Supplemental Proposed Rule Applying Phase IV Land Disposal Restrictions to Newly Identified Mineral Processing Waste

Regulatory Impact Analysis

Comment Summary and Response

(January 25, 1996 Proposed Rule)

March 26, 1998

	List of Commenters
COMM1	Roderick T. Dwyer, Deputy General Counsel, National Mining Association
COMM2	Michael V. Ruby, Senior Environmental Chemist, PTI Environmental Services
COMM3	Edward J. Kinghorn, Jr. , President, The Ferroalloys Association
COMM4	Gary F. Lindgren, CHMM, Vice President, Environmental Compliance, Heritage Environmental Services, Inc.
COMM5	Christopher H. Marraro and William F. Hughes, Attorneys for Marine Shale Processors, Inc., Howrey & Simon
COMM6	Raymond F. Pelletier, Director, Office of Environmental Policy and Assistance Department of Energy
COMM7	Alan R. Wood, Manager Waste Management Section Environmental Services, American Electric Power
COMM8	Scott Davis, Environmental Department Leader, Arizona Public Service Company
COMM9	Thomas J. Dammrich, President, Institute for Interconnecting and Packaging Electronic Circuits
COMM10	Edwin H. Seeger, Attorney for Lead Industries Association, Inc., Seeger, Potter, Richardson, Luxton, Joselow & Broods, L.L.P.
COMM11	David Sterman, Deputy Commissioner, New York State Department of Environmental Conservation
COMM12	Denise Lee, Anson County CACTUS, Chapter of the Blue Ridge Environmental Defense League
COMM13	Tim Scott, Vice President of Operations, Avocet Tungsten, Inc.
COMM14	Steve Baumann, General Manager, Chemgold, Inc.
COMM15	Frederick J. Koehler, Senior Staff Engineer, General Motors Corporation North American Operations Worldwide Facilities Group
COMM16	Public Service Electric and Gas Company
COMM17	Chemical Waste Management, Inc.
COMM18	David W. Aument, Safety, Health, and Environmental Affairs Manager, DuPont White Pigment and Mineral Products
COMM19	Westinghouse Electric Corporation
COMM20	Arthur Beckerman, Senior Environmental Engineer, US Borax, Inc.
COMM21	Paul W. Rankin, President, Association of Container Reconditioners
COMM22	Dr. Donald E. Knapp, SCM Chemicals, Inc.
COMM23	Don Vidrine, Manager Hazardous Waste Program, Montana Department of Environmental Quality Waste Management Division Hazardous Waste Program
COMM24	Raymond E. Krauss, Environmental Manager, Homestake Mining Company McLaughlin Mine
COMM25	Terry S. Casey, KRONOS, Inc.
COMM26	Colin Sweeney, CHMM Manager Site Remediation, Jersey Central Power & Light Company
COMM27	L.S. Magelssen, Assistant Director of Environmental Affairs, Union Carbide Corporation
COMM28	Shirley M. Ruffin, Environmental Services Department, South Carolina Electric and Gas Company
COMM29	Alan Dahlstrand, General Manager, Sonora Mining Corporation
COMM30	Kevin J. Igli, Vice President Environmental Management, Chemical Waste Management, Inc.
COMM31	Laidlaw Environmental Services, Inc.
COMM32	James M. Gerek, Unit Director Environmental Issues, Kodak
COMM33	Walter D. Ramsay, International Precious Metals Institute

	List of Commenters
COMM34	Robin K. Wiener, Assistant Counsel/Director of Environmental Compliance, Institute of Scrap Recycling Industries, Inc.
COMM35	John L. Wittenborn and Chet M. Thompson, Counsel to the Metals Industries Recycling Coalition, Collier, Shannon, Rill & Scott
COMM36	Krishna Parameswaran, ASARCO
COMM37	Sierra Club's Midwest Office and the Mining Impact Coalition of Wisconsin, Inc.
COMM38	Phelps Dodge Corporation
COMM39	Solite Corporation
COMM40	Kennecott Corporation
COMM41	David J. Lennett, Counsel to Environmental Defense Fund, Law Office of David J. Lennett
COMM42	Joseph H. Baird, Phosphorus Producers Environmental Council
COMM43	Steven G. Barringer, Attorney for Precious Metals Producers, Battle Mountain Gold Company, Barrick Gold Corporation, Echo Bay Mines, Independence Mining Company, and Santa Fe Pacific Gold Corporation, Singer & Brown
COMM44	Jean Beaudoin, Chairman BCI Environmental Committee and Gerald Dubinski, Chairman BCI Industry Relations Committee, Battery Council International
COMM45	The Fertilizer Institute
COMM46	Cyprus Amax Minerals Company
COMM47	Basil G. Constantelos, Vice President Environmental Policy and Governmental Relations, Safety-Kleen Corp.
COMM48	Guy D. Van Doren, Vice President, LAN Associates, Inc. on behalf of SKW Metals & Alloys, Inc.
COMM49	Robert Hogfoss, Hunton & Williams on behalf of Kemira Pigments, Inc.
COMM50	Michael J. Fitzgerald, Nugent, Fitzgerald, McGroarty & McFadden on behalf of New Jersey Natural Gas Company
COMM51	Michael J. Fitzgerald, Nugent, Fitzgerald, McGroarty & McFadden on behalf of South Jersey Gas Company
COMM52	Robert Lucht, Mining Engineer and Geologist
COMM53	INCO LTD., INCO United States, Inc., and International Metals Reclamation Company, Inc.
COMM54	Gerald A. Dumas, Vice President Environmental Services, RSR Corporation
COMM55	Joseph L. Mayer, Copper & Brass Fabricators Council, Inc.
COMM56	Utility Solid Waste Activities Group, Edison Electric Institute, American Public Power Association, and National Rural Electric Cooperative Association
COMM57	John K. Mudge, Director Environmental Affairs, Newmont Gold Company
COMM58	Richard L. Lawson, President, National Mining Association
COMM58A	Critique of EPA's LDR Phase IV LDR Supplemental Rule, National Mining Association
COMM58B	An Analysis and Critique of the Environmental Protection Agency's "Regulatory Impact Analysis of the Supplemental Rule Applying Phase IV Land Disposal Restrictions to Newly Identified Mineral Processing Wastes, National Mining Association
COMM58C	Review of Technical Documentation Provided by US EPA in n Support of the Supplemental Proposed Rule on Land Disposal Restrictions, National Mining Association
COMM58D	Comments Regarding Use of the Toxicity Characteristic Leaching Procedure to Analyze Mineral Processing Wastes, National Mining Association
COMM59	John Otto, Brush Wellman, Inc., Brian Buck, JBR Environmental Consultants, and Ronald R. Janke, Jones, Day, Reavis & Pogue, Brush Wellman, Inc.

List of Commenters	
COMM60	Brian Buck, JBR Environmental Consultants and Ronald R. Janke, Jones, Day, Reavis & Pogue, Brush Wellman, Inc.
COMM61	Brian Buck, JBR Environmental Consultants and Ronald R. Janke, Jones, Day, Reavis & Pogue, Brush Wellman, Inc.
COMM62	Marc E. Kolanz, Brush Wellman, Inc. and Ronald R. Janke, Jones, Day, Reavis & Pogue, Brush Wellman
COMM63	Marc E. Kolanz, Brush Wellman, Inc. and Ronald R. Janke, Jones, Day, Reavis & Pogue, Brush Wellman
COMM64	Robert J. Bayer, Chairman Environment Committee, Utah Mining Association
COMM65	Gary Crouth, Manager Solid & Hazardous Waste, Alcoa EHS Department, Aluminum Company of America
COMM66	Bill Ferdinand, Radiation Safety, Licensing & Regulatory Compliance, Rio Algom Mining Corp.
COMM67	BHP Copper
COMM68	Gene Dewey, President, Molycorp, Inc.
COMM69	David Shoemaker, Manager Molybdenum Operations, Molycorp, Inc.
COMM70	FMC
COMM71	Peter Walsh, Assistant Deputy Under Secretary of Defense, Office of the Under Secretary of Defense
COMM72	Mark S. Pelizza, Vice President Health, Safety and Environmental Affairs, Uranium Resources, Inc.
COMM73	Copper Range Company
COMM74	Willie Taylor, Director Office of Environmental Policy and Compliance, US Department of Interior
COMM75	Allan Silber, Chairman, Recyclers of Copper Alloy Products, Inc.
COMM76	John Stauter, Vice President, Kerr-McGee Corporation
COMM77	Barry Meyer, Vice President Governmental Affairs and Associate General Counsel, The Aluminum Association
COMM78	Robert Briggs, Director of Manufacturing, Rhone-Poulenc
COMM79	Stuart Sanderson, President, The Colorado Mining Association
COMM80	Randall Jones, Director Regulatory Affairs, Molten Metal Technology
COMM81	Barry Christensen, Manager of Solid Waste, OxyChem
COMM82	John Moore, Akin, Gump, Strauss, Hauer & Feld, Attorneys for Horsehead Resource Development Company, Inc.
COMM83	Electronics Industries Association
COMM84	Eric Males, Director Solid Waste Issues Regulatory Affairs, Chemical Manufacturers Association
COMM85	Michael Doyle, President, Nevada Mining Association
COMM86	Gerald Pepper, Environmental Affairs Manager, US Borax
COMM87	William Williams, Director Health Safety and Environmental Quality, Kennecott
COMM88	Denise Jones, Executive Director, California Mining Association
COMM89	Russell Rhoades, Director, Arizona Department of Environmental Quality
LCOMM1	Michael Baly III, President and Chief Executive Officer, American Gas Association
LCOMM2	Douglas M. MacMillan, Executive Director, Environmental Technology Council
LCOMM3	Jack L. Craven, Acting Director of Minerals & Geology Management, US Department of Agriculture

