

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION**

**MEETING OF JANUARY 16 AND 17, 2013
Barstow, California**

ITEM: 4

SUBJECT: **RESCISSION OF REVISED WASTE DISCHARGE REQUIREMENTS BOARD ORDER NO. 6-00-19 FOR BILLITON MINERALS U.S.A. AND SHELL OIL COMPANY, STANDARD HILL PROJECT, KERN COUNTY**

CHRONOLOGY:

September 12, 1986	Waste Discharge Requirements - Adopted (Board Order No. 6-86-107)
September 10, 1987	Revised Waste Discharge Requirements - Adopted (Board Order No. 6-87-101)
November 8, 1996	Revised Waste Discharge Requirements - Adopted (Board Order No. 6-96-157)
March 9, 2000	Revised Waste Discharge Requirements – Adopted (Board Order No. 6-00-19)

ISSUE: Should the Regional Board rescind Waste Discharge Requirements issued to Billiton Minerals U.S.A. and Shell Oil Company for the Standard Hill Project? Rescission is appropriate because the approved Site Closure Plan has been fully implemented, the heap leach materials have been detoxified, and the process ponds have been clean closed. Therefore, the Facility no longer presents a threat to water quality.

Discussion: The Standard Hill Project (Facility) is a heap leach gold operation that formerly applied a cyanide solution to ore. During leaching operations, the Facility consisted of a lined Leach Pad (Leach Pad), a lined pregnant solution pond (Pregnant Pond), a lined barren solution pond (Barren Pond) and a lined emergency storage pond (Overflow Pond). The Leach Pad and overlying mining waste (Heap Waste) has been closed in place. The three lined surface impoundments (ponds) have been clean closed in accordance with approved work plans. The Facility is located approximately three miles south of the City of Mojave in Kern County. The Facility was operated by Billiton Minerals U.S.A., a wholly-owned subsidiary of Shell Oil Company, on land leased by the Standard Hill Mine Company (Discharger).

Mining operations were carried out from 1987 to 1991 as an open-pit mine that utilized cyanide heap technology to extract gold. In 1993 the Discharger ceased adding cyanide to the Leach Pad. Ore on the Leach Pad has been detoxified of cyanide to concentrations below numerical limits previously established by the Water Board in Board Order No. 6-00-19. The Discharger completed closure activities of this Facility in accordance with the approved Closure Plan. The Discharger has been conducting post-closure monitoring for the Facility since 2006. Groundwater monitoring data indicate past operations have not impacted water quality. Reclamation for the Facility, mined area, and waste dumps (overburden rock) were completed in phases, beginning in 2001 and ending in 2006, in accordance with the reclamation plan as approved by Kern County Planning Department and under a Surface Mining and Reclamation Act (SMARA) Permit. Based on site conditions and depth to groundwater, the Heap Waste does not pose a threat to water quality.

Regional Board staff has solicited comments from the Discharger and interested parties. All comments received have been addressed.

RECOMMENDATION: Adoption of Order as proposed.

ENCLOSURE	ITEM	BATE NUMBER
1.	Proposed Board Order No. R6V-2013-Proposed	4-004
2.	Comments from Discharger 11/29/2012	4-011
3.	Response from Water Board 11/29/2012	4-015

File: S:\Board Orders 2013\Standard Hill\PROPOSED\draft_StandardHill_Resc GS.docx
 CH/rp

ENCLOSURE 1

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION**

**BOARD ORDER NO. R6V-2013-(PROPOSED)
WDID NO. 6B154520005**

**RESCISSION OF WASTE DISCHARGE REQUIREMENTS
BOARD ORDER NO. 6-00-19
FOR**

**BILLITON MINERALS U.S.A. AND SHELL OIL COMPANY
STANDARD HILL PROJECT**

_____Kern County_____

The California Regional Water Quality Control Board, Lahontan Region (Water Board) finds:

1. Discharger

Billiton Minerals U.S.A., a Division of Shell Oil Company, owns and formerly operated the heap leaching facility called the Standard Hill Project. For the purposes of this Water Board Order (Order), Billiton Minerals U.S.A., (Owner/Operator) is referred to as the "Discharger." The Discharger has requested that Waste Discharge Requirements, Board Order No. 6-00-19 be rescinded based on post-closure groundwater monitoring data, soil leach test results, and vadose zone transport modeling. Closure activities have been documented in previous annual progress reports during closure activities of the lined containment units.

