

The logo consists of two curved lines, one blue and one green, arching over the text. The text 'ENERGY SOLUTIONS' is centered, with 'ENERGY' in blue and 'SOLUTIONS' in white. Two horizontal lines, one blue and one green, extend from the left and right sides of the text.

ENERGY SOLUTIONS

Energy Solutions, Clive Utah

Class A West Facility

May 16, 2011

Purpose

- Highlight key features and information germane to the Class A West (CAW) embankment (Broad stroke introduction).
- Introduce principle participants in the generation of the CAW License Amendment Request.
- Discuss path forward for review of the License Amendment Request.



Principle Participants



- Sean McCandless: Director, Compliance and Permitting
- Vern Rogers, Ph.D: Environmental Engineer
- Robert Sobocinski, PG: Groundwater Manager
- Dave Booth, PE: Director of Engineering
- Tim Orton, PE: Environmental Engineer
- Rick Chalk: Director of Health Physics
- Mike LeBaron, Permitting Engineer
- Whetstone Associates
- AMEC Earth and Environmental
- Steve Newton, PE

Agenda

- Background and Introduction
 - History
 - Volume Changes
 - Embankment Comparison: CAW and CAC
- Fate and Transport Modeling
- Geotechnical Analysis
- Environmental Monitoring
- Drainage and Ditch Flow Calculations
- Path Forward



The logo features two curved lines, one blue and one green, arching over the text. Below the text, there are two horizontal lines, one blue and one green, extending across the width of the text.

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**BACKGROUND AND
INTRODUCTION**

Background and Introduction – History



Background and Introduction – History



Background and Introduction – History



Changes to Permitted Volume

August 4, 2011

Embankment	Disposal Volume (cy)
Class A West	8,724,097
Class A North	1,722,509
Class A	3,778,704
Class A South	3,501,915

Volume added by CAW: 3,222,884 cy

Volume retracted in Class A South: **3,501,915 cy**

Reduction in requested disposal space: ***279,031 cy**

*Volume correction based on July 27, 2011 letter.

Embankment Comparison

	CAW	CAC
Disposal Volume (cy)	8,724,097	9,828,087
Embankment Area (ft ²)	5,801,781	5,561,723
Shoulder Height (ft)	37.6	50
Peak Height (ft)	75.3	85.2
Side Slope Length (ft)	188	250
Top Slope Length (ft)	942	880



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**FATE AND TRANSPORT
MODELING**

Geometry	CAW (2011)	Class A (2000)
Top Slope	0.238 cm/yr	0.104 cm/yr
Side Slope	0.335 cm/yr	0.198 cm/yr

- Differences between 2011 CAW and 2000 Class A Modeling:
 - Increase in precipitation input into modeling (from 7.92 in/yr to 8.44 in/yr).
 - Increases in embankment slope lengths (modeled as a top slope of 942 ft and side slope of 188 ft, in comparison to top and side slopes of 540 ft and 160 ft for the original Class A Cell (refer to Engineering Drawings 10014-C01 and 10014-C09 for details)).



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GEO TECHNICAL ANALYSIS

- Objectives of the Geotechnical Analysis:
 - Evaluate the static and seismic stability of the CAW embankment.
 - Evaluate the potential range in post earthquake deformations of the CAW embankment.
 - Evaluate static and post earthquake cover settlements and displacements of the CAW embankment.





