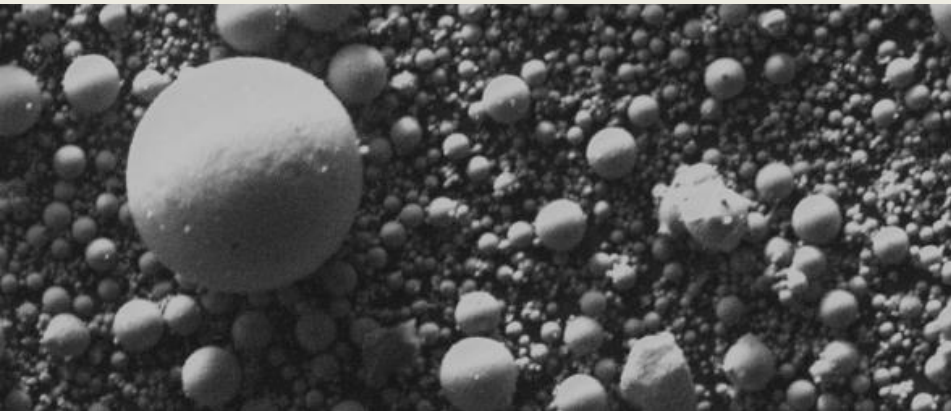




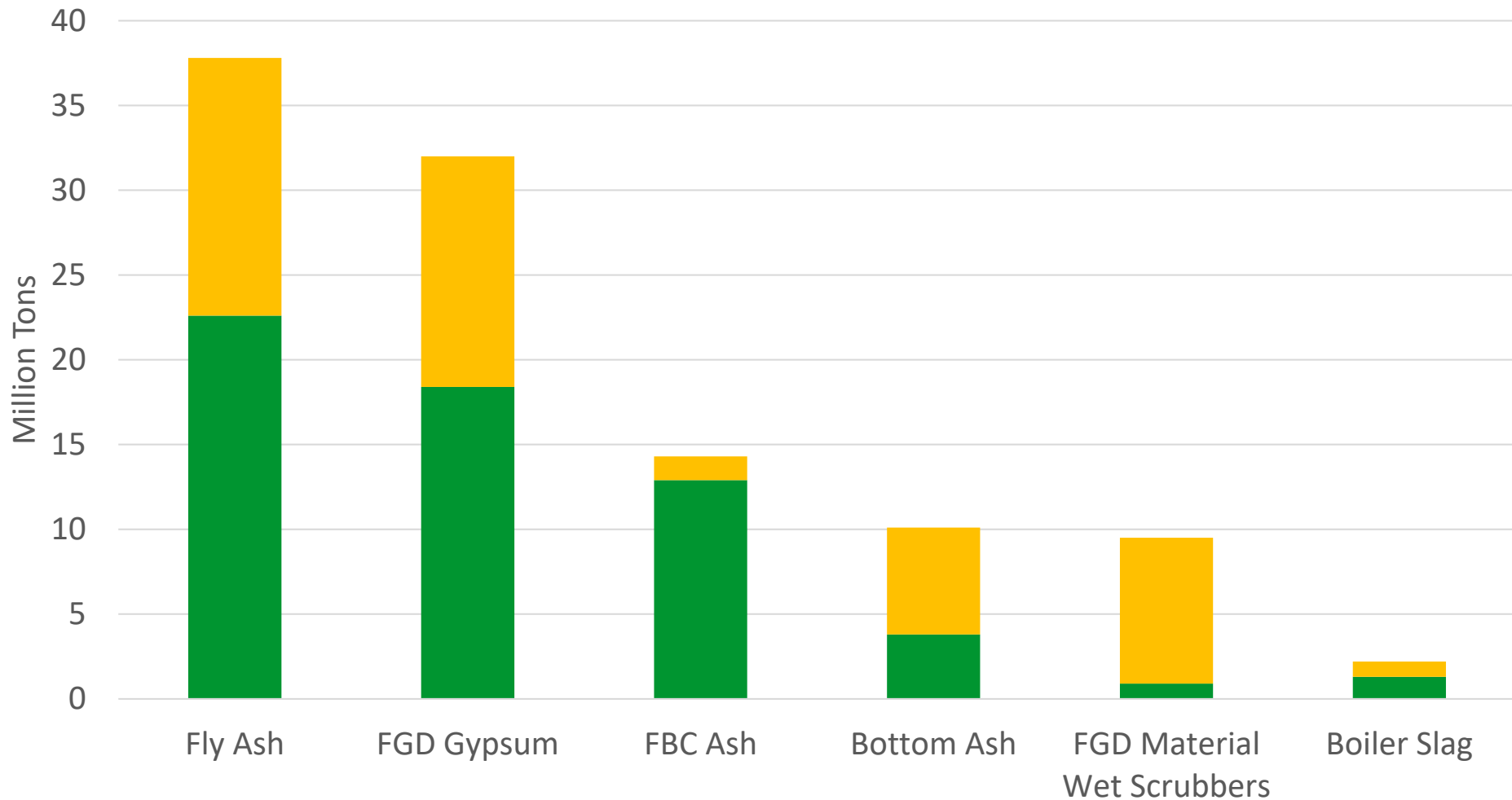
ASTM Guide for Harvesting CCPs from Active and Inactive Storage Areas for Beneficial Use – Task Group Overview