2. Facility Location

The Facility is located approximately three miles south of the town of Mojave, in Kern County, in the SW corner of Section 28 and the SE part of Section 29, T11N, R12W, San Bernardino Baseline & Meridian, as shown on the Vicinity Map, Attachment "A," which is made part of this Order.

3. Facility

The Standard Hill Project is a former heap leach operation that applied a cyanide solution to ore on a lined pad, to extract gold. During leaching operations, the Standard Hill Project Facility consisted of a lined Leach Pad (Leach Pad), a lined pregnant solution pond (Pregnant Pond), a lined barren solution pond (Barren Pond) and a lined emergency storage pond (Overflow Pond). The lined Leach Pad area consists of the original "test pad" and the "expansion pad," which together form a single Leach Pad that is 15.3 acres in size. The Leach Pad is double lined, with a 40-mil thick lower secondary High Density Polyethylene (HDPE) liner on the test pad and expansion pad areas, and a 40-mil thick upper

primary HDPE liner on the test pad area and 60-mil thick upper primary synthetic liner on the expansion pad area. A blanket seepage detection system is installed between the synthetic liners. Each of the three lined surface impoundments were double-lined with two 40-mil thick HDPE. A blanket seepage detection system was installed between the synthetic liners. For the purpose of this Order, the Leach Pad and the former surface impoundments (Pregnant Pond, Barren Pond and Overflow Pond) are referred to as the "Facility," which is shown in the Facility Map (Attachment "B"), which is made part of this Order. During mining operations, the Standard Hill Mine Project included the mined area (pits), Group B mining waste in the lined facilities (Leach Pad, and Ponds), waste dumps (overburden rock), and plant facility areas. The waste dumps are not regulated by Waste Discharge Requirements. The mined area and waste dumps are located on both public and private lands. Reclamation oversight for these areas are administered by the Bureau of Land Management (public) and Kern County (private), lead agency under the State Mining and Reclamation Act.

The Leach Pad and overlying mining waste (Heap Waste) has been closed in place. Heap Waste slopes have been graded so that they have a two (horizontal) to one (vertical) ratio (2:1) or less. The Heap Waste surface has been hydroseeded, and erosion-control measures have stabilized the Heap Waste slopes. The Heap Waste is 92 feet above ground surface and covers an area about 15.5 acres. The three lined surface impoundments (Ponds) have been clean closed in accordance with approved work plans.

4. Waste Discharge Requirements

The Water Board previously adopted Revised Waste Discharge Requirements (WDRs) for the Facility under Board Order No. 6-96-157, on November 8, 1996, to document the cyanide detoxification status of the Heap Waste on the Leach Pad and to comply with administrative requirements to update the WDRs. WDRs adopted on March 9, 2000, under Board Order No. 6-00-19, specified closure requirements for the Leach Pad and lined surface impoundments. That Board Order required: (1) closure activities be performed in accordance with the approved closure plan, and reclamation activities be performed in accordance with the approved reclamation plan; (2) post-closure monitoring and maintenance activities; and, (3) data collection during the post-closure maintenance period to confirm that the remaining waste materials no longer pose a threat to groundwater quality.

5. Reasons for Action

On February 8, 2010, and April 30, 2012, the Discharger submitted a Final Closure Document Report and Closure Report Addendum, respectively. Based on site conditions and depth to groundwater, the Heap Waste does not pose a threat to water quality. Groundwater monitoring data indicate past operations have not impacted water quality. Information to support this finding comprise 25

years of groundwater monitoring that includes 6 years of post-closure monitoring, soil leach tests results, and vadose zone transport modeling. The Water Board finds that the Heap Waste no longer poses a threat to water quality and it is appropriate to rescind Board Order No. 6-00-19 for the Standard Hill Project.

