control the source(s) of releases so as to reduce or eliminate, to the maximum extent practicable, further releases of Appendix IV of this part constituents into the environment that may pose a threat to human health or the environment; and

(4) Comply with standards for management of wastes as specified in § 257.98(d).

(c) In selecting a remedy that meets the standards of paragraph (b) of this section, the owner or operator of the CCR landfill or surface impoundment shall consider the following evaluation factors:

(1) The long- and short-term effectiveness and protectiveness of the potential remedy(s), along with the degree of certainty that the remedy will prove successful based on consideration of the following:

(i) Magnitude of reduction of existing risks;

(ii) Magnitude of residual risks in terms of likelihood of further releases due to CCRs remaining following implementation of a remedy;

(iii) The type and degree of long-term management required, including monitoring, operation, and maintenance;

(iv) Short-term risks that might be posed to the community, workers, or the environment during implementation of such a remedy, including potential threats to human health and the environment associated with excavation, transportation, and redisposal of containment;

(v) Time until full protection is achieved;

(vi) Potential for exposure of humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment associated with excavation, transportation, redisposal, or containment;

(vii) Long-term reliability of the engineering and institutional controls; and

(viii) Potential need for replacement of the remedy.

(2) The effectiveness of the remedy in controlling the source to reduce further releases based on consideration of the following factors:

(i) The extent to which containment practices will reduce further releases;

(ii) The extent to which treatment technologies may be used.

(3) The ease or difficulty of implementing a potential remedy(s) based on consideration of the following types of factors:

(i) Degree of difficulty associated with constructing the technology;

(ii) Expected operational reliability of the technologies;

(iii) Need to coordinate with and obtain necessary approvals and permits from other agencies;

(iv) Availability of necessary equipment and specialists; and

(v) Available capacity and location of needed treatment, storage, and disposal services.

(4) The degree to which community concerns are addressed by a potential remedy(s).

(d) The owner or operator of the CCR landfill or surface impoundment shall specify as part of the selected remedy a schedule(s) for initiating and completing remedial activities. Such a schedule must require the initiation of remedial activities within a reasonable period of time taking into consideration the factors set forth in paragraphs (d) (1) through (8) of this section. The owner or operator of the CCR landfill or surface impoundment must consider the following factors in determining the schedule of remedial activities:

(1) Extent and nature of contamination;

(2) Reasonable probabilities of remedial technologies in achieving compliance with the groundwater protection standards established under § 257.95 (f) or (g) and other objectives of the remedy;

(3) Availability of treatment or disposal capacity for CCRs managed during implementation of the remedy;

(4) Desirability of utilizing technologies that are not currently available, but which may offer significant advantages over already available technologies in terms of effectiveness, reliability, safety, or ability to achieve remedial objectives;

(5) Potential risks to human health and the environment from exposure to contamination prior to completion of the remedy;

(6) Resource value of the aquifer including:

(i) Current and future uses;

(ii) Proximity and withdrawal rate of users;

(iii) Groundwater quantity and quality;

(iv) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to CCR constituents;

(v) The hydrogeologic characteristic of the facility and surrounding land;

(vi) Groundwater removal and treatment costs; and

(vii) The cost and availability of alternative water supplies.

(7) Other relevant factors.

(e) The owner or operator of the CCR landfill or surface impoundment may determine that remediation of a release of an Appendix IV constituent from a CCR landfill or surface impoundment is not necessary if the owner or operator of the CCR landfill or surface impoundment demonstrates the following, and notifies the state that the demonstration, certified by an independent registered professional engineer or hydrologist, has been placed in the operating record and on the owner's or operator's publicly accessible internet site:

(1) The groundwater is additionally contaminated by substances that have originated from a source other than a CCR landfill or surface impoundment and those substances are present in concentrations such that cleanup of the release from the CCR landfill or surface impoundment would provide no significant reduction in risk to actual or potential receptors; or

(2) The constituent(s) is present in groundwater that:

(i) Is not currently or reasonably expected to be a source of drinking water; and

(ii) Is not hydraulically connected with waters to which the hazardous constituents are migrating or are likely to migrate in a concentration(s) that would exceed the ground-water protection standards established under § 257.95 (g) or (h); or

(3) Remediation of the release(s) is technically impracticable; or

(4) Remediation results in unacceptable cross-media impacts.

(f) A determination by the owner or operator pursuant to paragraph (e) of this section shall not affect the obligation of the owner or operator to undertake source control measures or other measures that may be necessary to eliminate or minimize further releases to the groundwater, to prevent exposure to the groundwater, or to remediate the groundwater to concentrations that are reasonable and significantly reduce threats to human health or the environment.

§ 257.98 Implementation of the corrective action program.

(a) Based on the schedule established under § 257.97(d) for initiation and completion of remedial activities the owner or operator must:

(1) Establish and implement a corrective action groundwater monitoring program that:

(i) At a minimum, meets the requirements of an assessment monitoring program under § 257.95;

(ii) Indicates the effectiveness of the corrective action remedy; and

(iii) Demonstrates compliance with ground-water protection standard pursuant to paragraph (e) of this section.

(2) Implement the corrective action remedy selected under § 257.97; and

(3) Take any interim measures necessary to ensure the protection of human health and the environment. Interim measures should, to the greatest extent practicable, be consistent with the objectives of and contribute to the performance of any remedy that may be required pursuant to § 257.97. The following factors must be considered by an owner or operator in determining whether interim measures are necessary:

(i) Time required to develop and implement a final remedy;

(ii) Actual or potential exposure of nearby populations or environmental receptors to any of the Appendix IV constituents;

(iii) Actual or potential contamination of drinking water supplies or sensitive ecosystems;

(iv) Further degradation of the groundwater that may occur if remedial action is not initiated expeditiously;

(v) Weather conditions that may cause any of the Appendix IV of this part constituents to migrate or be released;

(vi) Potential for exposure to any of the Appendix IV of this part constituents as a result of an accident or failure of a container or handling system; and

(vii) Other situations that may pose threats to human health and the environment.

(b) An owner or operator of the CCR landfill or surface impoundment may determine, based on information developed after implementation of the remedy has begun or other information, that compliance with requirements of § 257.97(b) are not being achieved through the remedy selected. In such cases, the owner or operator of the CCR landfill or surface impoundment must implement other methods or techniques that could reasonably achieve compliance with the requirements, unless the owner or operator makes the determination under paragraph (c) of this section.

(c) If the owner or operator determines that compliance with requirements under § 257.97(b) cannot be reasonably achieved with any currently available methods, the owner or operator of the CCR landfill or surface impoundment must:

(1) Obtain certification of an independent registered professional engineer or hydrologist that compliance with requirements under § 257.97(b) cannot be reasonably achieved with any currently available methods;

(2) Implement alternate measures to control exposure of humans or the environment to residual contamination, as necessary to protect human health and the environment; and

(3) Implement alternate measures for control of the sources of contamination or for removal or decontamination of equipment, units, devices, or structures that are consistent with the overall objective of the remedy.

(4) Notify the state within 14 days that a report, including the certification required in paragraph (c)(1) of this section, justifying the alternative measures prior to implementing the alternative measures has been placed in the operating record and on the owner's or operator's publicly accessible internet site.

(d) All CCRs that are managed pursuant to a remedy required under § 257.97, or an interim measure required under paragraph (a)(3) of this section, shall be managed in a manner:

(1) That is protective of human health and the environment; and

(2) That complies with applicable RCRA requirements.

(e) Remedies selected pursuant to § 257.97 shall be considered complete when:

(1) The owner or operator of the CCR landfill or surface impoundment complies with the groundwater protection standards established under §§ 257.95 (h) or (i) at all points within the plume of contamination that lie beyond the groundwater monitoring well system established under § 257.91(a).

(2) Compliance with the groundwater protection standards established under §§ 257.95 (h) or (h) has been achieved by demonstrating that concentrations of Appendix IV constituents have not exceeded the groundwater protection standard(s) for a period of three consecutive years using the statistical procedures and performance standards in § 257.93 (g) and (h).

(3) All actions required to complete the remedy have been satisfied.

(f) Upon completion of the remedy, the owner or operator of the CCR landfill or surface impoundment must notify the state within 14 days that a certification that the remedy has been completed in compliance with the requirements of paragraph (e) of this section has been placed in the operating record and on the owner's or operator's publicly accessible internet site. The certification must be signed by the owner or operator and by an independent registered professional engineer or hydrologist.

§ 257.99 [Reserved]

Closure and Post-Closure Care

§ 257.100 Closure criteria.