List of Commenters	
LCOMM4	Edward J. Kinghorn, Jr., President, The Ferroalloys Association
LCOMM5	Association of Battery Recyclers, Inc.
LCOMM6	Debra Beaver, Chair NPRC Hard Rock Mining Task Force, Northern Plains Resource Council
LCOMM8	Gary Beach, Administrator Water Quality Division, State of Wyoming Department of Environmental Quality

Table of Contents

1. Adequacy of the Regulatory Impact Analysis (RIA)

Comment: Two commenters argued that the RIA did not adequately assess the economic impacts of the proposed rule because the costs and benefits associated with the proposed rule were based largely upon assumptions. (COMM57, COMM85) One commenter specifically mentioned that EPA does not have strong confidence in the estimates of the quantity of wastes generated that will have to be treated to UTS standards or in the contaminants that will have to be treated. This commenter believed the costs of the proposed rule were underestimated as a result. (COMM85)

Response: EPA disagrees with these comments for two reasons. First, assumptions and uncertainty do not necessarily imply an underestimate any more than an overestimate. EPA simply attempted to quantify the level of confidence in the input data and results. Second, these estimates were used to develop an estimate of the total impact on the affected industry, and not to create a detailed cost estimate for any specific facility. The use of assumptions does not mean that the economic impacts of the proposal were not adequately addressed. Rather, it was precisely because of EPA's desire to accurately estimate impacts on the regulated community that the necessary assumptions were developed, employed, and documented.

Comment: One commenter stated that the analysis of the proposed rule presented in the RIA was inconsistent with prior EPA interpretation and the jurisdictional limits on EPA's authority under RCRA. The commenter felt that the RIA must be corrected based on this assertion, but did not provide any specific detail on this issue. (COMM39)

Response: EPA disagrees with the comment but is unable to respond specifically to the commenters underlying concerns because the comment did not include supporting detail.

Comment: Another commenter contended that EPA failed to provide an opportunity for comment on its evaluation of the economic impact and benefits of the proposed rule. The commenter argued that the evaluation of the economic impact of the proposed rule was deficient and it precluded comment because (1) EPA had not pulled the relevant information together and performed a complete analysis of the rule, and (2) EPA failed to provide the necessary details and support materials to allow for review by the public. (COMM58)

Response: EPA used all available data to assess the impacts of the rule. Where data were not available, the Agency used conservative estimating procedures to determine the costs and benefits of this rulemaking. The underlying data can be found in the *Identification and Description of Mineral Processing Sectors and Waste Streams Technical Background Document,* EPA, 1995 (Identification Background Document), and a description of the procedures used to estimate the impact of the rule can be found in the December 1995 RIA. EPA also solicited additional data on a number of issues in the preamble to the proposed rule. EPA has incorporated the data provided in public comment into the revised and final RIAs. Further, in addition to the background materials included in the docket at the start of the comment period, the Agency provided additional documents for public review at the request of interested parties and extended the duration of the public comment period to allow for public review of and comment on these additional supporting materials.

Comment: One commenter argued that EPA has not evaluated the alternative of not regulating (i.e. the status quo) in its analysis of the proposed rule. (COMM58)

Response: EPA disagrees with the commenter. Option 2 of the December 1995 RIA reflects the status quo regarding the definition of solid waste and mineral processing secondary materials. Regarding the promulgation of treatment standards for the wasted portion of these materials, promulgation of LDR standards for the subject wastes is required by the HSWA amendments to the RCRA statute (as noted in the Chapter 1 of the RIA). EPA has proposed these standards pursuant to a consent decree in which the Agency

has explicitly recognized this directive from the U.S. Congress. The <u>status</u> <u>quo</u> option would not fulfill EPA's obligations.

Comment: Two commenters contended that the scope of the RIA was narrower than the scope of the proposed rule in that the RIA only evaluated impacts associated with waste streams which were (1) treated and land disposed; (2) stored in land-based units prior to reinsertion into a mineral process unit; and (3) co-processed with virgin ores in land-based mineral beneficiation units. The commenters argued that the proposed rule also appears to be applicable to other land-based activities, non land-based activities, and actual production units. The commenters felt that the RIA underestimated the impact of the proposed rule as a result. (COMM58B, COMM67)

Response: It is not the Agency's intention to regulate "other land-based activities, non land-based activities, and actual production units." Nor does the final rule do so. Thus, mineral processing secondary materials may be placed in land-based process units (such as heap leach piles), and the production unit would not be subject to regulation.

Comment: One commenter asserted that the Identification Background Document's characterizations of various materials as spent materials, sludges, and by-products were technically and factually inaccurate, particularly when used as a basis for the RIA. The commenter did not provide any specific detail on this issue. (COMM67)

Response: EPA has used the best information available to classify secondary materials as spent materials, sludges, and byproducts. As new information became available, the Agency reevaluated these classifications and revised them as appropriate. Since the commenter has not provided any examples of inaccurate classifications, EPA cannot address the commenter's specific concerns.

Comment: One commenter argued that the environmental benefits projected by EPA for the proposed rule are speculative and overstated. The commenter disputed the assumptions that the proposed rule will increase recycling of secondary materials, or reduce the risks associated with secondary materials which have caused environmental and human health impacts in the past. (COMM38)

Response: EPA believes that the health benefits associated with the mineral processing LDRs have been reasonably estimated and that the methods used to estimate benefits are adequately documented in the revised RIA. It is important to note that the health benefits of the various regulatory options do not result only from increased recycling. In fact, as discussed in the revised RIA, all of the *quantified* health and environmental benefits come from improvements in the disposal practices for unrecycled materials and from improvements in storage controls on materials that are currently recycled and which will continue to be recycled under LDRs.

Comment: Another commenter asserted that the benefits analysis presented in the RIA was inadequate and based upon insufficient information. (COMM57)

Response: The RIA discussed in detail the limitations of the data used to develop regulatory benefits estimates. EPA believes that the data are sufficient to support the benefits estimates that have been developed (even though estimates for some wastes streams with little data may be quite uncertain). EPA also believes that the lack of data for some wastes streams has, if anything, resulted in an underestimation of benefits from the proposed LDRs for the no prior treatment baseline analyzed.

Comment: One commenter stated that the benefits analysis failed to account for existing state regulatory regimes that already regulate environmental impacts from land-based units. The commenter indicated that the State of Nevada, for example, imposes a variety of requirements which ensure that the environment is protected even when production operations take place in land-based units. The commenter felt that the proposed rule will only complicate matters by requiring facility operators to comply with dual regulatory schemes. (COMM57)

Response: EPA agrees with the commenter. One limitation of the analysis is the absence of state environmental regulation of mineral processing operations affected by this proposal. EPA notes that the presence of state environmental regulation has the potential to decrease both incremental costs and benefits associated with this proposed rule. EPA will try to assess the effect of state environmental regulation to the extent possible in future regulatory impact analyses for the Phase IV LDR final rule. EPA will identify any uncertainty regarding the effect of state environmental regulation in future analyses.

Comment: One commenter stressed that EPA needs to quantify the benefits associated with the proposed rule. This commenter also questioned whether the estimate of the benefits associated with the rule takes into account the facilities that will close or discontinue processing co-products as a result of the rule. (COMM40)

Response: EPA has quantified benefits to the extent feasible in the revised RIA. The quantified benefits arise from changes in both waste disposal and recycling practices. EPA's benefits analysis of health and environmental benefits did not take into account any shifts in recycling or co-processing practices.

Comment: One commenter asserted that the benefits associated with the proposed rule are minimal, as EPA mentions in the preamble to the proposed rule. The commenter stated that the proposed rule will not "protect and improve the health, safety, environment, and well-being" of the American people, nor can it improve "the performance of the economy without imposing unacceptable or unreasonable costs on society." (COMM58)

Response: EPA believes that the proposed LDR would protect health and the environment both through improvements in the treatment and disposal of unrecycled wastes, as well as through improvements in the management practices for recycled materials -- specifically by eliminating or improving land-based storage units for hazardous secondary materials which will be recycled.

Comment: The commenter indicated that the LDR benefits estimated by the RIA are primarily the reduction in health risks arising from reduced human exposures to waste constituents in ground water. The commenter also stated that the RIA's summary measure of this benefit is "changes in the number of facilities disposing of various wastes (facility-waste stream combinations) at which the calculated risks exceed selected levels." The commenter argued that to the extent that the LDR results in an increase in the volume of newly-identified materials treated and disposed, rather than recycled, the actual health risk improvement may be significantly less than that estimated by the RIA. (COMM58B)

Response: The final rule requires improvements both in the management of recycled secondary materials and in the treatment and disposal of unrecycled materials. In either case, materials must be managed so that potential risks to the public health and the environment are limited. Thus, even if, as the commenter maintains, some materials move from being recycled to being disposed, the proposed LDRs would require treatment prior to disposal to minimize health and environmental risks. In addition, the commenter's implicit assumption that risks from recycling are less than risks from treatment and disposal are unsupported, particularly when the rule targets land-based units which tend to pose the same risks whether used for disposal or whether used for storing hazardous secondary materials..