6. Reclamation, Closure, and Post Closure Activities

Ore on the Leach Pad has been detoxified of cyanide to concentrations below numerical limits previously established by the Water Board in Board Order No. 6-00-19 for Soluble Weak Acid Dissociable (WAD) Cyanide, Soluble Total Cyanide, and Total Cyanide. The Discharger completed closure activities of this Facility in accordance with the Closure Plan (approved in Order No. 6-00-19). The Discharger has conducted post-closure monitoring of the Facility since 2006. Reclamation of the Facility, mined area, and waste dumps were completed in phases, beginning in 2001 and ending in 2006, in accordance with the reclamation plan as approved by Kern County Planning Department and under a Surface Mining and Reclamation Act (SMARA) Permit. The Discharger has complied with Waste Discharge Requirements for closure and post closure, Section I., Discharge Specifications, in Board Order No. 6-00-19. Reclamation of the Heap Waste has been completed in accordance with the reclamation plan.

7. Unsaturated Zone Modeling

The Discharger submitted a *Closure Report Addendum-Standard Hill Mine Site, Mojave, California*, prepared by Conestoga-Rovers & Associates, dated April 2012, which presents modeling results of the dissolved metals in the Heap Waste to help determine if the waste pose a threat to groundwater due to surface water infiltration. The evaluation utilized widely recognized vadose zone transport modeling software¹ and conservative metal adsorption coefficients² to estimate the fate and transport of dissolved metals in soil pore water. The model predicts that dissolved metals in pore liquid within the Heap Waste will be attenuated in the unsaturated zone to very low levels below MCLs and does not pose a threat to water quality.

¹ U.S. EPA VLEACH, a One-Dimensional Finite Difference Vadose Zone Leaching Model (Ravi and Johnson, 1997; Harter, 2006; and Stacy et al., 2007) for making preliminary assessments of the effects on groundwater from the leaching of volatile, sorbed contaminants through the vadose zone. Modeling results are presented as an overall, area-weighted assessment of groundwater impact.

² Metal speciation, solubility equilibria, and sorption were modeled using Visual MINTEQ, which was originally released as a user interface to the USEPA program MINTEQA2. Since that time, Visual MINTEQ has expanded and revised its thermodynamic databases to account for the most current of available coefficients. The numerical engine of the current version of Visual MINTEQ (i.e., Version 3.0) still relies on the same subroutines employed by MINTEQA2 (i.e., MINEQL developed by Westall et al. 1976). Visual MINTEQ is an equilibrium speciation model that can be used to calculate the equilibrium composition of dilute aqueous solutions in the laboratory or in natural aqueous systems (as was done for this waste).

8. California Environmental Quality Act (CEQA)

This action is being taken by the Water Board to rescind WDRs issued pursuant to the California Water Code, and as such, is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000 et seq.) in accordance with the California Code of Regulations (CCR), title 14, section 15321, subsection (a)(2).

9. Right to Petition

Any person aggrieved by this action of the Water Board may petition the State Water Board to review the action in accordance with California Water Code, section 13320, and CCR, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the internet at http://www.waterboards.ca.gov/public_notices/petitions/water_quality, or will be provided upon request.

10. Public Notification

The Water Board has notified the Discharger and interested agencies and persons of its intent to rescind WDRs for the Facility. The Water Board, in a public meeting, heard and considered all comments pertaining to the rescission of these WDRs.

IT IS HEREBY ORDERED that Board Order No. 6-00-19 be rescinded.

I, Patty Kouyoumdjian, Executive Officer, do hereby verify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Lahontan Region, on January 16, 2013.