(a) Prior to closure of any CCR landfill or surface impoundment covered by this subpart, the owner or operator shall submit to the state, a plan for closure of the unit based on recognized and generally accepted good engineering practices and certified by an independent registered professional engineer. The closure plan shall be consistent with paragraph (g) of this section and provide for major slope stability, include a schedule for the plan's implementation and contain provisions to preclude the probability of future impoundment of water, sediment, or slurry. The closure plan shall be placed in the operating record and on the owner's or operator's publicly accessible internet site.

(b) Closure of a CCR landfill or surface impoundment may be accomplished with CCRs in place or through CCR removal and decontamination of all areas affected by releases from the CCR landfill or surface impoundment. CCR removal and decontamination are complete when constituent concentrations throughout the CCR landfill or surface impoundment and any areas affected by releases from the CCR landfill or surface impoundment do not exceed numeric cleanup levels for those constituents found in the CCRs established by the state in which the CCR landfill or surface impoundment is located.

(c) At closure, the owner or operator of a surface impoundment must:

(1) Eliminate free liquids by removing liquid wastes or solidifying the remaining wastes and waste residues;

(2) Stabilize remaining wastes to a bearing capacity sufficient to support the final cover; and

(3) Cover the surface impoundment with a final cover designed and constructed to:

(i) Provide long-term minimization of the migration of liquids through the closed impoundment;

(ii) Function with minimum maintenance; and

(iii) Promote drainage and minimize erosion or abrasion of the cover;

(iv) Accommodate settling and subsidence so that the cover's integrity is maintained; and

(v) Have a final cover system that meets the requirements of subsection (d).

(d) For closure with CCRs in place, a final cover system must be installed at all CCR landfills and surface impoundments that is designed to minimize infiltration and erosion. The final cover system must be designed and constructed to:

(1) Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than 1×10^{-5} cm/sec, whichever is less, and

(2) Minimize infiltration through the closed CCR landfill or surface impoundment by the use of an infiltration layer that contains a minimum 18-inches of earthen material, and

(3) Minimize erosion of the final cover by the use of an erosion layer that contains a minimum 6-inches of earthen material that is capable of sustaining native plant growth, and

(4) Minimize the disruption of the final cover through a design that accommodates settling and subsidence.

(e) The owner or operator of the CCR landfill or surface impoundment may select an alternative final cover design, provided the alternative cover design is certified by an independent registered professional engineer and notification is provided to the state and the EPA Regional Administrator that the alternative cover design has been placed in the operating record and on the owner's or operator's publicly accessible internet site. The alternative final cover design must include:

(1) An infiltration layer that achieves an equivalent reduction in infiltration as the infiltration layer specified in paragraphs (d)(1) and (d)(2) of this section, and

(2) An erosion layer that provides equivalent protection from wind and water erosion as the erosion layer specified in paragraph (d)(3) of this section.

(f) The design of the final cover system shall be placed on the owner's or operator's publicly accessible internet site.

(g) The owner or operator of the CCR landfill or surface impoundment must prepare a written closure plan that describes the steps necessary to close the CCR landfill or surface impoundment at any point during the active life in accordance with the cover design requirements in paragraph (d) or (e) of this section, as applicable. The closure plan, at a minimum, must include the following information:

(1) A description of the final cover, designed in accordance with paragraph (d) or (e) of this section and the methods and procedures to be used to install the cover;

(2) An estimate of the largest area of the CCR landfill or surface impoundment ever requiring a final cover as required under paragraph (d) or (e) of this section at any time during the active life;

(3) An estimate of the maximum inventory of CCRs ever on-site over the active life of the CCR landfill or surface impoundment; and

(4) A schedule for completing all activities necessary to satisfy the closure criteria in this section.

(h) The owner or operator of the CCR landfill or surface impoundment must notify the state that a closure plan, certified by an independent registered professional engineer, has been prepared and placed in the operating record and on the owner's or operator's publicly accessible internet site no later than the effective date of this part, or by the initial receipt of CCRs, whichever is later.

(i) Prior to beginning closure of each CCR landfill or surface impoundment as specified in paragraph (j) of this section, an owner or operator of a CCR landfill or surface impoundment must notify the state that a notice of the intent to close the unit has been placed in the operating record and on the owner's or operator's publicly accessible internet site.

(j) The owner or operator of the CCR landfill or surface impoundment must begin closure activities no later than 30 days after the date on which the CCR landfill or surface impoundment receives the known final receipt of CCR or, if the CCR landfill or surface impoundment has remaining capacity and there is a reasonable likelihood that the CCR landfill or surface impoundment will receive additional CCRs, no later than one year after the most recent receipt of CCRs.

(k) The owner or operator of the CCR landfill or surface impoundment must complete closure activities in accordance with the closure plan within 180 days following the beginning of closure as specified in paragraph (j) of this section.

(l) Following closure of each CCR landfill or surface impoundment, the owner or operator of the CCR landfill or surface impoundment must notify the state that a certification, signed by an independent registered professional engineer, verifying that closure has been completed in accordance with the closure plan and the requirements of this subpart that has been placed in the operating record and on the owner's or operator's publicly accessible internet site.

(m)(1) Following closure of all CCR landfills or surface impoundments, the owner or operator of the CCR landfill or surface impoundment must record a notation on the deed to the property, or some other instrument that is normally examined during title search, and notify the state that the notation has been recorded and a copy has been placed in the operating record and on the owner's or operator's publicly accessible internet site.

(2) The notation on the deed must in perpetuity notify any potential purchaser of the property that:

(i) The land has been used as a CCR landfill or surface impoundment; and

(ii) Its use is restricted under § 257.101(c)(3).

§ 257.101 Post-closure care requirements.

(a) Following closure of each CCR landfill or surface impoundment, the owner or operator must conduct post-closure care. Post-closure care must be conducted for 30 years, except as provided under paragraph (b) of this section, and consist of at least the following:

(1) Maintaining the integrity and effectiveness of any final cover, including making repairs to the cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing run-on and run-off from eroding or otherwise damaging the final cover;

(2) Maintaining the integrity and effectiveness of the leachate collection and removal system and operating the leachate collection and removal system in accordance with the requirements of §§ 257.70, 257.71, and 257.72.

(3) Maintaining the groundwater monitoring system and monitoring the groundwater in accordance with the requirements of §§ 257.91 through 257.98 of this part.

(b) The length of the post-closure care period may be:

(1) Decreased if the owner or operator of the CCR landfill or surface impoundment demonstrates that the reduced period is sufficient to protect human health and the environment and this demonstration is certified by an independent registered professional engineer and notice is provided to the state that the demonstration has been placed in the operating record and on the owner's or operator's publicly accessible Internet site; or

(2) Increased if the owner or operator of the CCR landfill or surface impoundment determines that a lengthened period is necessary to protect human health and the environment.

(c) The owner or operator of the CCR landfill or surface impoundment must prepare a written post-closure plan, certified by an independent registered professional engineer that includes, at a minimum, the following information:

(1) A description of the monitoring and maintenance activities required in paragraph (a) of this section for each CCR landfill or surface impoundment, and the frequency at which these activities will be performed;

(2) Name, address, and telephone number of the person or office to contact about the facility during the post-closure period; and

(3) A description of the planned uses of the property during the post-closure period. Post-closure use of the property shall not disturb the integrity of the final cover, liner(s), or any other components of the containment system, or the function of the monitoring systems unless necessary to comply with the requirements in this subpart. Any other disturbance is allowed if the owner or operator of the CCR landfill or surface impoundment demonstrates that disturbance of the final cover, liner or other component of the containment system, including any removal of CCRs, will not increase the potential threat to human health or the environment. The demonstration must be certified by an independent registered professional engineer, and notification shall be provided to the state that the demonstration has been placed in the operating record and on the owner's or operator's publicly accessible internet site.

(d) The owner or operator of the CCR landfill or surface impoundment must notify the state that a post-closure plan has been prepared and placed in the operating record and on the owner's or operator's publicly accessible internet site no later than the effective date of this rule, or by the initial receipt of CCRs, whichever is later.

(e) Following completion of the post-closure care period for the CCR landfill or surface impoundment, the owner or operator of the CCR landfill or surface impoundment must notify the state that a certification, signed by an independent registered professional engineer, verifying that post-closure care has been completed in accordance with the post-closure plan has been placed in the operating record and on the owner's or operator's publicly accessible internet site.