2.   Proposed Regulatory Requirements and Predicted Responses

2.1   Perceived Errors in the Description of the Two Regulatory Options

Comment: One commenter questioned EPA's description of how materials are recycled under existing rules. The commenter referenced the conclusion of the RIA section of the preamble to the proposed rule, where EPA recommended Option 1 (the proposed rule approach) over Option 2 (status quo), because Option 1 allows for a one year storage period as opposed to a 90-day storage period for Option 2. The

commenter added that it did not understand the reference to the 90-day storage period under Option 2 because, under existing rules, materials that are exempt from the definition of solid waste are not subject to a 90-day storage period. Rather, they are subject to the speculative accumulation criterion at 40 CFR §261.2. The commenter stated that the 90-day storage period only applies to on-site storage of hazardous waste. (COMM67)

Response: EPA notes that, under current regulations, hazardous spent materials may only be stored for 90 days before the generating facility would be considered a treatment, storage, and disposal facility, requiring a RCRA Part B permit. (See 40 CFR §262.34.)

Comment: Another commenter argued the following point:

"The Phase IV LDR rules, if Option 2 is chosen, would not be subject to the LDR timing requirements in §3004 at all, because they would not be LDR rules. RCRA §§3004(h) and (m) refer to 'prohibitions' and 'treatment standards,' respectively. The requirements that are contemplated in Option 2 of the Phase IV proposed rule are neither one. The proposed requirements, addressing air emissions, sludges, and leaks from CWA wastewater surface impoundments, would be neither prohibitions from land disposal under RCRA §3004(d) through (g), nor treatment standards pursuant to RCRA §3004(m). If there is any authority in RCRA for such requirements, it does not come from the LDR provisions. The technical surface impoundment requirements in Option 2 of the Phase IV proposal are clearly not 'prohibitions,' because, as noted above, the hazardous wastes involved are already prohibited from land disposal. The proposed Option 2 requirements cannot be treatment standards, because they are not "levels" or 'methods' of treatment as set out in §3004(m) of RCRA. The Option 2 requirements would not be prohibitions or treatment standards, and thus are not subject to the LDR timing requirements in RCRA §3004."

The commenter then noted in a footnote that:

"If EPA believes that authority exists for the Option 2 requirements in some part of RCRA other than the LDR provisions, one remaining issue would be whether RCRA §3010(b) would require the regulations to be effective within six months of final promulgation of the rule. EPA has determined that it has the discretion to stay the effective date of RCRA rules where necessary (as with the Subpart CC rule, see 60 Fed. Reg. 50,426 Sept. 29, 1995). If such a stay is not an option, however, EPA should delay final promulgation of the Phase IV LDR rule until after the HWIR rule is promulgated." (COMM70)

Response: EPA believes that the commenter has mischaracterized Option 2 of the RIA. Option 2 does not pertain to air emissions, sludges, and leaks from CWA wastewater surface impoundments as the commenter asserts. Option 2 models current regulatory requirements for mineral processing secondary materials being recycled (i.e., spent materials being reclaimed are solid wastes whereas characteristic sludges and by-products being reclaimed are not solid wastes). With respect to the wasted portion of mineral processing secondary materials, Option 2 models treatment to universal treatment standards established pursuant to §3004(m) of the Resource Conservation and Recovery Act.

2.2 Potential Decreases in Recycling of Mineral Processing Secondary Materials

Comment: Seven commenters stated that the RIA was inadequate and underestimated the costs associated with the proposed rule because the RIA failed to account for the possibility that recycling of mineral processing secondary materials may decrease with the promulgation of the proposed rule. The commenters asserted that the imposition of a quantitative legitimacy test, Bevill mixture test, or toxics-ratio

test would serve to decrease recycling within the mineral processing industry, impose new treatment and disposal costs, and have a negative economic impact upon the mineral processing industry. Several of the commenters argued that EPA's "static" assumption in the RIA was an incorrect one, and the economic costs of the proposed rule should be evaluated on a "dynamic" basis to reflect decreases in recycling caused by imposition of this rule. (COMM36, COMM46, COMM57, COMM58, COMM58B, COMM67, COMM85)

Response: The Agency has conducted a dynamic analysis for both the April 1997 RIA and the final RIA, to account for both incentives and disincentives to recycling.

Comment: Two commenters indicated that the most significant economic impact of the proposed rule may arise from changes in industry practices with respect to newly-identified material recycling. The commenters asserted that passing or failing a legitimacy test or Bevill mixture test could cause a change in a mineral processing unit's ability to continue recycling a given material. The commenters believed that the possibility of decreased recycling needs to be examined to adequately portray the costs associated with the proposed rule. (COMM58B, COMM67)

Response: The Agency has withdrawn the requirement for a quantitative legitimacy test from the final rule.

Comment: One of the commenters contended that the impact of changes in industry practices could be large, and for a processing unit currently recycling newly identified materials, failing the tests would force the facility operator to either: 1) stop the recycling activity, or 2) risk losing the Bevill exemption for the entire unit and be effectively classified as a hazardous waste disposal unit subject to RCRA Subtitle C regulation.

The commenter added that if the processing unit decides to stop recycling the materials, the economic effects could include the following: 1) lost revenue from sale of the metal values contained in the material, 2) added costs for treating and disposing of the material, and 3) added cost to purchase commercial materials for use in the place of previously-recycled materials where the recycled material has a processing role (such as with spent bleed electrolyte which might need to be replaced with purchased sulfuric acid in a leach circuit).

The commenter indicated that a processing unit choosing to continue recycling after failing a legitimacy or Bevill test could face large costs. The commenter indicated that for mineral processing operations producing large quantities of secondary materials, the cost of treating these materials as a Subtitle C waste would most likely be economically prohibitive. The commenter believed that failing a legitimacy or Bevill test would cause a facility to cease recycling of newly-identified secondary materials. (COMM58B)

Response: The commenter has effectively described the "worst case scenario" that could result from the use of a quantified legitimacy test. EPA believes that the effects on a facility engaged in legitimate recycling would not be this extreme. As noted above, however, the Agency has withdrawn the requirement for a quantitative legitimacy test from the final rule. The final rule also does not include the tests relating to use of hazaredous secondary materials in Bevill process units.

Comment: The commenter indicated that the RIA did not comply with OMB guidelines dictating that the consequences of alternative actions be addressed, because the RIA failed to address the consequences of a mineral processing facility passing or failing a legitimacy or Bevill recycling test. The commenter suggested that the following be taken into account in order to provide for an accurate analysis of the proposed rule:

- Consider the probability that processing units would: (a) pass the legitimacy and Bevill tests and continue recycling; or (b) fail these tests and cease recycling; and

- Consider the cost effects associated with any reduction in industry recycling and consequent increase in the proportion of total newly-identified materials that are treated and disposed. (COMM58B)

5

Response: The Agency has withdrawn the requirements for a quantitative legitimacy test and a Bevill significantly affected test from the final rule.

Comment: Another commenter mentioned that the proposed rule may cause decreased recycling of and further negative economic impacts upon extra-industrial secondary materials, which constitute valuable metal and mineral-bearing resources for the primary metals and mineral processing industry. The commenter contended that if these extra-industrial materials were deemed solid wastes, and likely hazardous wastes, many operations would likely discontinue the reuse or recovery of those materials in order to avoid being subject to RCRA Subtitle C controls and permitting requirements. As a result, the operating costs to the generating industry would increase due to the need to dispose of these materials. As with secondary materials, the environmental costs due to land disposal would also increase. The commenter argued that the RIA did not account for these costs in the assessment of the proposed rule's economic impact. (COMM36)

Response: Extra-industrial secondary materials are not newly identified mineral processing wastes and are, accordingly, outside the scope of today's rulemaking. Nonetheless, the Agency notes that the provisions that would cause a decrease in recycling these materials (such as a quantitative legitimacy test and a Bevill significantly affected test) have been withdrawn from the final rule.

Comment: Two commenters asserted that EPA was wrong to assume in the RIA that all mineral processing secondary materials that are currently being recycled without being placed on the land will continue to be exempt from RCRA regulation. The commenters argued that this may not be the case if EPA decides to promulgate a "toxics-ratio" test or a "significantly affected" test. (COMM67, COMM85) One commenter mentioned that mineral recovery would be reduced as a result, affecting the economic benefit of the proposed rule. (COMM85)

Response: As noted above, the Agency has withdrawn the requirements for a quantitative legitimacy test and a Bevill significantly affected test from the final rule. As such, the Agency maintains that secondary materials that are currently being recycled without being placed on the land will not be affected by the final rule.

2.3   The Remining Assumption

Comment: One commenter argued that EPA's predictions regarding the "remining" of previously discarded wastes were overly optimistic, and that there were only minimal benefits relating to remining as a result of the rulemaking. The commenter felt that the proposed rule was not adequate to encourage remining. The commenter asserted that primary mineral processing operations will not remine historically discarded wastes due to the complexities, risks, and expenses associated with EPA's proposed revisions to the regulatory definition of solid waste. The commenter believed that in order to make remining feasible, EPA must revise the Bevill mixture rule and withdraw the application of the TCLP to mineral processing wastes. (COMM36)

Response: The Agency appreciates these comments and no longer considers increased remining a "benefit" of this rule.

Comment: Another commenter indicated that EPA's analysis of the benefits associated with remining fails to take into account two key facts. First, under current RCRA regulations, mining companies can already remine previously disposed hazardous mineral processing wastes to recover their metallic values. If the mineral processing wastes are excavated and destined for reclamation, their management prior to reclamation, as well as the reclamation process itself, is not subject to RCRA Subtitle C regulation. The commenter cited 40 CFR 261.2(c)(3).

Second, the major impediments to remining are not imposed by RCRA, but by CERCLA and CWA. Under CERCLA, if a mining operation were to remine previously discarded wastes at a given site, the mining company would be potentially liable for the remediation of all environmental releases and damage ever

coming from the site. In addition, under CWA, the mining company runs the risk of being deemed responsible for all discharges, including pre-existing discharges, from the site. CWA would therefore require the mining operation to treat all of the discharges so that they meet effluent limitations guidelines and water quality standards.