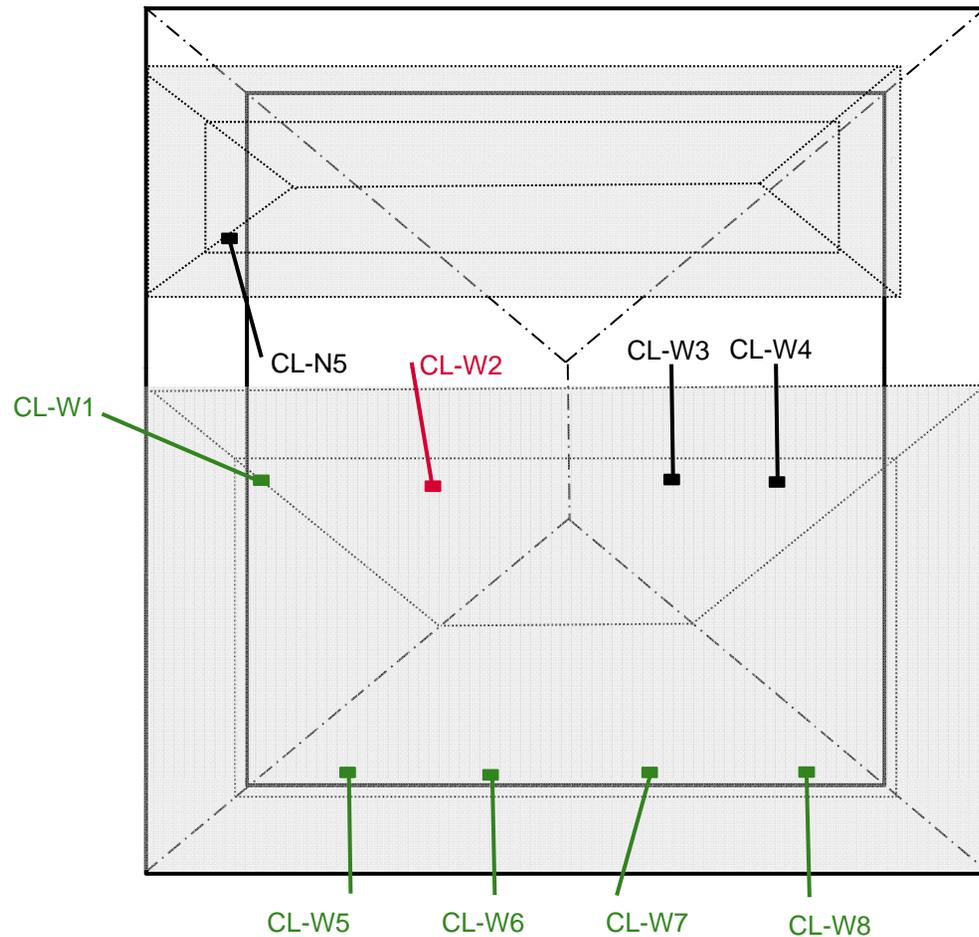
- Method used to achieve the analysis objectives:
 - The design features of the CAW embankment were analyzed within the boundary conditions established by the CAC embankment (2005, Geotechnical Analysis).



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**ENVIRONMENTAL
MONITORING**