03/29/2018

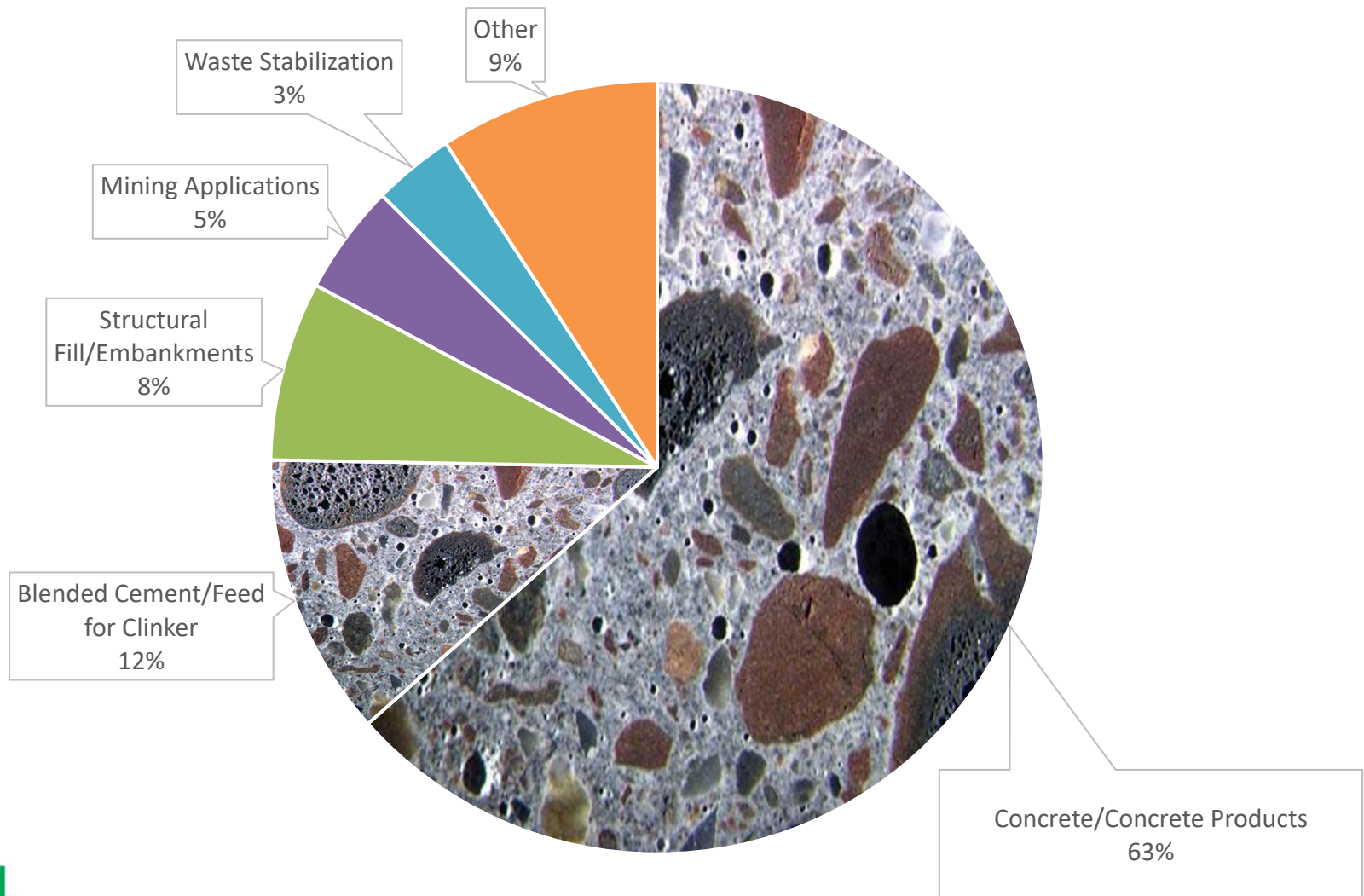


Ivan Diaz Loya, PhD
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CCP Production and Use



Where is Fly Ash Used?



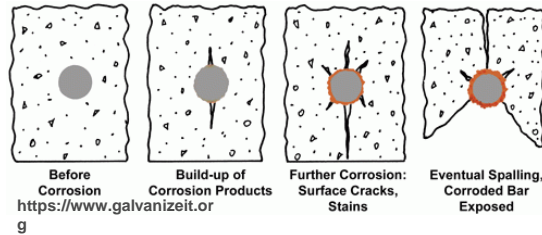
Why do we use fly ash in concrete?

Other than cost reduction & sustainability.....