The commenter stressed that many mining companies have been attempting to persuade Congress to adopt amendments to both CERCLA and CWA that would allow mining companies to engage in remining. However, the mining industry has sought no such amendment to RCRA, because it presents no impediment. As a result, the proposed rule, even if implemented, will not serve to encourage remining. (COMM57)

Response: EPA agrees that CERCLA and CWA regulations and their statutory basis present more significant barriers to remining than does the RCRA program.

Comment: Another commenter argued that considering the cost savings associated with remining in the compliance cost estimation process was inappropriate. The commenter suggested that EPA should instead consider an industry's opportunity cost in investing in processes with lower returns on investments compared to those processes in other countries with greater returns on investments. The commenter contended that EPA is arguing both sides of the argument in that there should be ore cutoff grades, normal operating ranges, and efficiency standards, while at the same time encouraging the reprocessing of wastes to save money. The commenter argued that EPA was trying to regulate outside of its jurisdiction because the economics of industry's processes are the responsibility of industry, not EPA. (COMM40)

Response: The Agency appreciates these comments and no longer considers increased remining a "benefit" of this rule.

Comment: A fourth commenter indicated that it does not have knowledge of direct cost savings related to remining but, based on the commenter's knowledge of the costs incurred in the traditional cleanup and reclamation of old mine sites, believed that the cost savings associated with remining could be substantial and may represent hundreds of millions of dollars. The commenter also made the following point:

"The proposal to treat such materials as being recycled within the mineral processing and mineral beneficiation industry sectors provides a means for recovery of mineral values from materials which might otherwise have been disposed of, and also provides for environmental protection through the standards regarding the land-based storage and process units where these materials are stored prior to recycling." (COMM74)

Response: Because characteristic sludges and by-products from mineral processing facilities are not considered to be solid wastes when reclaimed under current regulations, EPA does not believe that these materials would benefit from the conditional exclusion for mineral processing secondary materials in the final rule. With respect to spent materials, potential cost savings may occur from the final rule due to longer accumulation times in non-land based storage units such as tanks, containers and buildings. Previously, storage in these units without a permit would be limited to 90 days. 40 CFR §262.34. However, under the final rule, these materials may be stored for up to 1 year provided that at least 75 percent of the material is recycled in that time. EPA has not quantified the extent of these cost savings.

Comment: A fifth commenter suggested that EPA examine the actual intended benefits and cost effectiveness of remining (e.g., how many acres of land would be remined and remediated; or how many tons of sludges and by-products would be recycled; or how many tons of mineral materials would be recovered.) This commenter requested that EPA provide information on how the anticipated results of the proposed rule fits into EPA's long term strategy of regulating mining wastes. (LCOMM3)

Response: Despite numerous data collection attempts, the Agency does not have sufficient information on abandoned waste piles to conduct the type of analysis requested by the commenter.

Comment: One commenter argued that the benefits associated with the remining of "historically discarded materials" were overstated. The commenter stated that the rule presents a large risk to mineral processing facilities in that they may be reluctant to remine recyclable materials if the materials that they process in existing process units are determined to be outside the scope of the RCRA exemption. (COMM38)

Response: The Agency appreciates these comments and no longer considers increased remining a "benefit" of this rule.

3. Cost Analysis

3.1 General

Comment: A commenter asserted that the costs associated with land disposal should be compared to the *status quo* for compliance cost estimates instead of being compared with recycling costs. (COMM40)

Response: The commenter may have misinterpreted the purpose of the comparison between land disposal costs and recycling costs, which was to determine whether the rule would encourage recycling. EPA is aware that not all material can be recycled. However, EPA believes that land disposal restrictions usually result in an increase in the amount of material being recycled, due to operators reevaluating the economics of recycling (i.e., comparing the costs of recycling with the "new cost" of treatment and disposal). The function of predicting increases (or decreases) in recycling is separate from the overall cost benefits evaluation of the rule.

Comment: This commenter also argued that mercury-bearing mineral processing residues would most likely have to be treated via roasting and retort (rather than cement stabilization, as modeled in the RIA) because disposal of mercury-bearing mineral processing residues is not available in the United States. The commenter contended that retorting alone would drive the estimated compliance costs up considerably. (COMM40)

Response: The Agency does not believe that costs are understated. While high mercury streams need to be treated using roasting and retort prior to land disposal of the residues, the Agency believes that low mercury streams can be treated using cement stabilization. The Agency's data do not indicate any mineral processing streams have a high mercury content, and the commenter has not supplied any new data indicating the existence of newly identified high mercury streams.

3.2 Multipliers

Comment: One commenter indicated that EPA had not provided any reasoning or source for the specific multipliers used to represent the percentage of the waste stream that has been recycled and the percentage that is considered to be hazardous. (COMM58B)

Response: EPA agrees that the derivation of the multipliers was not well documented. The final rule replaces these multipliers. The new multipliers are based on data reflecting management of F006 and K061 (two listed wastes for which recycling increased after LDRs went into place), the Agency's knowledge of current industry practice, and best engineering judgment. More information on the derivation of these multipliers can be found in Appendix A of the RIA.

Comment: This commenter stated that EPA had used the same multipliers for categories where waste streams are known to be partially recycled with certainty ("YS") and those assumed to be partially recycled ("YS?"). Furthermore, the commenter felt that the multipliers used under the uncertainty columns, "Y?" and "YS?" should be generally higher than the corresponding ones used under the certainty columns "Y" and "YS". However, only one out of the six boxes reflects this pattern. (COMM58B)

Response: EPA agrees that the multipliers for the YS and YS? categories should be different, and has incorporated this change in the new multipliers developed to model the shifts which may occur as a result of this rule. These new multipliers also reflect the pattern that the multipliers used for Y? and YS? are higher than those for Y and YS (i.e., more waste is sent to treatment and disposal for streams that are only suspected to be fully or partially recycled).

3.3   Rounding

Comment: One commenter stated that EPA used an inconsistent rounding method. For example, 67,500 is rounded off to 68,000 and 112,500 is rounded off to 110,000 and 174,000 is rounded off to 170,000. (COMM58B)

Response: Throughout the RIA, including the three examples cited by the commenter, figures were rounded to two significant digits. Use of significant digits, common in most scientific calculations, allows for a general estimate to be presented without the false precision that would be implied by reporting all digits carried through a complex set of calculations.

3.4   Waste Generation Rates and Facility Averages

Comment: This commenter also stated that EPA inconsistently estimated waste generation rates when data were not available. The commenter indicated that for a substantial proportion of the waste streams, EPA apparently used a single figure and applied it across the board for minimum, maximum, and expected scenarios. In addition, the source of these figures is not stated. (COMM58B)

Response: The Agency disagrees with the commenter's contention that the waste generation rates were inconsistently estimated. As stated in the RIA, single "reported" waste generation rates were used for all three costing scenarios when they were available. The source of the reported waste generation rates can be found in the Identification Background Document's description of each waste stream. Separate waste generation rates for the three costing scenarios were estimated only when a reported value was not available, using the procedures outlined in Section 3.3 of the December RIA.

Comment: One commenter objected to the way facility averages were calculated. The commenter indicated that the maximum number of facilities generating waste with 1-10 percent solids content in the copper sector is 10 facilities. However, EPA has used 14 facilities to calculate the overall average figures. The use of 14 facilities as opposed to 10 for calculating the averages will underestimate the cost impact. (COMM58B)

Response: The Agency notes that this point no longer applies to the copper sector due to revisions to the input data performed in response to public comment. Nonetheless, EPA would like to address the commenters concern. The cost model assumes that each facility generating waste above the on-site threshold will build a single treatment system on-site to treat and dispose all of the waste. Therefore, all wastes at a site are assumed to be aggregated to the extent possible before treatment and disposal (i.e., all waste streams requiring dewatering are commingled prior to dewatering, and all streams requiring stabilization are mixed together, including the dewatered mass from neutralization and dewatering). In the table below, for example, 6 facilities would need to build treatment systems. The average facility generation rates used in the modeling are 10,000 mt/yr of solids, and 22,167mt/yr of wastewaters. These generation rates were calculated by summing the total facility generation rates within physical form categories and dividing by the maximum number of facilities *in the sector* that need to build treatment systems. Similarly, in the December RIA, in the copper sector, a single solid waste stream was generated by 14 facilities, while many of the other waste streams were generated by 10 facilities. Thus in the December RIA, 14 facilities in the copper sector required on site treatment, and the average facility generation rates were calculated based on 14 facilities building treatment systems.

While this method of calculating quantities to be treated by the model "average facility" in a sector sometimes underestimates the cost to some of the facilities, EPA has found this method of calculating total sector cost to the most accurate method available, given the limitations of the input data. EPA also reminds the commenter that the purpose of this analysis was to estimate the total cost of this rulemaking, not to determine the cost of compliance at a particular facility.