§§ 257.102–257.109 [Reserved]

6. Add Appendixes III and IV to Part 257 to read as follows:

Appendix III to Part 257—Constituents for Detection Monitoring

Common Name [1]
Boron
Chloride
Conductivity
Fluoride
pH
Sulphate
Sulfide
Total Dissolved Solids

[1] Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

Appendix IV to Part 257—Constituents for Assessment Monitoring

Common Name [1]
Aluminum
Antimony
Arsenic
Barium
Beryllium
Boron
Cadmium
Chloride
Chromium (total)
Copper
Fluoride
Iron
Lead
Manganese
Mercury
Molybdenum
pH
Selenium
Sulphate
Sulfide
Thallium
Total Dissolved Solids

[1] Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

Alternative 2: Co-Proposal Under Authority of Subtitle C

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

6a. The authority citation for part 261 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, 6922, 6924(y), and 6938.

7. Section 261.4 is amended by revising paragraph (b)(4) to read as follows.

§ 261.4 Exclusions.

* * * * *

(b) * * *

(4)(i) Fly ash, bottom ash, boiler slag, and flue gas emission control wastes, generated primarily from the combustion of coal for the purpose of generating electricity by the electric power sector if the fly ash, bottom ash, boiler slag, and flue gas emission control wastes are beneficially used or placed in minefilling operations. Beneficial Use of Coal Combustion Products (CCPs) means the use of CCPs that provides a functional benefit; replaces the use of an alternative material, conserving natural resources that would otherwise need to be obtained through practices such as extraction; and meets relevant product specifications and regulatory standards (where these are available). CCPs that are used in excess quantities, placed as fill in sand and gravel pits, or used in large scale fill projects, such as for restructuring the landscape, are not considered beneficial uses.

(ii) Fly ash, bottom ash, boiler slag, and flue gas emission control wastes generated primarily from the combustion of coal for the purpose of generating electricity by facilities outside of the electric power sector (*i.e.,* not included in NAICS code 221112).

(iii) Fly ash, bottom ash, boiler slag, and flue gas emission control wastes, generated primarily from the combustion of fossil fuels other than coal, for the purpose of generating electricity, except as provided by § 266.112 of this chapter for facilities that burn or process hazardous waste.

* * * * *

8. Part 261 is amended by adding Subpart F to read as follows.

Subpart F—Special Wastes Subject to Subtitle C Regulations

§ 261.50 General.

(a) The following solid wastes are special wastes subject to regulation under parts 262 through 268, and parts 270, 271, and 124 of this chapter, and to the notification requirements of section 3010 of RCRA,

Industry and EPA special waste No.	Special waste	Hazard code
Coal Combustion Residuals: S001	Coal combustion residuals generated by the electric power sector (Electric Utilities and Independent Power Producers).	(T)

(b) For the purposes of the S001 listing, the electric power sector is defined as electricity-only and combined-heat-and-power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public; *i.e.,* NAICS code 221112 plants. Coal combustion residuals are defined to include fly ash, bottom ash, boiler slag, and flue gas desulfurization materials generated by the electric utility industry. This listing does not apply to coal combustion residuals that are:

(1) Uniquely associated wastes as defined in paragraph (c) of this section;

(2) Beneficially used as defined in paragraph (d) of this section;

(3) Placed in minefilling operations;

(4) Generated by facilities outside the electric power sector (*i.e.,* not included in NAICS code 22112); or

(5) Generated from clean-up activities that are conducted as part of a state or federally required clean-up that commenced prior to the effective date of this rule.

(c) Uniquely associated wastes are low-volume wastes other than those defined as coal combustion residuals in paragraph (a) of this section that are related to the coal combustion process. Examples of uniquely associated wastes are precipitation runoff from coal storage piles at the facility, waste coal or coal mill rejects that are not of sufficient quality to burn as fuel, and wastes from cleaning the boilers used to generate steam.

(d) Beneficial Use of Coal Combustion Products (CCPs) means the use of CCPs that provides a functional benefit; replaces the use of an alternative material, conserving natural resources that would otherwise need to be obtained through practices such as extraction; and meets relevant product specifications and regulatory standards (where these are available). CCPs that are used in excess quantities, placed as fill in sand and gravel pits, or used in large scale fill projects, such as for restructuring the landscape, are not considered beneficial uses.

9. Part 261 is amended by adding Appendix X to read as follows.

Appendix X to Part 261—Basis for Listing Special Wastes

EPA special waste No.	Hazardous constituents for which listed
S001	Antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, nickel, selenium, silver, thallium.

PART 264—STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

10. The authority citation for part 264 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, and 6925.

11. Section 264.1 is amended by adding paragraph (k) to read as follows:

§ 264.1 Purpose, scope and applicability.

* * * * *

(k) Owners or operators who treat, store or dispose of EPA Special Waste Number S001, also referred to as coal combustion residuals are subject to the requirements of this part, except as specifically provided otherwise in this part. In addition, subpart FF of this part includes additional requirements for the treatment, storage or disposal of EPA Special Waste Number S001.

12. Section 264.140 is amended by revising paragraph (a) to read as follows:

§ 264.140 Applicability.

(a) The requirements of §§ 264.142, 264.143, and 264.147 through 264.151 apply to owners and operators of all hazardous waste facilities and facilities that treat, store or dispose of special wastes, except as provided otherwise in this section, or in § 264.1.

* * * * *

13. Part 264 is amended by adding subpart FF to read as follows:

Subpart FF—Special Requirements for Coal Combustion Residual (S001) Wastes

Sec.

Subpart FF—Special Requirements for Coal Combustion Residual (S001) Wastes

§ 264.1300 Applicability.

(a) The regulations in this subpart apply to owners or operators of facilities that treat, store or dispose of EPA Special Waste Number S001.

(b) Owners or operators of surface impoundments that cease receiving EPA Special Waste Number S001, must comply with the closure requirements in 40 CFR 265.111 and 40 CFR 265.228. Facilities that have not met these closure requirements by the effective date of this regulation would be subject to the requirements in Parts 260 through 268, and 270 through 272, of this chapter.

§ 264.1301 Definitions.

This section contains definitions for terms that appear throughout this subpart; additional definitions appear in 40 CFR 260.10 or the specific sections to which they apply.

Area-capacity curves means graphic curves which readily show the reservoir water surface area, in acres, at different elevations from the bottom of the reservoir to the maximum water surface, and the capacity or volume, in acre-feet, of the water contained in the reservoir at various elevations.

CCR landfill means a disposal facility or part of a facility where CCRs are placed in or on land and which is not a land treatment facility, a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, an underground mine, a cave, or a corrective action management unit. For purposes of this subpart, landfills also include piles, sand and gravel pits, quarries, and/or large scale fill operations. Sites that are excavated so that more coal ash can be used as fill are also considered CCR landfills.

CCR surface impoundment or *impoundment* means a facility or part of a facility which is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), which is designed to hold an accumulation of CCRs containing free liquids, and which is not an injection well. Examples of CCR surface impoundments are holding, storage, settling, and aeration pits, ponds, and lagoons. CCR surface impoundments are used to receive CCRs that have been sluiced (flushed or mixed with water to facilitate movement), or wastes from wet air pollution control devices, often in addition to other solid wastes.

Coal Combustion Residuals (CCRs) means fly ash, bottom ash, boiler slag, and flue gas desulfurization materials, destined for disposal. CCRs are also known as coal combustion wastes (CCWs) and fossil fuel combustion (FFC) wastes, when destined for disposal.

Existing CCR landfill means a landfill which was in operation or for which construction commenced prior to the effective date of the final rule. A CCR landfill has commenced construction if the owner or operator has obtained the Federal, State and local approvals or permits necessary to begin physical construction; and either

(1) A continuous on-site, physical construction program has begun; or

(2) The owner or operator has entered into contractual obligations—which cannot be cancelled or modified without substantial loss—for physical construction of the CCR landfill to be completed within a reasonable time.

Existing CCR surface impoundment means a surface impoundment which was in operation or for which construction commenced prior to the effective date of the final rule. A CCR surface impoundment has commenced construction if the owner or operator has obtained the Federal, State and local approvals or permits necessary to begin physical construction; and either

(1) A continuous on-site, physical construction program has begun; or

(2) The owner or operator has entered into contractual obligations—which can not be cancelled or modified without substantial loss—for physical construction of the CCR surface impoundment to be completed within a reasonable time.

Factor of safety (Safety factor) means the ratio of the forces tending to resist the failure of a structure to the forces tending to cause such failure as determined by recognized and generally accepted good engineering practices.

Hazard potential means the possible adverse incremental consequences that result from the release of water or stored contents due to failure of a dam (or impoundment) or mis-operation of the dam or appurtenances.

(1) *High hazard potential surface impoundment* means a surface impoundment where failure or mis-operation will probably cause loss of human life.