ASR



PERMEABILITY



RHEOLOGY



STRENGTH



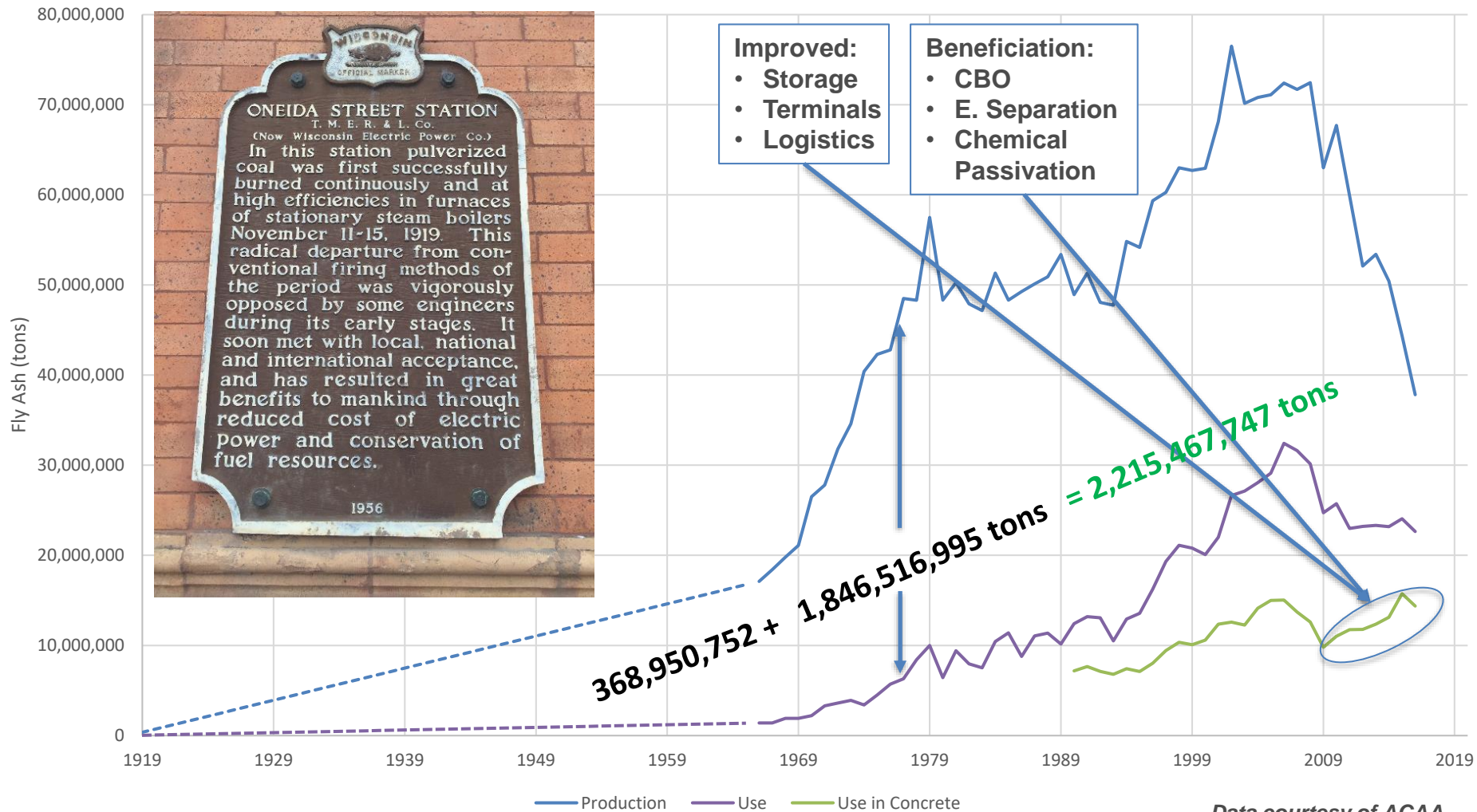
TEMPERATURE RISE



SULFATE RESISTANCE



Fly ash - 100 anniversary (almost)



Data courtesy of ACAA

To Harvest or Not To Harvest –

Other Factors and Options

- Other Factors
 - Environmental Benefits
 - Corrective Action is Needed
 - Financially Self-Sustaining?
 - Utility Incentives

- Other Options
 - Fly Ash Light Weight Aggregates
 - Other Volume-Focused Technologies

ASTM E50 Guide - Motivation

Standard Guide for Harvesting Coal Combustion Products Stored in Active and Inactive Storage Areas for Beneficial Use

- Simplify process
- Support regulatory understanding
- Provide a baseline of care and compliance
- Advocate policy
- Identify opportunities



Implications of the Guide for Harvesting CCPs

- **Test Method** – *A definitive procedure that produces a test result*
- **Practice** – *A definitive set of instructions for performing one or more specific operation that does not include a test result*
- **Specification** – *An explicit set of requirements to be satisfied by a material, product, system or service*
- **Classification** – *A systematic arrangement or division of materials, products, systems or services into groups based on similar characteristics, such as origin, composition, properties or use.*
- **Terminology** – *A document comprising of terms; explanations of symbols, abbreviations, or acronyms.*
- **Guide** - *A compendium of information or series of options that does not recommend a specific course of action.*