Waste Stream	Physical Form	Number of Facilities	Average Facility Generation	Total Facility Generation
A	Wastewater	3	1,000	3,000
B	Wastewater	2	50,000	100,000
C	Solid	6	10,000	60,000
D	Wastewater	3	10,000	30,000
Total	Wastewater		61,000	133,000
Total	Solid		10,000	60,000
Average	Wastewater			22,166
Average	Solid			10,000

Comment: One commenter indicated that for some waste streams the amount to be recycled has been underestimated. The commenter cited tankhouse slimes, and WWTP sludge in the copper sector as examples. This commenter added that the amount to be recycled is the difference between the waste generated and the amount to be treated and disposed. (COMM58B)

Response: The commenter may have misunderstood the manipulation of the input data used to account for uncertainty with regard to both hazard characteristics and recycling. The Agency categorized each waste stream into a portion considered to be non-hazardous, and a hazardous portion, some of which is treated and disposed, and some of which is recycled. The amount of waste to be recycled is the difference between the portion of the waste stream *considered to be hazardous* and the amount to be treated and disposed. For example, using the data for the copper sector from the December RIA, both tankhouse slimes and WWTP sludge have a hazard characteristic of Y? (only suspected to be hazardous). Therefore, in the minimum value case these streams are not considered to be hazardous, and drop out of the analysis, while in the expected value case, only half of each stream is counted, and in the maximum value case each entire stream is considered to be hazardous. It is these hazardous portions (in the expected and maximum value cases) that are divided between treatment/disposal and recycling.

Comment: One commenter stated that EPA has made some calculation errors in combining the matrices and waste generation rates to arrive at the quantities to be treated/disposed/recycled. For example, calculations of quantities for copper scrubber blowdown and surface impoundment waste liquids for copper appear to be incorrect. (COMM58B)

Response: EPA has carefully reviewed the calculations for these two wastes streams and cannot find any errors. Because the commenter has not suggested any revised quantities, the Agency cannot respond to this criticism in more detail.

3.5   Cost Functions

Comment: One commenter stated that it was their understanding that a very limited amount of actual cost data was used to derive the cost functions employed in the RIA. The use of such a limited number of actual "data points" to generate the cost functions may render the quality of generalizations based on these cost functions to be unreliable. Further, a visual examination of most of the cost functions reveals that the EPA is assuming decreasing costs for almost the entire range of output. This implies that for all the waste

streams that the EPA has considered, the per unit cost of disposal never increases, irrespective of the amount of waste being treated and disposed. (COMM58B)

Response: EPA acknowledges that it used a limited number of data points to develop the cost functions employed in the cost model, but disagrees with the commenter's contention that the cost model results are unreliable. EPA used these cost functions to estimate the national impact of the rule and to estimate the costs at model facilities, not to estimate the specific costs at actual facilities. The Agency believes that the cost functions are of sufficient quality to accomplish this purpose. In addition, EPA believes that cost functions that reflect positive economies of scale (the commenters "decreasing costs") accurately represent the costs of treatment technologies and equipment for which capacity (volume) increases more rapidly than area (basis of cost).

Comment: One commenter pointed out that EPA did not include O & M costs associated with storage and recycling. The commenter felt that as a result, the storage costs have been underestimated which, in turn, led EPA to underestimate the incremental LDR costs for the Prior Treatment and No Prior Treatment baselines under Option 1 and the No Prior Treatment baseline under Option 2. (COMM58B)

Response: The Agency agrees with the commenter that total storage costs were understated and notes that the O & M costs associated with storage have been included in the revised RIA. Nonetheless, because the analysis was static (i.e., the amount of material stored did not increase or decrease as a result of the rule), the major storage O & M costs were associated with moving the material into and out of the storage units, which should be primarily a function of the amount of material being stored rather than the type of storage unit. Therefore, although the total storage costs were understated, the effect on the incremental sector cost and total industry incremental costs should have been minor.

Comment: One commenter noted an inconsistency with the annualization formula that EPA used to determine the before-tax annualized cost (page F-25, December RIA). The commenter said there appear to be typographical errors in the second and third components of this formula:.

$(\text{Capital Costs})*(\text{CRF}) + (\text{Annual Capital} + \text{O\&M Costs}) + (\text{Closure Costs})/(1.07^{21})*(\text{CRF})$

The commenter believed the actual formula used by EPA to determine the before-tax annualized cost was as follows:

$(\text{Capital Costs})*\text{CRF} + (\text{O\&M costs}) + (\text{Closure Costs})*\text{CRF}/1.07^{21}$

(COMM58B)

Response: While EPA concedes that the expression:

$(\text{Capital Costs})*\text{CRF} + (\text{Annual Capital} + \text{O\&M costs}) + (\text{Closure Costs})*\text{CRF}/1.07^{21}$

which is very similar to the commenter's suggested expression, would be clearer than the expression which appeared in the RIA, both expressions are mathematically equivalent. The Agency also notes that while annual capital costs do not appear in many of the calculations, they are included in the formula for completeness. Annual capital cost are treated as if they were O & M costs (because they reoccur every year), rather than being considered with the year one capital costs.

3.6   Calculations

Comment: Under Option 1 Prior Treatment Baseline, the method used to calculate the incremental LDR costs is inconsistent with the methodology used in other scenarios. The incremental LDR costs under Option 1 with No Prior Treatment are calculated by multiplying the number of facilities for each waste stream by the total storage cost and adding up the figures for the waste streams. With respect to copper, these waste streams are acid plant blowdown, APC dust/sludge, tankhouse slimes, and WWTP sludge. EPA has not used its methodology consistently in arriving at these results. Typically, EPA has multiplied the average cost

figures with the maximum number of facilities to arrive at the total cost figures. In this case, however, the EPA has used the number of facilities for each waste stream in deriving the total cost results. (COMM58B)

Response: EPA believes the commenter is actually referring to Option 1 with Prior Treatment in the second sentence. Assuming this is the case, EPA agrees with the commenter that storage costs were inconsistently scaled up between baselines, and notes that this inconsistency has been corrected. In the final RIA, the average facility storage cost is calculated for each stream. This average cost is multiplied by the number of facilities recycling that waste stream, and these sector stream totals are added together to get the total sector storage cost. In all options and baselines, these total sector costs are used to calculate the total sector incremental storage cost, which is added to the total sector incremental treatment and disposal cost and the total sector record keeping cost to determine the total sector cost. Finally, this total sector cost is divided by the maximum number of facilities generating hazardous waste to determine the incremental average facility sector cost.

3.7   Assumptions

Comment: One commenter provided a detailed review of the steps EPA took in conducting the cost analysis, and attempted to recreate EPA's calculations. In restating the assumptions the Agency made, the commenter incorrectly noted the following: (COMM58B)

- The "Prior Treatment" scenario assumes that spent materials that are recycled are stored in compliance with full RCRA Subtitle C controls. This scenario further assumes that prior to disposal, byproducts and sludges are decharacterized. For spent materials, it assumes that full Universal Treatment Standards (UTS) are carried out prior to disposal.

- Under Option 2, EPA believes that those materials, which EPA currently views as "spent" materials and requiring storage under RCRA Subtitle C conditions prior to recycling, would continue to require such handling under this option. Recycling through a Bevill-exempt unit of materials considered by EPA to be newly identified materials would not be permitted. (Industry currently recycles certain materials through Bevill-exempt units to recover the metal values contained in these materials. The industry believes that such recycling is permissible under current law.)

- The following conversion rates were used:

    1 mt = 66.07 gallons;

    1 mt = 8.8 cubic feet; and

    1 mt = 0.33 cubic yard.

Response: EPA would like to clarify that in the Prior Treatment scenario, prior to disposal all types of materials are decharacterized, not treated to UTS levels. Option 2 allowed materials to be recycled to Bevill units (as does the final rule). (The Agency notes that Option 2 is not considered in final RIA.) Finally, EPA used the conversion rate of 1 mt = 2204.6 lbs, with an assumed density of liquids of 62.4 lb/ft^3 to arrive at the following conversions: 1 mt = 264.28 gallons = 35.33 ft^3 = 1.3 yd^3.

Comment: One commenter noted that the cost figures in the RIA text are different from those in the RIA tables.

Response: The costs in the tables were the correct estimates.

4. Specific Mineral Processing Sectors and Facilities

Comment: One commenter questioned EPA's estimate of the number of facilities that would be affected by the proposed rule. The commenter stated that the Profile of the Metals Mining Industry indicates that there are 873 metal mining facilities, and EPA has studied approximately 200 mineral processing facilities and found over 350 secondary materials. Given the above numbers, the commenter wanted to know how EPA arrived at the estimate that only 181 facilities would be affected by this rulemaking. In addition, the commenter questioned EPA's assumption of one land-based unit per facility (61 FR 2367), and whether there is data supporting that assumption. (COMM40)

Response: This rulemaking applies to facilities generating hazardous mineral processing wastes from primary mineral processing operations. Therefore, no mines will be affected except those co-located with mineral processing operations. Mines that only conduct extraction and beneficiation operations are outside the scope of the rulemaking. Further, because some of the facilities conducting mineral processing operations do not generate hazardous waste, not all of the 200 mineral processing facilities will be affected. The number of land-based units per facility was estimated from field experience, but does not influence the number of facilities affected. Since the proposed rule, EPA has received new information for some sectors indicating that several additional facilities have closed down, thereby further reducing the estimate of affected facilities in today's rulemaking.