(2) *Significant hazard potential surface impoundment* means a surface impoundment where failure or mis-operation results in no probable loss of human life, but can cause economic loss, environment damage, disruption of lifeline facilities, or impact other concerns.

(3) *Low hazard potential surface impoundment* means a surface impoundment where failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the surface impoundment owner's property.

(4) *Less than low hazard potential surface impoundment* means a surface impoundment not meeting the definitions for High, Significant, or Low Hazard Potential.

Lateral expansion means a horizontal expansion of the waste boundaries of an existing CCR landfill, or CCR surface impoundment made after the effective date of the final rule.

New CCR landfill means a landfill, including lateral expansions, or installation from which there is or may be placement of CCRs without the presence of free liquids, which began operation, or for which the construction commenced after the effective date of the final rule.

New CCR surface impoundment means a surface impoundment, including lateral expansions, or installation from which there is or may be placement of CCRs with the presence of free liquids, which began operation, or for which the construction commenced after the effective date of the final rule.

Probable maximum precipitation means the value for a particular area which represents an envelopment of depth-duration-area rainfall relations for all storm types affecting that area adjusted meteorologically to maximum conditions.

Recognized and generally accepted good engineering practices (RAGAGEPs)

means engineering, operation, or maintenance activities based on established codes, standards, published technical reports or recommended practices (RP) or a similar document. RAGAGEPs detail generally approved ways to perform specific engineering, inspection or mechanical integrity activities.

§ 264.1302 Reporting.

(a) Except as provided in paragraph (b) of this section, every twelfth month following the date of the initial plan approval required in § 264.1303, the person owning or operating a CCR surface impoundment that has not been properly closed in accordance with an approved plan shall submit to the Regional Administrator a report containing the following information:

(1) Changes in the geometry of the CCR surface impoundment for the reporting period.

(2) Location and type of installed instruments and the maximum and minimum recorded readings of each instrument for the reporting period.

(3) The minimum, maximum, and present depth and elevation of the CCR slurry and CCR wastewater in the CCR surface impoundment for the reporting period.

(4) The storage capacity of the CCR surface impoundment.

(5) The volume of the CCR slurry and CCR wastewater in the CCR surface impoundment at the end of the reporting period.

(6) Any other change which may have affected the stability or operation of the CCR surface impoundment that has occurred during the reporting period.

(7) A certification by an independent registered professional engineer that all construction, operation, and maintenance are in accordance with the approved plan prepared in accordance with § 264.1303.

(b) A report is not required under this section when the person owning or operating the CCR surface impoundment provides the Regional Administrator with a certification by an independent registered professional engineer that there have been no changes in the operation of the CCR surface impoundment or to any of the parameters previously reported under paragraphs (a)(1) through (a)(6) of this section. However, a report containing the information set out in paragraph (a) of this section shall be submitted to the Regional Administrator at least every 5 years.

§ 264.1303 Surface impoundments.

(a) In addition to the requirements in subpart K of this part, EPA Special Waste No. S001 is subject to the requirements in this section.

(b) Plans for the design, construction, and maintenance of existing CCR surface impoundments shall be required if such a unit can:

(1) Impound CCRs to an elevation of five feet or more above the upstream toe of the structure and can have a storage volume of 20 acre-feet or more; or

(2) Impound CCRs to an elevation of 20 feet or more above the upstream toe of the structure.

(c) Plans required under paragraph (b) of this section shall be submitted in triplicate to the Regional Administrator on or before [date one year after the effective date of the final rule].

(d) A permanent identification marker, at least six feet high and showing the identification number of the CCR surface impoundment as assigned by the Regional Administrator, the name associated with the CCR surface impoundment and the name of the person owning or operating the structure, shall be located on or immediately adjacent to each CCR surface impoundment by [date 60 days after the effective date of the final rule].

(e) The plan specified in paragraph (b) of this section, shall contain at a minimum the following information:

(1) The name and address of the persons owning or operating the CCR surface impoundment; the name associated with the CCR surface impoundment; and the identification number of the CCR surface impoundment as assigned by the Regional Administrator.

(2) The location of the CCR surface impoundment indicated on the most recent USGS 7½ minute or 15 minute topographic quadrangle map, or a topographic map of equivalent scale if a USGS map is not available.

(3) A statement of the purpose for which the CCR surface impoundment is being used.

(4) The name and size in acres of the watershed affecting the CCR surface impoundment.

(5) A description of the physical and engineering properties of the foundation materials on which the CCR surface impoundment is constructed.

(6) A statement of the type, size, range, and physical and engineering properties of the materials used in constructing each zone or stage of the CCR surface impoundment; the method of site preparation and construction of each zone of the CCR surface impoundment; the approximate dates of construction, and each successive stage of construction of the CCR surface impoundment; and for existing CCR surface impoundments, such history of construction as may be available, and any record or knowledge of structural instability.

(7) At a scale not to exceed 1 inch = 100 feet, detailed dimensional drawings of the CCR surface impoundment, including a plan view and cross sections of the length and width of the CCR surface impoundment, showing all zones, foundation improvements, drainage provisions, spillways, diversion ditches, outlets, instrument locations, and slope protection, in addition to the measurement of the minimum vertical distance between the crest of the CCR surface impoundment and the reservoir surface at present and under design storm conditions, CCR slurry level and CCR wastewater level, and other information pertinent to the CCR surface impoundment itself, including any identifiable natural or manmade features which could affect operation of the CCR surface impoundment.

(8) A description of the type and purpose of existing or proposed instrumentation.

(9) Graphs showing area-capacity curves.

(10) The hazard potential classification for which the facility is designed and a detailed explanation of the basis for this classification.

(11) A statement of the runoff attributable to the storm for which the CCR surface impoundment is designed and the calculations used in determining such runoff and the minimum freeboard during the design storm.

(12) A description of the spillway and diversion design features and capacities and calculations used in their determination.

(13) The computed minimum factor of safety for slope stability of the CCR retaining structure(s) and the analyses used in their determinations.

(14) The construction specifications and provisions for surveillance, maintenance, and repair of the CCR surface impoundment.

(15) General provisions for closure.

(16) Such other information pertaining to the CCR surface impoundment which may be requested by the Regional Administrator.

(17) A certification by an independent registered professional engineer that the design of the CCR surface impoundment is in accordance with recognized and generally accepted good engineering practices for the maximum volume of CCR slurry and CCR wastewater which can be impounded therein and for the passage of runoff from the design storm which exceeds the capacity of the CCR surface impoundment; or, in lieu of the

certification, a report indicating what additional investigations, analyses, or improvement work are necessary before such a certification can be made by an independent registered professional engineer, including what provisions have been made to carry out such work in addition to a schedule for completion of such work.

(f) Any changes or modifications to the plans for CCR surface impoundments shall be approved by the Regional Administrator prior to the initiation of such changes or modifications.

(g) Effective [date two years after the effective date of the final rule], all existing CCR surface impoundments that receive CCRs shall be operated and maintained with:

(1) A run-on control system to prevent flow onto the active portion of the CCR surface impoundment during the peak discharge from a 24-hour, 25-year storm;

(2) A run-off control system from the active portion of the CCR surface impoundment to collect and control at least the water volume resulting from a 24-hour, 25-year storm. Run-off from the active portion of the CCR surface impoundment must be handled in accordance with § 264.1307.

(h) For CCR surface impoundments classified as having high or significant hazard potential, the owner or operator shall develop and maintain in the operating record an Emergency Action Plan which: defines responsible persons and the actions to be taken in the event of a dam-safety emergency; provides contact information for emergency responders; includes a map which delineates the downstream area which would be affected in the event of a dam failure; and includes provisions for an annual face-to-face meeting or exercise between representatives of the facility owner and the local emergency responders.

§ 264.1304 Inspection requirements for surface impoundments.

(a) In addition to the inspection requirements in § 264.226 of this part, all CCR surface impoundments that meet the requirements of § 264.1303(b) of this subpart shall be inspected by the owner or operator as follows:

(1) At intervals not exceeding 7 days, or as otherwise approved by the Regional Administrator, for appearances of structural weakness and other hazardous conditions.

(2) At intervals not exceeding 7 days, or as otherwise approved by the Regional Administrator, all instruments shall be monitored.

(3) Longer inspection or monitoring intervals approved under this paragraph shall be justified by the owner or operator of the CCR surface impoundment based on the hazard potential and performance of the CCR surface impoundment, and shall include a requirement for inspection immediately after a specified event approved by the Regional Administrator.

(4) All inspections required by paragraphs (a)(1) and (2) shall be performed by a qualified person, as defined in paragraph (e) of this section, designated by the person owning or operating the CCR surface impoundment.