Lysimeters



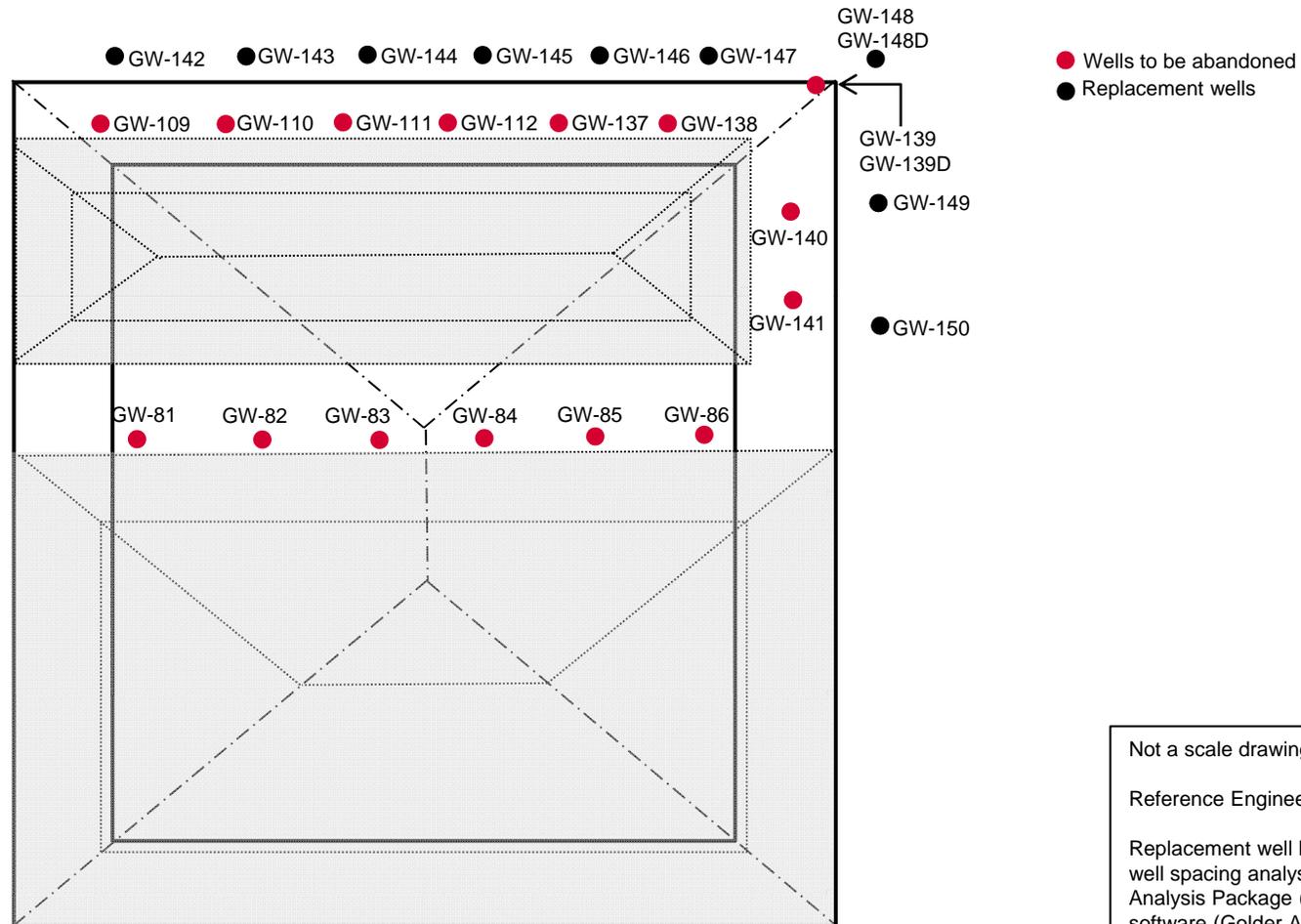
- To be abandoned
- Never built
- Existing

Not a scale drawing.

Nine more lysimeters will be added during CAW construction activities (see Engineering Drawing 10014-C01).

Embankment	Acres	Number of Lysimeters	Acres per Lysimeter
Class A	73	7	10
Class A North	39	5	8
Class A West	133	14	9.5

Well Abandonment/Replacement



Not a scale drawing.

Reference Engineering Drawing No. 10014-U02.

Replacement well locations were established via a well spacing analysis performed using Monitoring Analysis Package (MAP), Version 1.1; MEMO software (Golder Associates, Inc)



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**DRAINAGE & DITCH FLOW
CALCULATIONS**

CAW Drainage

Parameter	Calculated Value
Total drainage ditch depth	4.00 ft
Max height of water during *normal event.	2.72 ft
Max height of water during **abnormal event.	2.83 ft

*Normal Event: 25 year, 24 hour storm at 1.9" of precipitation.

**Abnormal Event: 100 year, 24 hour storm at 2.4" of precipitation.



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PATH FORWARD

Regulatory Review and Approval Flow Chart