Comment: Two commenters argued that the RIA underestimated the potential financial impacts of the proposed rule due to significant errors in EPA's assumptions and baseline data. (COMM61, COMM64) One commenter provided more detail, arguing that EPA underestimated the capital and operating costs of beryllium waste treatment at the Brush Wellman facility in Delta, Utah. This commenter mentioned that it had difficulty determining how EPA arrived at cost estimates, but felt that a summary of the costs would include:

Treatment	Capital $	O&M $
Neutralization	107,974	244,015
Dewatering	217,019	64,743
Stabilization	511,432	949,979
TOTAL	**$ 836,425**	**$ 1,258,737**

This commenter had a consultant perform a preliminary cost estimate for treatment of just one of their beryllium waste streams, raffinate. The overall capital and operating costs were significantly higher: (1) capital cost: $ 5,013,255; and (2) O&M cost: $ 1,863,499. The commenter added that it was unclear whether the cost of the construction of the stabilized sludge disposal cell used in beryllium waste treatment was included in EPA's cost estimates. (COMM61) Both commenters argued that EPA clearly underestimated the potential financial impact of the proposed rulemaking upon the commenter's operation. (COMM61, COMM64)

Response: EPA notes that several of the waste streams in question are beneficiation wastes, and will not be affected by this rulemaking; they were included in the December 1995 RIA due to an oversight. Nonetheless, the Agency acknowledges receipt of this new information, and believes that the discrepancy in cost between the commenter's analysis and EPA's cost estimates occurs for three reasons. First, a review of the commenter's treatment process revealed that the commenters process appears to include an extra treatment step, as well as the construction of a sludge disposal cell. Second, although the Brush Wellman facility is the only facility generating several of the waste streams in the beryllium sector, these generation rates were apportioned to two facilities in developing the average facility estimates for the RIA. Therefore, it could be expected that the average treatment costs for the model facility in the RIA would be less than the

actual costs at the Brush Wellman facility. The total sector costs for the RIA, however, are more likely to represent the impact of the rule on the entire sector. Finally, EPA used average facilities to estimate the national impact of the rule and to estimate the costs at model facilities, not to estimate the specific costs at actual facilities.

Comment: Two commenters indicated that the RIA waste estimates for the commenters' operations vary from the 1995 actual tonnages recorded by the commenters (COMM61, COMM64):

Wastestream	EPA Estimate (tons)	1995 Actual (tons)
Barren Filtrate	88,000	55,000
Bertrandite Thickener Slurry	370,000	376,000
Beryl Thickener Slurry	3,000	1,000
Raffinate	380,000	367,000

Response: EPA will incorporate this new information into the Identification Background Document.

Comment: One commenter indicated that it was very difficult to correlate how EPA's general assumptions on treatment concepts apply to the commenter's Delta, Utah operations, but the waste tonnage determined by EPA for the beryllium sector as a whole in the RIA are as follows:

Neutralized Waste	223,500 TPY
Dewatered Waste	33,525 TPY
Stabilized Waste	16,529 TPY
Waste Disposed	27,920 TPY

The commenter mentioned that for the raffinate generated at it's facility, assuming that it is classified as a hazardous waste, it would have to first neutralize the raffinate, then dewater and stabilize the treatment sludge. The commenter had a consultant develop a preliminary estimate of the tonnages of waste that would have to be treated at its facility (COMM61):

Raffinate to be neutralized	367,000 TPY
Neutralized Sludge to be Dewatered (30% solids)	121,110 TPY
Dewatered Sludge to be Stabilized (dry weight)	40,370 TPY
Final Waste to be Disposed with 50% cement	60,555 TPY

Two commenters stated that as a result of the above figures, it appears that the EPA estimates of the potential scale of the waste treatment and handling impacts of the proposed rule are underestimated. (COMM61, COMM64)

Response: EPA recognizes that its estimates may be inaccurate when applied to any specific facility. As indicated above, the purpose of this analysis is to project total sector and total industry costs. Due to a number of differences in assumptions, such as amount recycled and number of facilities generating wastes, EPA's estimates have a different basis than those presented by the commenters.

Comment: One commenter presented a case study of how the proposal could force a change in management practices that have not been considered in the RIA. The commenter outlined its current management practices with respect to smelter furnace brick and revert and asserted that under the proposed rule these materials would be affected in two ways: (1) the brick and revert would be subject to a legitimacy test which they could fail, and (2) assuming that the materials pass the legitimacy test, recovery of these materials may cause tailing impoundments to lose coverage under the Bevill exclusion. The commenter determined that there are four management options under the proposed rule, and that all lead to with negative economic impacts upon the commenter's operations.

The commenter mentioned that the RIA does not appear to address smelter furnace brick and revert. The commenter asserted that these materials are not wastes unless they are actually discarded, but they could become subject to RCRA Subtitle C regulation as a result of the proposed rule. The commenter argued that EPA's failure to consider smelter furnace brick and revert in the RIA, coupled with the fact that these materials could become subject to regulation, will cause the commenter to adopt the high cost treatment scenario of sending the material to a hazardous waste disposal facility. (COMM67)

Response: EPA notes first that the commenter has mischaracterized spent furnace brick as "becoming" subject to RCRA jurisdiction as a result of the proposed rule. Spent furnace brick is currently classified as a spent material which when reclaimed is already currently subject to jurisdiction. 40 CFR §261.2(c)(3). EPA also notes that the quantified legitimacy test referred to by the commenter has been removed from the final rule. EPA also notes that the "significantly affects" test for materials being added to Bevill process units has also been removed from the final rule. Finally, the commenter's statement that the proposed rule would result in the copper brick and revert material being sent to a hazardous waste disposal facility is unsupported. The commenter has failed to identify this regulatory response as a least cost alternative mostly likely to be undertaken in the event of promulgating the final rule as proposed.

Comment: One commenter indicated that EPA failed to consider the cost of the Bevill mixture rule in the RIA. The commenter argued that if EPA continues to believe that the leach step in the Chemical Plant is acid digestion and hence mineral processing, there would be significant economic consequences to Molycorp's Mountain Pass operations. The commenter contended that these costs would be unwarranted given the ability of the commenter's tailings pond to immobilize hazardous constituents of concern from the wastes generated by the facility. (COMM68)

Response: EPA disagrees with the commenter that costs resulting from the Agency's previous determination that the leach step in Molycorp's mountain pass facility constitutes mineral processing is attributable to the Phase IV LDR proposed and final rulemakings. These costs are attributable to the Agency's 1989 final rulemaking demarcating beneficiation and mineral processing materials.

Comment: One commenter stated that the RIA underestimated the economic impact of the proposed rule upon the rare earths sector of the mineral processing industry. The commenter argued that EPA's estimates were unreliable because they are based upon information taken from the Identification Background Document, which has been shown to contain numerous errors, especially concerning the commenter's operations. The commenter pointed out that the estimates EPA presented in the RIA were based on several waste streams identified for the rare earths sector in general, and for Molycorp's Mountain Pass facility in particular, that are not generated.

The commenter commissioned a study to evaluate the potential cost impacts of the Bevill Amendment changes in EPA's proposed LDR rule to its facility. Based on a scenario of on-site treatment and disposal of wastes that would be classified as hazardous due to the proposed rule, the study estimated that the capital costs to the commenter's facility would be $12.2 million and annual operating costs would be $1.2 million. Assuming that the commenter could not obtain a permit for on-site treatment, an additional cost of $1.2 million for off-site treatment would be required in addition to $3.6 million in capital cost and approximately $1 million in annual operating costs. The commenter argued that these multimillion dollar costs would seriously cripple the production of bastnasite ore at its facility, the sole domestic producer and major supplier of cerium products. The commenter felt that the proposed rule would ultimately result in lost jobs and dollars to overseas producers without added environmental protection. (COMM68)

Response: EPA used all available data in preparing the Identification Background Document, and solicited additional data in the preamble to the proposed rule, in recognition of the data limitations. EPA has incorporated into the Identification Background Document the new information about the rare earth sector that was provided by the commenter. EPA cannot remark on the commenter's economic analysis because it

was not included with those comments. EPA again points out that the analysis conducted in the RIA was a screening level analysis to determine the total industry impact of the rule, not to determine the compliance cost at a particular facility.

Comment: One commenter did not agree with the finding that the proposed rule would have no impact upon the lightweight aggregate sector of the mineral processing industry. The commenter referenced Section 6.1.3 of the RIA, where EPA identified three management choices available to facilities that generate APC dust from lightweight aggregate production and burn listed hazardous wastes as fuel. The commenter argued that treatment and disposal, as a routine practice, would become prohibitively expensive. The commenter added that cost would vary from plant to plant but, using current disposal costs, it would increase production costs to the extent that burning hazardous waste fuel would no longer be economically feasible. In addition, the commenter also asserted that recycling the dust to the kiln without reclamation may not always be technically feasible, but in any event it is typical for some portion of a plant's production be placed on the land as structural fill. (COMM39)

Response: EPA has removed consideration of the Bevill status of lightweight aggregate kiln dust from the LDR Phase IV final rule.

Comment: One commenter argued that the proposed rule presents a heavy burden to the regulated industry, and EPA seemed to dismiss the fact that compliance costs could exceed 5 percent of a mineral product's value. The commenter added that 8 out of 17 mineral processing sectors risk individual facility closings due to the proposed rule, under the no prior treatment baseline. (COMM40)

Response: EPA has completed a thorough economic impact analysis of the Phase IV LDR final rule. The Agency has concluded the estimated $10 million compliance cost of the final rule will not pose undue burden on the mining industry. In addition, the Agency notes that the commenter was describing results for the no prior treatment baseline, which assumes facilities were not in compliance with baseline regulations.

5.   Risk Assessment

5.1   General

Comment: A commenter disagreed with EPA's comparison of the LDR Phase II cost-benefit and risk analyses results to those of the LDR Supplemental rule, because the Phase II rule dealt with organic compounds that have different transport characteristics and potentially different health effects than metals in mineral processing wastes. (COMM58A)

Response: The risk and benefits analyses for the mineral processing LDRs stand on their own and do not depend on the results of the Phase II LDR analysis. Since the December RIA, EPA has performed additional groundwater modeling that employed constituent-specific dilution attenuation factors (DAFs). These DAFs were developed for all of the identified mineral processing waste constituents using constituent concentrations and facility characteristics data from the mineral processing industry as inputs to the EPACMTP model. This approach takes into account the concentration-specific fate and transport characteristics of all of the inorganic constituents for which risks were modeled, and is consistent with EPA approaches in other recent rulemakings (for example, HWIR-Waste).