 - A guide may propose a series of options or instructions that offer direction without recommending a definite course of action.
 - The purpose of this type of standard is to offer guidance based on a consensus of viewpoints but not to establish a standard practice to follow in all cases. A guide is intended to increase the awareness of the user concerning available techniques in a given subject area, while providing information from which subsequent testing programs can be derived.

Guide Overview

- Phase I – Site Background review of CCP storage areas
 - Regulatory Status and authority (state? federal?)
 - Material Compliance with Intended BU Specs
 - Review Geotechnical Information
 - Volume?
 - Logistics Considerations
- Phase II – Detailed characterization of CCP storage areas
 - Sampling and Analysis Plan
 - No. of Samples
 - Types of Analysis
 - Evaluation of Results (go/no-go?)

Guide Overview

- Phase III – Harvesting planning and scoping of CCP storage areas
 - CCP Located in a Permitted/Unpermitted Storage Area... Active/Inactive?
 - Beneficiation/Infrastructure Needs?
 - Conceptual Strategy for Harvesting... how do I eat the pie?
 - Engage Approval Authority
- Phase IV – Harvesting detailed design and approval (if required) of CCP storage areas
 - Evaluation of Hydrogeological/Geotechnical data
 - Geologic Conditions/Water Table Flow
 - Structural Stability During Harvesting (Containment and Subsurface Soil Properties)
 - Detailed Design and Approval Application (If Applicable)
 - Leachate Collection, Management and Treatment Needs (Leachate Pond, Tanks, Piping, etc.)