(5) All CCR surface impoundments that meet the requirements of § 264.1303(b) of this subpart shall be inspected annually by an independent registered professional engineer to assure that the design, operation, and maintenance of the surface impoundment is in accordance with recognized and generally accepted good engineering standards. The owner or operator must notify the state and the EPA Regional Administrator that a certification by the registered professional engineer that the design, operation, and maintenance of the surface impoundment is in accordance with recognized and generally accepted good engineering standards has been placed in the operating record.

(b) When a potentially hazardous condition develops, the person owning or operating the CCR surface impoundment shall immediately:

(1) Take action to eliminate the potentially hazardous condition;

(2) Notify the Regional Administrator and State and local first responders;

(3) Notify and prepare to evacuate, if necessary, all personnel from the owner or operator's property which may be affected by the potentially hazardous conditions; and

(4) Direct a qualified person to monitor all instruments and examine the structure at least once every eight hours, or more often as required by an authorized representative of the Regional Administrator.

(c) After each inspection and instrumentation monitoring referred to in paragraphs (a) and (b) of this section, each qualified person who conducted all or any part of the inspection or instrumentation monitoring shall promptly record the results of such inspection or instrumentation monitoring in a book which shall be available in the operating record for inspection by an authorized representative of the Regional Administrator and such qualified person shall also promptly report the results of the inspection or monitoring to one of the persons specified in paragraph (d) of this section.

(d) All inspection and instrumentation monitoring reports recorded in accordance with paragraph (c) of this section shall include a report of the action taken to abate hazardous conditions and shall be promptly signed or countersigned by the person designated by the owner or operator as responsible for health and safety at the owner or operator's facility.

(e) The qualified person or persons referred to in this section shall be trained to recognize specific signs of structural instability and other hazardous conditions by visual observation and, if applicable, to monitor instrumentation.

§ 264.1305 Requirements for surface impoundment closure.

Prior to the closure of any CCR surface impoundment which meets the requirements of § 264.1303(b) of this subpart, the person owning or operating such CCR surface impoundment shall submit to and obtain approval from the Regional Administrator, a plan for closure in accordance with the requirements of § 264.228 and subpart G of this part. This plan shall provide for major slope stability, include a schedule for the plan's implementation and, contain provisions to preclude the probability of future impoundment of water.

§ 264.1306 Landfills.

(a) Owners or operators of new CCR landfills and lateral expansions of existing landfills are exempt from the double liner and leachate collection system requirements of § 264.301(c), and the requirements of § 264.302, provided the owner or operator is in compliance with the requirements of paragraph (b) of this section. Owners or operators of existing landfills are also exempt from the liner requirements of paragraph (b)(1) of this section, provided they comply with the requirements of paragraph (c) of this section and the requirements at 40 CFR part 264 subparts F, G, H, and N.

(b) Prior to placement of CCRs in new landfills and lateral expansions of new and existing landfills, new landfills and lateral expansions shall be constructed:

(1) With a composite liner, as defined in paragraph (b)(2) of this section, and a leachate collection and removal system that is designed and constructed to maintain less than a 30-cm depth of leachate over the liner.

(2) For purposes of this subpart, composite liner means a system consisting of two components; the upper component must consist of a

minimum 30-mil flexible membrane liner (FML), and the lower component must consist of at least a two-foot layer of compacted soil with a hydraulic conductivity of no more than 1×10^{-7} cm/sec. FML components consisting of high density polyethylene (HDPE) shall be at least 60-mil thick. The FML component must be installed in direct and uniform contact with the compacted soil component.

(3) For purpose of this subpart, hydraulic conductivity means the rate at which water can move through a permeable medium (*i.e.,* the coefficient of permeability).

(c) Effective [date two years after the effective date of the final rule], all existing landfills that receive CCRs shall be operated and maintained with:

(1) A run-on control system to prevent flow onto the active portion of the CCR landfill during the peak discharge from a 24-hour, 25-year storm;

(2) A run-off control system from the active portion of the CCR landfill to collect and control at least the water volume resulting from a 24-hour, 25-year storm. Run-off from the active portion of the CCR landfill must be handled in accordance with § 264.1307 of this subpart.

§ 264.1307 Surface water requirements.

(a) Permits for CCR surface impoundments and CCR landfills shall include conditions to ensure that:

(1) The operation of the unit will not cause any violation of any requirements of the Clean Water Act, including, but not limited to, the National Pollutant Discharge Elimination System (NPDES) requirements, pursuant to section 402 of the Clean Water Act.

(2) The operation of the unit will not cause any violation of any requirement of an area-wide or state-wide water quality management plan that has been approved under section 208 or 319 of the Clean Water Act, as amended.

(b) [Reserved]

§ 264.1308 Air requirements.

(a) CCR surface impoundments and CCR landfills must be managed in a manner that fugitive dusts do not exceed 35 $\mu g/m^3$, unless an alternative standard has been established by the Regional Administrator.

(b) CCR surface impoundments must be managed to control wind dispersal of dusts consistent with the standard in paragraph (a) of this section unless an alternative standard has been established by the Regional Administrator.

(c) CCR landfills must be managed to control wind dispersal of dusts consistent with the standard in paragraph (a) of this section unless an alternative standard has been established by the Regional Administrator. CCRs placed in landfills as wet conditioned CCRs shall not result in the formation of free liquids.

(d) Tanks, containers, buildings and pads used for the storage must be managed to control the dispersal of dust. Pads must have wind protection that will ensure comparable levels of control.

(e) CCRs transported in trucks or other vehicles must be covered or otherwise managed to control the wind dispersal of dust consistent with the standard in paragraph (a) of this section unless an alternative standard has been established by the Regional Administrator.

PART 265—INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

14. The authority citation for part 265 continues to read as follows:

Authority: 42 U.S.C. 6905, 6906, 6912, 6922, 6923, 6924, 6925, 6935, 6936, and 6937.

15. Section 265.1 is amended by adding paragraph (g) to read as follows:

§ 265.1 Purpose, scope, and applicability.

* * * * *

(g) Owners or operators who treat, store or dispose of EPA Special Waste Number S001, also referred to as coal combustion residuals (CCRs) are subject to the requirements of this part, except as specifically provided otherwise in this part. In addition, subpart FF of this part includes additional requirements for the treatment storage or disposal of EPA Special Waste No. S001.

* * * * *

16. Section 265.140 is amended by revising paragraph (a) to read as follows:

§ 265.140 Applicability.

(a) The requirements of §§ 265.142, 265.143 and 265.147 through 265.150 apply to owners or operators of all hazardous and special waste facilities, except as provided otherwise in this section, or in § 265.1.

* * * * *

17. Part 265 is amended by adding Subpart FF to read as follows:

Subpart FF—Special Requirements for S001 Wastes

Sec.

Subpart FF—Special Requirements for S001 Wastes

§ 265.1300 Applicability.

(a) The regulations in this subpart apply to owners or operators of hazardous waste facilities that treat, store or dispose of EPA Hazardous Waste Number S001.

(b) Owners or operators of surface impoundments that cease receiving EPA Special Waste Number S001,must comply with the closure requirements in 40 CFR Part 265.111 and 40 CFR 265.228. Facilities that have not met these closure requirements by the effective date of this regulation would be subject to the requirements in Parts 260 through 268, and 270 through 272, of this chapter.

§ 265.1301 Definitions.

This section contains definitions for terms that appear throughout this subpart; additional definitions appear in 40 CFR 260.10 or the specific sections to which they apply.

Area-capacity curves means graphic curves which readily show the reservoir water surface area, in acres, at different elevations from the bottom of the reservoir to the maximum water surface, and the capacity or volume, in acre-feet, of the water contained in the reservoir at various elevations.

Coal Combustion Residuals (CCRs) means fly ash, bottom ash, boiler slag, and flue gas desulfurization materials, destined for disposal. CCRs are also known as coal combustion wastes (CCWs) and fossil fuel combustion (FFC) wastes, when destined for disposal, and as coal combustion products (CCPs) when beneficially used.

CCR landfill means a disposal facility or part of a facility where CCRs are placed in or on land and which is not a land treatment facility, a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, an underground mine, a cave, or a corrective action management unit. For purposes of this subpart, landfills also include piles, sand and gravel pits, quarries, and/or large scale fill operations. Sites that are excavated so that more coal ash can be used as fill are also considered CCR landfills.

CCR surface impoundment or *impoundment* means a facility or part of a facility which is a natural topographic

depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), which is designed to hold an accumulation of CCRs containing free liquids, and which is not an injection well. Examples of CCR surface impoundments are holding, storage, settling, and aeration pits, ponds, and lagoons. CCR surface impoundments are used to receive CCRs that have been sluiced (flushed or mixed with water to facilitate movement), or wastes from wet air pollution control devices, often in addition to other solid wastes.