5.2   Hazard Assessment

Comment: A commenter observed that an incorrect reference dose for manganese was used in the risk assessment calculations. (COMM58A)

Response: Since the December RIA, EPA has performed revised risk and benefit modeling, employing the most current toxicity values obtained from the IRIS database. The change to the toxicity value for manganese had very little impact on the results of the revised risk and benefits calculations, since manganese was not a dominant contributor to estimated health risks (hazard indices) for any waste stream.

Comment: Two commenters remarked that beryllium, by EPA's own determination, has not been treated as an ingestion carcinogen in several recent rulemakings, and therefore, EPA's LDR Supplemental rule RIA risk assessment for beryllium should be based only on non-carcinogenic endpoints. (COMM58A, COMM62)

Response: EPA agrees. The risk calculations supporting the revised RIA no longer treat beryllium as an ingestion pathway carcinogen.

Comment: One commenter argued that the beryllium reference dose used in the risk assessment is overly conservative, and called for a risk calculation with a revised reference dose for beryllium. The commenter felt the reference dose for beryllium was too conservative because (1) it was based on No Observed Adverse Effect Levels (NOAELs), rather than Lowest Observed Effect Levels (LOAELs), and (2) the uncertainty factors used to develop the reference dose were very high. The commenter also presented alternative toxicity data and uncertainty factors which, it argued, would raise the RfD significantly. (COMM62)

Response: EPA believes that the Reference Dose for beryllium exposure is adequately documented in IRIS, and that the reference dose was derived appropriately using data from the best available peer-reviewed toxicological study. The commenter is correct that EPA is currently reviewing the approach used to establish RfDs for beryllium and for several other substances, but that review is not yet complete. When this review is complete, EPA may revise the risk and benefits estimates for beryllium-containing wastes if the RfD value changes significantly. It should be noted that there is no assurance that the review will result in an increase in the RfD, as maintained by the commenter.

Comment: A commenter noted that the most recent arsenic cancer slope factor was not used in the LDR Supplemental rule RIA risk assessment. (COMM58A)

Response: EPA agrees. In risk work to support subsequent revisions to the RIA, EPA has used the revised value.

Comment: A commenter criticized the current arsenic cancer slope factor as being overly conservative. The commenter cited several criticisms of the underlying toxicological study which, it maintained, undermine the validity of the CSF derivation. These criticisms have to do with how exposures were calculated in the study, and the contribution of background arsenic exposures to the observed cancer incidence. The commenter further argues that arsenic exhibits a sub-linear, rather than linear, dose-response relationship at low doses. The commenter provided alternative CSF values which were calculated using different data sets and dose-response extrapolation models. (COMM58A)

Response: The risk and benefits analysis for the mineral processing LDRs employed the most current CSF value from IRIS (1.5 $(mg/kg\text{-}day)^{-1}$) . The commenter provides a table of ingestion slope factor values for arsenic derived using different dose-response models and water intake assumptions, ranging from 1.98 $(mg/kg\text{-}day)^{-1}$ to 0.86 $(mg/kg\text{-}day)^{-1}$, and suggests that a value as low as 0.77 $(mg/kg\text{-}day)^{-1}$ would be credible. EPA does not feel that the alternative models and water intake assumptions suggested by the commenter are significantly superior to those used to derive the value in IRIS. In addition, all of the alternative estimates are very close to the slope factor from IRIS, the lowest being just one-half this value. The clustering of the CSF values so closely together at values near to that used by EPA undermines the

commenter's argument that the uncertainty associated with this CSF value is unusually high. In addition, using any of the commenter's slope factors would not have significant impact on the RIA, because only order-of-magnitude distinctions in risk levels are made in the risk and benefits assessments.

Comment: One commenter argued that the arsenic reference dose is too conservative and that it should be raised. The commenter cited a study from the scientific literature that suggests EPA did not adequately assess the contributions of inorganic arsenic in food, and that EPA used unreliable toxicological study results in its calculation of the reference dose. (COMM58A)

Response: As was the case for beryllium, EPA used the latest IRIS Reference Dose value for the risk and benefits assessment. Because a large human epidemiologic study was used to derive the RfD instead of animal studies, a relatively low uncertainty factor value (3) was used. EPA considers the level of uncertainty in the RfD to be only "moderate." EPA does not feel that the data are likely to support a substantially higher RfD value. The commenter argues that the RfD should be approximately two-fold higher. As was the case for the slope factor value, even if this argument is accepted, a change of this magnitude would change the results of the risk and benefits assessment only marginally, since hazard quotients are calculated only in order-of-magnitude ranges. In addition, addition, even if the reference dose were changed, the carcinogenic affects of arsenic would still dominate for all of the arsenic-containing wastes.

Comment: A commenter observed that a reference dose for lead was derived based on the MCL for lead, and pointed out that this action is contrary to EPA's published guidance on lead risk characterization. This commenter also maintained that the MCL for lead is "not a health-based standard." (COMM58A)

Response: EPA's MCL (Action Level) for lead in drinking water is, in fact, intended to be health-protective of small children against the adverse effects of lead exposure. The MCL was set in part based on the finding, using EPA's IEUBK model, that fewer than five percent of children drinking water at the MCL level would have unsafe blood lead concentrations, as long as there were no other major sources of exposure. The derivation is thus clearly health-based, even if economic considerations were also weighed during its promulgation. The commenter maintains that the only valid approach to evaluating potential lead impacts on human health is to compare lead concentrations in drinking water to the MCL. This is precisely what is done through the use of the "derived RfD." A hazard quotient of greater than one for lead indicates nothing more than that the calculated well concentration exceeds the MCL. Whatever approach is used to indicate exceedence this level, this does not affect the general findings of the risk assessment that lead is a potential health concern for the disposal of many waste streams pre-LDR and that the level of concern is reduced post-LDR.

5.3   Exposure Assessment

5.3.1   Proximity to Populations

Comment: Two commenters disagreed with EPA's assumption that population densities and prevalence of private ground water wells near mineral processing facilities are similar to those of Subtitle D waste management facilities. (COMM57, COMM58A) One of the commenters stated that although commercial waste management facilities tend to be located in population centers and, thus, near to private drinking water wells, integrated mineral processing facilities tend to be located in sparsely populated areas that are far away from private residences and drinking water wells. (COMM57)

Response: In the absence of data on mineral processing facility, EPA has used the probability distribution of well distances near Subtitle D facilities in the derivation of constituent-specific DAFs which were used in the revised risk and benefits modeling for the mineral processing waste LDRs. While the Agency believes this approach has not resulted in substantial bias in the risk estimates, it is currently gathering site-specific population density data for areas near mineral processing facilities. While this analysis

is not yet complete, the preliminary findings of this assessment indicate substantial populations resident near many of the facilities. The degree of dependence on groundwater near the facilities is still being determined.

Comment: One commenter pointed out that EPA failed to recognize that the metallic impurities contained in mineral processing secondary materials occur naturally in soils throughout the area of the processing facility. Therefore, the release of small quantities of such metals into the environment will not significantly increase the total exposures or risks to nearby populations above those which already exist. (COMM57)

Response: EPA does not have sufficient data on background exposures to naturally occurring concentrations of waste constituents to address this issue quantitatively in the risk and benefits assessment. Based on previous experience, however, the Agency does not believe that pre-existing exposures are as significant as the commenter suggests. EPA also feels it has an obligation to protect the health of populations near mineral processing facilities, irrespective of natural background exposures. In fact, the commenter's point would argue for more stringent, not less stringent, controls on groundwater concentrations of contaminants, if background exposures were already high.

Comment: A commenter argued that EPA failed to account for the increased potential for exposure associated with the transportation of secondary materials to commercial hazardous waste disposal facilities and disposal of the ultimate residues of treatment. The commenter asserts that the potential for traffic accidents, spills, and drinking water well contamination is much higher if these materials are transported to commercial hazardous waste disposal facilities than if the materials were treated on-site at an integrated mining, beneficiation, and smelting facility. The reason for this is that commercial hazardous waste disposal facilities tend to be located in more populous areas, while integrated mining, beneficiation, and smelting facilities tend to be located in non-populous areas. (COMM57)

Response: The data available to EPA indicate that the great majority of the mineral processing wastes which are now managed on-site will continue to be managed on-site under the proposed regulatory options because off-site transport would be uneconomic for all but a very few low-volume waste streams. EPA also believes that the potential risks of waste releases from transportation accidents are much less that the risks associated with on-site treatment and final disposal.

5.3.2 Groundwater Transport Modeling

Comment: A commenter objected to EPA's use of a single, generic DAF value for the chemical exposure calculations, and recommended that chemical-specific DAF values be used instead. Based on the results of the commenter's sensitivity analyses of various groundwater models, the commenter argued that exposure-point chemical concentrations (and DAFs) are highly dependent on the chemical's physical/chemical and environmental fate properties, the time period and source assumptions, and the assumed distance to a drinking water well. The commenter also pointed to EPA's guidance for the groundwater model used in the RIA risk assessment. The guidance showed chemical-specific DAF values being used. (COMM58A)

Response: EPA has conducted extensive additional risk modeling since the December RIA. This modeling, consistent with the reviewer's comment, has incorporated constituent-specific DAF values derived specifically for mineral processing wastes and disposal facilities. All risk and benefits results in the revised RIA are based on the constituent-specific DAFs which have been derived using data on waste composition, constituent concentrations, and management unit sizes from mineral processing facilities.