Guide Overview

- Continued - Phase IV
 - Detailed Phasing/Sequencing Plan (including plan for managing leachate, contact water and surface water for each phase)
 - Fugitive Dust/Air Approvals Needs
 - Operational Plans (As Applicable)
 - Closure/Post-Closure Plan, Including End Use (Wildlife Area?)
 - Contingency Plan for Premature Cessation of Harvesting
- Phase V – Harvesting implementation of CCP storage areas
 - Erosion and Sediment Control
 - Infrastructure (leachate collection, beneficiation, access roads, etc.)
 - HARVEST!!
 - Post-Harvesting Activities



Guide Status

Item 2

DRAFT REV. 4 (7/6/18)

1 Date: 7/24/2018

2 To: Subcommittee E 50.03

3 Tech Contact: Ivan Diaz, ldiaz@boral.com, (770) 684-0102

4 Work Item #: 54880

5 Ballot Action: **New Standard: Standard Guide for Harvesting Coal Combustion Products Stored in Active**
6 **and Inactive Storage Areas for Beneficial Use**

8

9 **Rationale:** Coal combustion products (CCPs) are co-products produced from energy generation operations at
10 coal-fired energy facilities. CCPs can yield physical and chemical properties that allow for its use as
11 an ingredient in a variety of projects, including concrete, wallboard and controlled or structural fills.
12 Some energy plants have developed systems to manage the CCPs by taking them directly to market
13 upon production for use, while others either in the past or currently utilize wet or dry storage areas to
14 contain the materials for potential later use – these units are commonly referred to as
15 ponds/impoundments/lagoons or landfills. The storage areas may be either active (operational) or
16 inactive (closed or no longer receiving CCPs), and may or may not be subject to regulation. If the
17 CCPs stored in active or inactive storage areas are characterized and determined to meet product
18 specifications and performance standards (with or without conditioning) for use as an ingredient in
19 lieu of raw materials or used on its own, the CCPs may be harvested and directed to beneficial use
20 applications. This can provide industry with a safe and responsible way to economically manage the
21 CCPs, while promoting conservation, recycling/reuse and meeting sustainability goals. Beyond this,
22 these storage areas may (or may not) be regulated under local, state and/or country programs, and
23 alternate closure of CCP storage areas via harvesting can allow for the repurposing of the land for
24 reuse and assist with potential, long-term risk and liability management issues.

25

26 This guide provides a framework to address critical aspects related to the harvesting of CCPs
27 situated in active and inactive storage areas for beneficial use. It provides harvesting guidance for
28 CCPs including the evaluation of storage areas for harvesting, the detailed characterization of CCP
29 storage areas, planning and scoping of harvesting projects, the detailed design and approval (as
30 applicable) of CCP storage area harvesting, and implementation of harvesting. It provides guidance
31 related to the operational aspects of harvesting CCPs, such as management of contact water and
32 fugitive dust controls during the harvesting process. Lastly, this document identifies potential
33 beneficial uses of harvested CCPs.

Committee
E50 on
Environmental
Assessment,
Risk
Management
and Corrective
Action

Storage Tanks

Real Estate Assessment
an Management












Beneficial Use

Corrective action

Environmental Risk
Management

Biological Effects and
Environmental Fate

Task Group Developing the Guide

- Angie Gerdeman – Main Drafter 
- Marty Leedy – Drafter and Reviewer 
- Bill Petruzzi – Drafter and Reviewer 
- Gwen Eklund – Subcommittee Chair – Eklund Environmental
- Ivan Diaz – Drafter, Reviewer and TG Chair 
- Benjamin Gallagher – Reviewer 
- Tony Mathis – Reviewer 
- John Daniels – Reviewer 
- Tom Adams – Reviewer 
- Helen Waldorf – Reviewer 
- Claudio Arato – Reviewer 
- Tom Jansen – Reviewer 
- Andy Hicks – Reviewer – Ash Mineral Solutions



Thank You!

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Want to get involved?

For more information on ASTM and Committee E50 see
<https://www.astm.org/COMMITTEE/E50.htm>