Existing CCR landfill means a landfill which was in operation or for which construction commenced prior to the effective date of the final rule A CCR landfill has commenced construction if the owner or operator has obtained the Federal, State and local approvals or permits necessary to begin physical construction; and either

(1) A continuous on-site, physical construction program has begun; or

(2) The owner or operator has entered into contractual obligations—which cannot be cancelled or modified without substantial loss—for physical construction of the CCR landfill to be completed within a reasonable time.

Existing CCR surface impoundment means a surface impoundment which was in operation or for which construction commenced prior to the effective date of the final rule. A CCR surface impoundment has commenced construction if the owner or operator has obtained the Federal, State and local approvals or permits necessary to begin physical construction; and either

(1) A continuous on-site, physical construction program has begun; or

(2) The owner or operator has entered into contractual obligations—which can not be cancelled or modified without substantial loss—for physical construction of the CCR surface impoundment to be completed within a reasonable time.

Factor of safety (Safety factor) means the ratio of the forces tending to resist the failure of a structure to the forces tending to cause such failure as determined by recognized and accepted good engineering practices.

Hazard potential means the possible adverse incremental consequences that result from the release of water or stored contents due to failure of a dam (or impoundment) or mis-operation of the dam or appurtenances.

(1) *High hazard potential surface impoundment* means a surface impoundment where failure or mis-operation will probably cause loss of human life.

(2) *Significant hazard potential surface impoundment* means a surface impoundment where failure or mis-operation results in no probable loss of human life, but can cause economic loss, environment damage, disruption of lifeline facilities, or impact other concerns.

(3) *Low hazard potential surface impoundment* means a surface impoundment where failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the surface impoundment owner's property.

(4) *Less than low hazard potential surface impoundment* means a surface impoundment not meeting the definitions for High, Significant, or Low Hazard Potential.

Lateral expansion means a horizontal expansion of the waste boundaries of an existing CCR landfill, or CCR surface impoundment made after the effective date of the final rule.

New CCR landfill means a landfill, including lateral expansions, or installation from which there is or may be placement of CCRs without the presence of free liquids, which began operation, or for which the construction commenced after the effective date of the final rule.

New CCR surface impoundment means a surface impoundment, including lateral expansion, or installation from which there is or may be placement of CCRs with the presence of free liquids, which began operation, or for which the construction commenced after the effective date of the final rule.

Probable maximum precipitation means the value for a particular area which represents an envelopment of depth-duration-area rainfall relations for all storm types affecting that area adjusted meteorologically to maximum conditions.

Recognized and generally accepted good engineering practices (RAGAGEPs) means engineering, operation, or maintenance activities based on established codes, standards, published technical reports or recommended practices (RP) or a similar document. RAGAGEPs detail generally approved ways to perform specific engineering, inspection or mechanical integrity activities.

§ 265.1302 Reporting.

(a) Except as provided in paragraph (b) of this section, every twelfth month following the date of the initial plan approval required in § 265.1303 of this subpart, the person owning or operating a CCR surface impoundment that has not been properly closed in accordance with an approved plan shall submit to the Regional Administrator a report containing the following information:

(1) Changes in the geometry of the CCR surface impoundment for the reporting period.

(2) Location and type of installed instruments and the maximum and minimum recorded readings of each instrument for the reporting period.

(3) The minimum, maximum, and present depth and elevation of the CCR slurry and CCR waste water in the CCR surface impoundment for the reporting period.

(4) The storage capacity of the CCR surface impoundment.

(5) The volume of the CCR slurry and CCR waste water in the CCR surface impoundment at the end of the reporting period.

(6) Any other change which may have affected the stability or operation of the CCR surface impoundment that has occurred during the reporting period.

(7) A certification by an independent registered professional engineer that all construction, operation, and maintenance are in accordance with the approved plan prepared in accordance with § 265.1303.

(b) A report is not required under this section when the person owning or operating the CCR surface impoundment provides the Regional Administrator with a certification by an independent registered professional engineer that there have been no changes in the operation of the CCR surface impoundment or to any of the parameters previously reported under paragraphs (a)(1) through (a)(6) of this section. However, a report containing the information set out in paragraph (a) of this section shall be submitted to the Regional Administrator at least every 5 years.

§ 265.1303 Surface impoundments.

(a) In addition to the requirements in subpart K of this part, EPA Special Waste No. S001 is subject to the requirements in this section.

(b) Plans for the design, construction, and maintenance of existing CCR surface impoundments shall be required if such a unit can:

(1) Impound CCRs to an elevation of five feet or more above the upstream toe of the structure and can have a storage volume of 20 acre-feet or more; or

(2) Impound CCRs to an elevation of 20 feet or more above the upstream toe of the structure.

(c) Plans required under paragraph (b) of this section shall be submitted in triplicate to the Regional Administrator on or before [date one year after the effective date of the final rule].

(d) A marker, at least six feet high and showing the identification number of the CCR surface impoundment as assigned by the Regional Administrator, the name associated with the CCR surface impoundment and the name of the person owning or operating the structure, shall be located on or immediately adjacent to each CCR surface impoundment permanent identification by [date 60 days after the effective date of the final rule].

(e) The plan specified in paragraph (b) of this section, shall contain at a minimum the following information:

(1) The name and address of the persons owning or operating the CCR surface impoundment; the name associated with the CCR surface impoundment; and the identification number of the CCR surface impoundment as assigned by the Regional Administrator.

(2) The location of the CCR surface impoundment indicated on the most recent USGS 7½ minute or 15 minute topographic quadrangle map, or a topographic map of equivalent scale if a USGS map is not available.

(3) A statement of the purpose for which the CCR surface impoundment is being used.

(4) The name and size in acres of the watershed affecting the CCR surface impoundment.

(5) A description of the physical and engineering properties of the foundation materials on which the CCR surface impoundment is constructed.

(6) A statement of the type, size, range, and physical and engineering properties of the materials used in constructing each zone or stage of the CCR surface impoundment; the method of site preparation and construction of each zone of the CCR surface impoundment; the approximate dates of construction, and each successive stage of construction of the CCR surface impoundment; and for existing CCR surface impoundments, such history of construction as may be available, and any record or knowledge of structural instability.

(7) At a scale not to exceed 1 inch = 100 feet, detailed dimensional drawings of the CCR surface impoundment, including a plan view and cross sections of the length and width of the CCR surface impoundment, showing all zones, foundation improvements, drainage provisions, spillways, diversion ditches, outlets, instrument locations, and slope protection, in addition to the measurement of the minimum vertical distance between the crest of the CCR surface impoundment and the reservoir surface at present and under design storm conditions, CCR slurry level or CCR waste water level, and other information pertinent to the CCR surface impoundment itself, including any identifiable natural or manmade features which could affect operation of the CCR surface impoundment.

(8) A description of the type and purpose of existing or proposed instrumentation.

(9) Graphs showing area-capacity curves.

(10) The hazard potential classification for which the facility is designed and a detailed explanation of the basis for this classification.

(11) A statement of the runoff attributable to the storm for which the CCR surface impoundment is designed and the calculations used in determining such runoff and the minimum freeboard during the design storm.

(12) A description of the spillway and diversion design features and capacities and calculations used in their determination.

(13) The computed minimum factor of safety for slope stability of the CCR retaining structure(s) and the analyses used in their determinations.

(14) The construction specifications and provisions for surveillance, maintenance, and repair of the CCR surface impoundment.

(15) General provisions for closure.

(16) Such other information pertaining to the stability of the CCR surface impoundment which may be requested by the Regional Administrator.

(17) A certification by an independent registered professional engineer that the design of the CCR surface impoundment is in accordance with recognized and generally accepted good engineering practices for the maximum volume of CCR slurry and CCR waste water which can be impounded therein and for the passage of runoff from the design storm which exceeds the capacity of the CCR surface impoundment; or, in lieu of the certification, a report indicating what additional investigations, analyses, or improvement work are necessary before such a certification can be made by an independent registered professional engineer, including what provisions have been made to carry out such work in addition to a schedule for completion of such work.

(f) Any changes or modifications to the plans for CCR surface impoundments shall be approved by the Regional Administrator prior to the initiation of such changes or modifications.

(g) Effective [date two years after the effective date of the final rule], all existing surface impoundments that receive CCRs shall be operated and maintained with:

(1) A run-on control system to prevent flow onto the active portion of the CCR surface impoundment during the peak discharge from a 24-hour, 25-year storm;

(2) A run-off control system from the active portion of the CCR surface impoundment to collect and control at least the water volume resulting from a 24-hour, 25-year storm. Run-off from the active portion of the CCR surface impoundment must be handled in accordance with § 265.1307 of this subpart.