Comment: A commenter requested that EPA reevaluate the DAF values and risks using the updated groundwater modeling approach (EPACMTP) that was applied in the proposed Hazardous Waste

Identification Rule (HWIR-Waste) rulemaking. The commenter noted that the EPACMTP does not use the infinite source and infinite time assumptions and that the Monte Carlo analysis reportedly has been improved. The commenter believes that the incorporation of these revisions will affect the range of DAFs used in the EPA's LDR Supplemental Rule risk assessment and, thus, the calculated risks. (COMM58A)

Response: Consistent with this comment, EPA has used the EPACMTP model to derive constituent-specific DAFs for all of the waste constituents. These constituent-specific DAF values were used to derive all of the risk and benefits estimates presented in the revised RIA.

Comment: One commenter observed that many of the groundwater transport calculations are incorrect because the total metal concentration was used rather than a measure of the leachable metal concentration. The commenter remarked that EPA's use of the total metal concentration in the calculations had a large impact on the risk characterization results. (COMM58A)

Response: As noted above, the data used to estimate DAF values and risks has been changed in revised risk modeling work done by EPA since the December RIA. In the revised risk assessment for wastewasters, the bulk concentration data were used as estimates of release concentrations. For liquid nonwastewaters (waste streams containing one to ten percent solids), EP extraction data for the solids were used as release concentration estimates if they were available. Otherwise, bulk concentration data were used as release concentrations. In the case of nonwastewaters (solid materials), the EP extraction data were used to evaluate release concentrations when they were available. When EP extraction data were not available (this was only the case for about five of the waste streams), a conservative estimation procedure was employed, which assumed that the release concentration for any constituent would be equal to the bulk concentration of that constituent divided by 20. EPA believes that this approach makes the best use of the available data, provides prudently but not unreasonably conservative estimates of release concentrations, and minimizes the potential biases associated with the lack of leachate data for some wastes.

Comment: A commenter recommended that the infinite source and time-frame assumptions used in the groundwater modeling (for the development of the DAFs) be replaced with a reduced time-period (e.g., 1,000 years). (COMM58A)

Response: In the derivation of the constituent-specific DAFs that are used to estimate risks and benefits in the revised RIA, EPA employed the finite-source modeling methodology, consistent with this reviewer's suggestion. EPA has, however, retained the 10,000-year modeling period, in order to be consistent with previous regulatory risk analyses.

Comment: A commenter disagreed with EPA's use of a Subtitle D facilities study to derive DAF values. The commenter asserted that the DAF values should instead be based on a statistical analysis of actual data for mineral processing facilities, and recommended that a survey of distances of mineral processing facilities to drinking water wells, or a surrogate analysis, be performed. (COMM58A)

Response: The derivation of constituent-specific DAFs for the revised RIA employed data that came primarily from mineral processing facilities. The distributions of constituent concentrations and constituent masses used in the finite source modeling came from a data base of mineral processing waste analyses. All of the available concentration data were used in the DAF derivation. Hydrogeological and meteorological settings used in the groundwater transport modeling were derived based on the geographical distribution of mineral processing facilities identified in the data base. The same waste disposal unit types, sizes, and configurations employed in the cost and economic analysis were used in the constituent-specific DAF modeling.   The spatial distribution of receptor wells around Subtitle D facilities was retained, however, since detailed information about receptor distributions around the mineral processing facilities was not available.

Comment: A commenter observed that EPA has not conducted validation or site-specific modeling efforts for the Supplemental Phase IV LDR rule to verify that the calculated concentrations at an assumed drinking water well are reasonable. (COMM58A)

Response: The groundwater modeling performed for the risk and benefits analysis is intended to provide a prudently conservative screening-level assessment of potential risks associated with long-term transport of persistent inorganic pollutants from the population of waste disposal facilities taken as a whole. It is not meant to provide estimates of current risks from any individual facility. At any site, groundwater concentrations will vary depending on facility and waste characteristics, on hydrogeologic and meteorologic conditions, and on well locations and monitoring strategy. Agreement with modeling results (e.g., a DAF value) would be fortuitous.

The agency is currently assembling data on specific mineral processing facilities which will help to support or validate the risk screening level assessment.

5.4   Scope of the Risk Assessment

Comment: A commenter stated that the EPA's LDR Supplemental rule risk assessment is only a screening-level analysis. The commenter cited Administrator Browner's March 1995 EPA guidance on risk characterization, which says that a "screening-level risk assessment" is only the first step in the risk assessment process, and suggested that a more detailed and thorough risk assessment is required before any final rulemaking. (COMM58A)

Response: The level of detail of any risk assessment should be determined by the policy issue which it addresses. In the case of the mineral processing LDR, the generic risk assessment approach which was taken was sufficient to identify which wastes presented the greatest hazard when disposed in unlined facilities, to rank the potential risks by waste stream and commodity sector, to confirm that uncontrolled disposal resulted in potential risks above levels of regulatory concern, and that treatment and disposal of these wastes under LDR standards resulted in effective risk reduction. The numerical results for any waste are, of course, quite uncertain, but the results taken in aggregate are sufficient to inform the regulatory decision being made.

In addition, EPA has selected a small sample of mineral processing facilities indicated as having potentially high risks in the screening level assessment and assembled site-specific information which is used to support more facility-specific discussion of risks in the revised RIA.

Comment: One commenter argued that EPA failed to address population risks in the LDR Supplemental Rule risk assessment, and that EPA must do so in order to conduct a meaningful cost-benefit analysis. (COMM58A)

Response: As noted in response to the previous comments, EPA has gathered data concerning populations residing near mineral processing facilities, and site-specific data related to potential exposure pathways. These data re discussed in the revised RIA.

5.5   Data Quality/Availability

Comment: A commenter remarked that the chemical concentration database used for the risk assessment was too limited to support the risk characterization. The commenter argued that more data should be gathered on chemical constituent concentrations for a range of mineral processing facilities and process streams in order to achieve a more detailed and accurate risk assessment. (COMM58A)

Response: The data sources used to evaluate constituent concentrations for the mineral processing wastes, and the limitations of these data sources, are discussed in detail in the RIA. As noted there, although concentration data were available only for a minority of the wastes streams addressed in the economic analysis, data were available for most of the large-volume wastes, representing a high proportion of the total

mineral processing wastes. While the Agency would like to have had more information on constituent concentrations, EPA believes that the data are sufficient to support the screening level analysis that was performed, recognizing that the risk and benefits results for those wastes with little data are quite uncertain. As noted in the RIA, the lack of data for some waste streams results in a bias toward the underestimation of LDR risks and benefits.

Comment: One commenter noted that the leachable metal concentrations data used for the risk assessment are too limited and argued that more of this data must be collected for the risk assessment to be accurate. (COMM58A)

Response: As noted above, EPA used all of the available leachate and bulk metals data in deriving constituent-specific DAFs and in evaluating risks and benefits. Leachate data were used preferentially to estimate release concentrations, and these data were available for a large majority of the wastes streams evaluated. EPA agrees that the risk results derived for any individual waste sample are quite uncertain. However, the aggregate risk and benefit results are of sufficient quality to support the rulemaking.

5.6   Risk Management

Comment: One commenter argued that the "acceptable" lifetime cancer risk threshold for arsenic used in the LDR Supplemental Rule RIA (10^{-5}) should be increased from 10^{-4} to 10^{-3} to make it consistent with EPA's drinking water criteria, which carry a risk of approximately 10^{-3}, and consistent with the target risk adopted at an Superfund site (5×10^{-4}). The commenter also maintained that the background cancer risk from food is on the order of 10^{-4} or higher. (COMM58A)

Response: As noted above, EPA feels that it has the responsibility to protect the public from incremental risks, irrespective of the risks posed by background exposures or other risk factors. The levels of regulatory concern used to tabulate benefits in the RIA (cancer risk of 10^{-5}, hazard quotient of 1.0) were consistent with those used by EPA in other regulatory analyses and rulemaking proceedings (e.g., LDRs for solvent wastes, HWIR-Waste). It should be noted that these levels are only measurement benchmarks, and are not decision criteria.

5.7   Documentation

Comment: One commenter noted that the risk assessment document is insufficiently "transparent" because it failed to fully present the chemical-specific risk calculations and results. The same commenter was also unable to determine which DAF values were used in the RIA. The commenter also noted that EPA did not present an explanation of why some of the groundwater transport calculations used the EP Toxicity values and others used total metal concentrations. (COMM58A)

Response: Since the December RIA, EPA has conducted additional risk and benefits assessment calculations incorporating additional information provided by commenters and employing constituent-specific, rather than generic, DAFs. These risk calculations are fully documented in the revised RIA. All of the input data files and risk calculation spreadsheet files have been made available in electronic form to commenters.

In the revised risk modeling, both EP extraction and total metals concentrations (the latter divided by 20) are used, where available, as estimates of release concentrations of metals from wastes. The EP extraction data are used because these are the only extraction data that EPA has for mineral processing wastes. Total metals data divided by twenty are used to provide a conservative screening level estimate of release concentrations from wastes, essentially assuming 100 percent leaching efficiency.

6.   Other Comments (UIC Comments)

Comment: One commenter argued that the RIA is flawed if it was intended to include uranium mining within the proposed underground injection ban. The commenter contended that this was evidenced by the fact that EPA assumed that only 20 facilities (8 non-hazardous) would be affected, when according to the commenter, there would be a total of 31 wells associated with 16 uranium in-situ leaching operations that would be affected. (COMM66)

Response: EPA agrees with the commenter. The RIA for the final rule does not model any uranium facilities within the universe of affected facilities.