(h) For CCR surface impoundments classified as having high or significant hazard potential, the owner or operator shall develop and maintain in the operating record an Emergency Action Plan which: defines responsible persons and the actions to be taken in the event of a dam-safety emergency; provides contact information for emergency responders; includes a map which delineates the downstream area which would be affected in the event of a dam failure; and includes provisions for an annual face-to-face meeting or exercise between representatives of the facility owner and the local emergency responders.

§ 265.1304 Inspection requirements for surface impoundments.

(a) In addition to the inspection requirements in § 265.226, all CCR surface impoundments that meet the requirements of § 265.1303(b) of this subpart shall be inspected by the owner or operator as follows:

(1) At intervals not exceeding 7 days, or as otherwise approved by the Regional Administrator, for appearances of structural weakness and other hazardous conditions.

(2) At intervals not exceeding 7 days, or as otherwise approved by the Regional Administrator, all instruments shall be monitored.

(3) Longer inspection or monitoring intervals approved under this paragraph shall be justified by the owner or operator of the CCR surface impoundment based on the hazard potential and performance of the CCR surface impoundment, and shall include a requirement for inspection immediately after a specified event approved by the Regional Administrator.

(4) All inspections required by paragraphs (a)(1) and (2) of this section shall be performed by a qualified person, as defined in paragraph (e) of this section, designated by the person owning or operating the CCR surface impoundment.

(5) All CCR surface impoundments that meet the requirements of § 265.1303(b) of this subpart shall be inspected annually by an independent registered professional engineer to assure that the design, operation, and maintenance of the surface impoundment is in accordance with recognized and generally accepted good engineering practices. The owner or operator must notify the state and the EPA Regional Administrator that a certification by the independent registered professional engineer that the design, operation, and maintenance of the surface impoundment is in accordance with recognized and generally accepted good engineering practices has been placed in the operating record.

(b) When a potentially hazardous condition develops, the person owning or operating the CCR surface impoundment shall immediately:

(1) Take action to eliminate the potentially hazardous condition;

(2) Notify the Regional Administrator and State and local first responders;

(3) Notify and prepare to evacuate, if necessary, all personnel from the owner or operator's property which may be affected by the potentially hazardous conditions; and

(4) Direct a qualified person to monitor all instruments and examine the structure at least once every eight hours, or more often as required by an authorized representative of the Regional Administrator.

(c) After each inspection and instrumentation monitoring referred to in paragraphs (a) and (b) of this section, each qualified person who conducted all or any part of the inspection or instrumentation monitoring shall promptly record the results of such inspection or instrumentation monitoring in a book which shall be available in the operating record for inspection by an authorized representative of the Regional Administrator and such qualified person shall also promptly report the results of the inspection or monitoring to one of the persons specified in paragraph (d) of this section.

(d) All inspection and instrumentation monitoring reports recorded in accordance with paragraph (c) of this section shall include a report of the action taken to abate hazardous conditions and shall be promptly signed or countersigned by the person designated by the owner or operator as responsible for health and safety at the owner or operator's facility.

(e) The qualified person or persons referred to in this section shall be trained to recognize specific signs of structural instability and other hazardous conditions by visual observation and, if applicable, to monitor instrumentation.

§ 265.1305 Requirements for surface impoundment closure.

Prior to the closure of any CCR surface impoundment which meets the requirements of § 264.1303(b) of this subpart, the person owning or operating such CCR surface impoundment shall submit to and obtain approval from the Regional Administrator, a plan for closure in accordance with the requirements of § 265.228 and part 265 subpart G. This plan shall provide for major slope stability, include a schedule for the plan's implementation, and contain provisions to preclude the probability of future impoundment of water.

§ 265.1306 Landfills.

(a) Owners or operators of new CCR landfills and lateral expansions of existing landfills are exempt from the double liner and leachate collection system requirements of § 265.301(c), and the requirements of § 265.302, provided the owner or operator is in compliance with the requirements of paragraph (b) of this section. Owners or operators of existing landfills are also exempt from the liner requirements of paragraph (b)(1) of this section, provided they comply with the requirements of paragraph (c) of this section and the requirements at 40 CFR part 265 subparts F, G, H, and N.

(b) Prior to placement of CCRs in new landfills and lateral expansions, new landfills and lateral expansions shall be constructed:

(1) With a composite liner, as defined in paragraph (b)(2) of this section, and a leachate collection and removal system that is designed and constructed to maintain less than a 30-cm depth of leachate over the liner.

(2) For purposes of this subpart, composite liner means a system consisting of two components; the upper component must consist of a minimum 30-mil flexible membrane liner (FML), and the lower component must consist of at least a two-foot layer of compacted soil with a hydraulic conductivity of no more than 1×10^{-7} cm/sec. FML components consisting of high density polyethylene (HDPE) shall be at least 60-mil thick. The FML component must be installed in direct and uniform contact with the compacted soil component.

(3) For purposes of this subpart, hydraulic conductivity means the rate at which water can move through a permeable medium. (*i.e.,* the coefficient of permeability.)

(c) Effective [date two years after the effective date of the final rule], all existing landfills that receive CCRs shall be operated and maintained with:

(1) A run-on control system to prevent flow onto the active portion of the CCR landfill during the peak discharge from a 24-hour, 25-year storm;

(2) A run-off control system from the active portion of the CCR landfill to collect and control at least the water volume resulting from a 24-hour, 25-year storm. Run-off from the active portion of the CCR landfill must be handled in accordance with § 265.1307 of this subpart.

§ 265.1307 Surface water requirements.

(a) Permits for CCR surface impoundments and CCR landfills shall include conditions to ensure that:

(1) The operation of the unit will not cause any violation of any requirements of the Clean Water Act, including, but not limited to, the National Pollutant Discharge Elimination System (NPDES) requirements, pursuant to section 402 of the Clean Water Act.

(2) The operation of the unit will not cause any violation of any requirement of an area-wide or state-wide water quality management plan that has been approved under section 208 or 319 of the Clean Water Act, as amended.

(b) [Reserved]

§ 265.1308 Air requirements.

(a) CCR surface impoundments and CCR landfills must be managed in a manner that fugitive dusts do not exceed 35 $\mu g/m^3$, unless an alternative standard has been established by the Regional Administrator.

(b) CCR surface impoundments must be managed to control wind dispersal of dusts consistent with the standard in paragraph (a) of this section unless an alternative standard has been established by the Regional Administrator.

(c) CCR landfills must be managed to control wind dispersal of dusts consistent with the standard in paragraph (a) of this section unless an alternative standard has been established by the Regional Administrator. CCRs placed in landfills as wet conditioned CCRs shall not result in the formation of free liquids.

(d) Tanks, containers, buildings and pads used for the storage must be managed to control the dispersal of dust. Pads must have wind protection that will ensure comparable levels of control.

(e) CCRs transported in trucks or other vehicles must be covered or otherwise

managed to control the wind dispersal of dust consistent with the standard in paragraph (a) of this section unless an alternative standard has been established by the Regional Administrator.

PART 268—LAND DISPOSAL RESTRICTIONS

18. The authority citation for part 268 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, and 6924.

19. Section 268.2 is amended by revising paragraph (f) to read as follows:

§ 268.2 Definitions applicable in this part.

* * * * *

(f) Wastewaters are wastes that contain less than 1% by weight total organic carbon (TOC) and less than 1% by weight total suspended solids (TSS), except for coal combustion residuals, [waste code S001], which are wastewaters if the moisture content exceeds 50%.

* * * * *

20. Section 268.14 is amended by adding paragraph (d) to read as follows:

§ 268.14 Surface impoundment exemptions.

* * * * *

(d) The waste specified in 40 CFR Part 261 as EPA Special Waste Number S001 may continue to be placed in an existing CCR surface impoundment of this subpart for 60 months after the promulgation date of listing the waste provided the existing CCR surface impoundment is in compliance with the requirements of subpart F of part 265 of this chapter within 12 months after the promulgation of the new listing. Closure in accordance with subpart G of part 264 must be completed within two years after placement of waste in the existing CCR surface impoundment ceases.

21. Section 268.21 is added to Subpart C to read as follows:

§ 268.21 Waste specific prohibitions—Coal combustion residuals.

(a) Effective [date six months after the effective date of the final rule], nonwastewaters specified in 40 CFR part 261 as EPA Special Waste Number S001 are prohibited from land disposal.

(b) Effective [date 60 months after the effective date of the final rule], wastewaters specified in 40 CFR part 261 as EPA Special Waste Number S001 are prohibited from land disposal.

(c) The requirements of paragraphs (a) and (b) of this section do not apply if:

(1) The wastes meet the applicable treatment standards specified in subpart D of this Part;

(2) Persons have been granted an exemption from a prohibition pursuant to a petition under § 268.6, with respect to those wastes and units covered by the petition;

(3) The wastes meet the applicable treatment standards established pursuant to a petition granted under § 268.44;

(4) Persons have been granted an extension to the effective date of a prohibition pursuant to § 268.5, with respect to these wastes covered by the extension.

22. In § 268.40, the table "Treatment Standards for Hazardous Wastes" is amended by adding in alphanumeric order the new entry for S001 to read as follows:

§ 268.40 Applicability of treatment standards.

* * * * *

TREATMENT STANDARDS FOR HAZARDOUS WASTES

[Note: NA means not applicable]

Waste code	Waste description and treatment/ regulatory subcategory [1]	Regulated hazardous constituent		Wastewaters	Nonwastewaters
		Common name	CAS [2] No.	Concentration in mg/L [3], or technology code [4]	Concentration in mg/kg [5] unless noted as "mg/L TCLP", or technology code
*	* * *	*	*	*	*
S001	Coal combustion wastes generated by the electric power sector. For purposes of this listing, the electric power sector is defined as electricity-only and combined-heat-and-power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public; *i.e.,* NAICS code 221112 plants. For the purposes of this listing, coal combustion wastes are defined as fly ash, bottom ash, boiler slag, and flue gas desulfurization materials generated by the electric power sector. This listing does not apply to coal combustion residuals that are: (1) Uniquely associated wastes with wastes from the burning of coal; (2) beneficially used; (3) placed in minefilling operations; (4) generated by facilities that are outside the electric power sector; or (5) generated from clean-up activities that are conducted as part of a state or federally required clean-up that commenced prior to the effective date of this rule..	Antimony Arsenic ..... Barium ..... Beryllium ..... Cadmium ..... Chromium ... Lead ..... Mercury ..... Nickel ..... Selenium ..... Silver ..... Thallium	7440–36–0 7440–38–2 7440–39–3 7440–41–7 7440–43–9 7440–47–3 7439–92–1 7439–97–6 7440–02–0 7782–49–2 7440–22–4 7440–28–0	TSS of 100mg/l and meet § 268.48.	Meet § 268.48.
*	* * *	*	*	*	*

Footnotes to Treatment Standard Table 268.40

[1] The waste descriptions provided in this table do not replace waste descriptions in 40 CFR 261. Descriptions of Treatment/Regulatory Subcategories are provided, as needed, to distinguish between applicability of different standards.

[2] CAS means Chemical Abstract Services. When the waste code and/or regulated constituents are described as a combination of a chemical with its salts and/or esters, the CAS number is given for the parent compound only.

[3] Concentration standards for wastewaters are expressed in mg/L and are based on analysis of composite samples.

[4] All treatment standards expressed as a Technology Code or combination of Technology Codes are explained in detail in 40 CFR 268.42 Table 1—Technology Codes and Descriptions of Technology-Based Standards.

[5] Except for Metals (EP or TCLP) and Cyanides (Total and Amenable) the nonwastewater treatment standards expressed as a concentration were established, in part, based upon incineration in units operated in accordance with the technical requirements of 40 CFR Part 264 Subpart O or Part 265 Subpart O, or based upon combustion in fuel substitution units operating in accordance with applicable technical requirements. A facility may comply with these treatment standards according to provisions in 40 CFR 268.40(d). All concentration standards for nonwastewaters are based on analysis of grab samples.

* * * * *

23. In § 268.42, Table 1 is amended by adding an entry for "RSLDS" to read as follows:

§ 268.42 Treatment standards expressed as specified technologies.

* * * * *

TABLE 1—TECHNOLOGY CODES AND DESCRIPTION OF TECHNOLOGY-BASED STANDARDS

Technology code	Description of technology-based standards
* * * * *	
RSLDS	Removal of solids and meet § 268.48 treatment levels.
* * * * *	
* * * * *	

PART 271—REQUIREMENTS FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

24. The authority citation for part 271 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), and 6926.

25. Section 271.1(j) is amended by adding the following entries to Table 1 and Table 2 in chronological order by date of publication to read as follows.

§ 271.1 Purpose and scope.

* * * * *

(j) * * *

TABLE 1—REGULATIONS IMPLEMENTING THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984

Promulgation date	Title of regulation	Federal Register reference	Effective date
* *	* *	* *	* *
[date of signature of final rule]	Listing of Special Waste S001	[Federal Register page numbers for final rule].	[effective date of final rule].

TABLE 2—SELF-IMPLEMENTING PROVISIONS OF THE SOLID WASTE AMENDMENTS OF 1984

Effective date	Self-implementing provision	RCRA citation	Federal Register reference
* * * *	* * * *	* *	* *
[effective date of final rule].	Prohibition on land disposal of S001 waste with free liquids and prohibition on the disposal of S001 waste below the natural water table. For purposes of this provision, free liquids means liquids which readily separate from the solid portion of a waste under ambient temperature and pressure.	3001(b)(3)(A) and 3004(g)(4)(C).	[date of publication date of final rule Federal Register page numbers] [FR page numbers].

PART 302—DESIGNATION, REPORTABLE QUANTITIES, AND NOTIFICATION

26. The authority citation for part 302 continues to read as follows:

Authority: 42 U.S.C. 9602, 9603, and 9604; 33 U.S.C. 1321 and 1361.

27. In § 302.4, Table 302.4 is amended by adding the following new entry in alphanumeric order to the table to read as follows:

§ 302.4 Designation of hazardous substances.

* * * * *

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES

[Note: All comments/notes are located at the end of this table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
* *	* * *	*		*
S001[f] Coal combustion residuals generated by the electric power sector (Electric Utilities and Independent Power Producers)	.....	4	S001	1 (0. 4536)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[Note: All comments/notes are located at the end of this table]

Hazardous substance	CASRN	Statutory code†	RCRA waste No.	Final RQ pounds (Kg)
*	* * * * *	*	*	*

† Indicates the statutory source defined by 1, 2, 3, and 4, as described in the note preceding Table 302.4.

* * * * *

[f] *See* 40 CFR 302.6(b)(1) for application of the mixture rule to this hazardous waste.

* * * * *

28. Section 302.6 is amended by amending paragraph (b)(1)(iii), including the Table, to read as follows:

§ 302.6 Notification requirements.

* * * * *

(b) * * *

(1) * * *

(iii) For waste streams K169, K170, K171, K172, K174, K175, and S001, knowledge of the quantity of all of the hazardous constituent(s) may be assumed, based on the following maximum observed constituent concentrations identified by EPA:

Waste	Constituent	Max ppm
K169	Benzene	220.0
K170	Benzene	1.2
	Benzo (a) pyrene	230.0
	Dibenz (a,h) anthracene	49.0
	Benzo (a) anthracene	390.0
	Benzo (b) fluoranthene	110.0
	Benzo (k) fluoranthene	110.0
	3–Methylcholanthrene	27.0
	7,12–Dimethylbenz (a) anthracene	1,200.0
K171	Benzene	500.0
	Arsenic	1,600.0
K172	Benzene	100.0
	Arsenic	730.0
K174	2,3,7,8TCDD	0.000039
	1,2,3,7,8–PeCDD	0.0000108
	1,2,3,4,7,8–HxCDD	0.0000241
	1,2,3,6,7,8–HxCDD	0.000083
	1,2,3,7,8,9–HxCDD	0.000062
	1,2,3,4,6,7,8–HpCDD	0.00123
	OCDD	0.0129
	2,3,7,8–TCDF	0.000145
	1,2,3,7,8–PeCDF	0.0000777
	2,3,4,7,8–PeCDF	0.000127
	1,2,3,4,7,8–HxCDF	0.001425
	1,2,3,6,7,8–HxCDF	0.000281
	1,2,3,7,8,9–HxCDF	0.00014
	2,3,4,6,7,8–HxCDF	0.000648
	1,2,3,4,6,7,8–HpCDF	0.0207
	1,2,3,4,7,8,9–HpCDF	0.0135
	OCDF	0.212
K175	Mercury	9,200
S001	Antimony	3,100
	Arsenic	773
	Barium	7,230
	Beryllium	31
	Cadmium	760
	Chromium	5,970
	Lead	1,453
	Mercury	384
	Nickel	6,301
	Selenium	673
	Silver	338
	Thallium	100

* * * * *

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