PATTY Z. KOUYOUMDJIAN
EXECUTIVE OFFICER

Attachment: A. Vicinity Map
Attachment: B. Facility Map

Attachment A – Vicinity Map

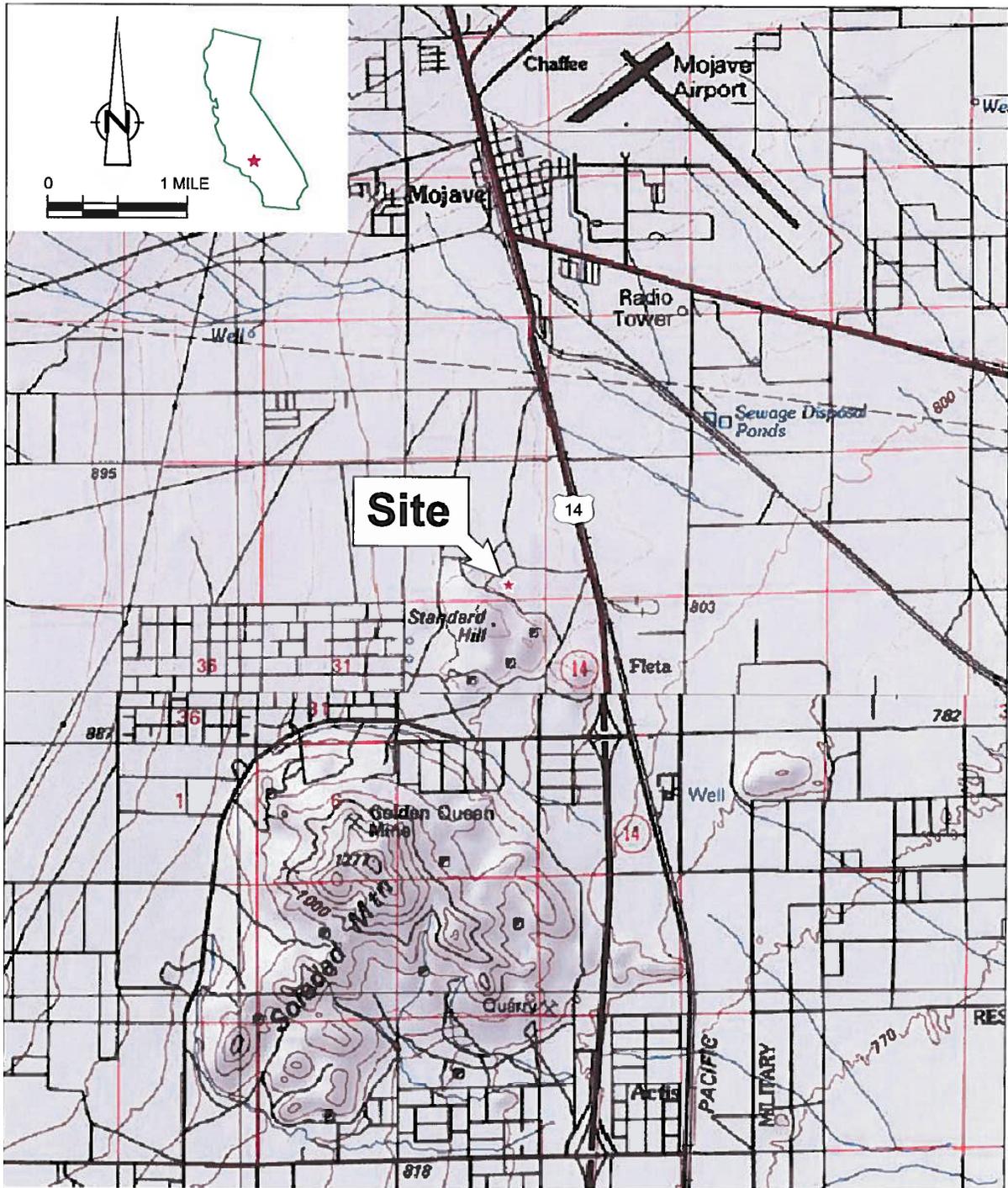
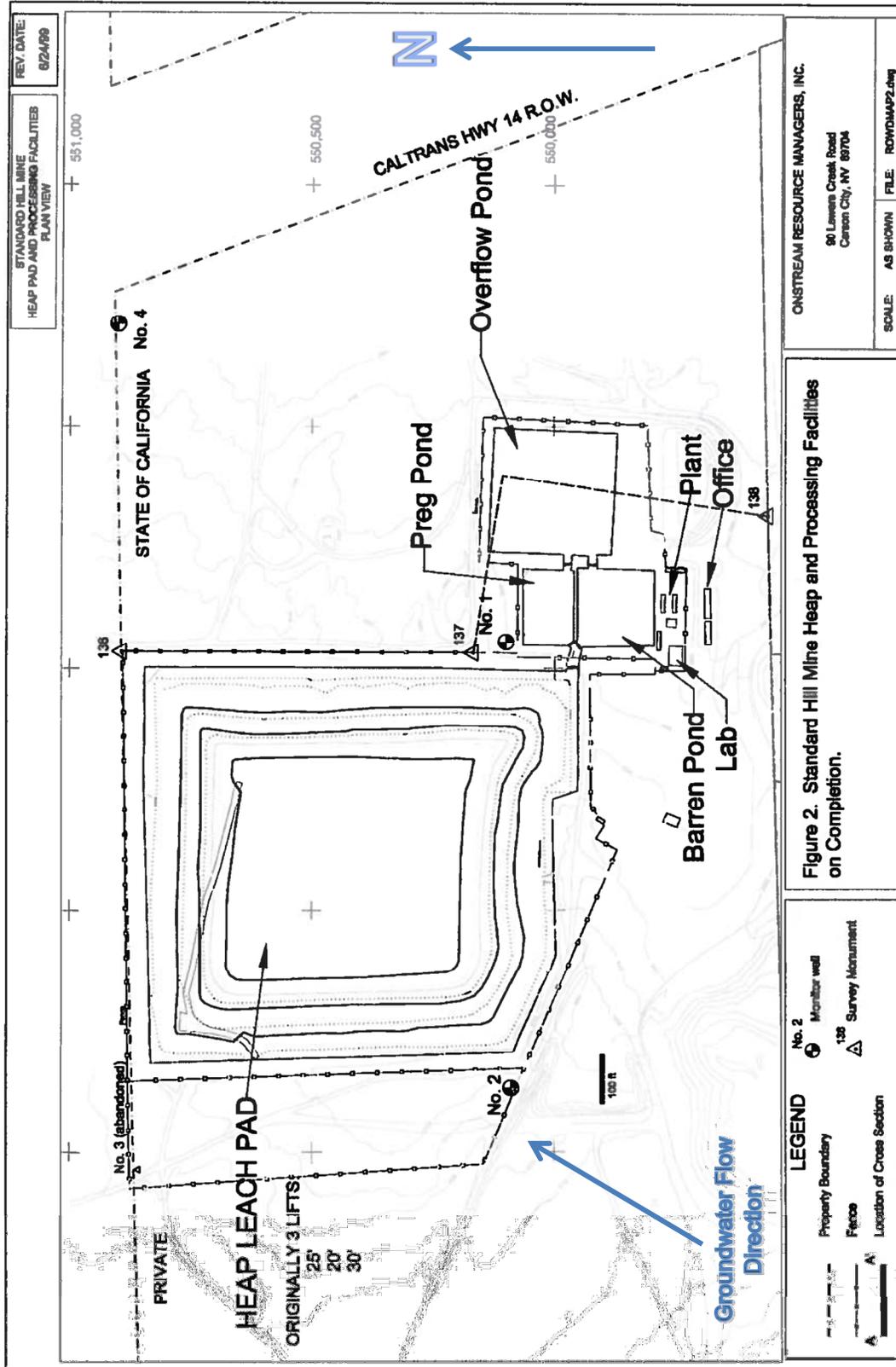


Figure 1
VICINITY MAP
SHELL EXPLORATION & PRODUCTION COMPANY
STANDARD HILL MINE
Mojave, California



Attachment B – Facility Map



ENCLOSURE 2



MEMORANDUM

TO: Rebecca Phillips, Lahontan Regional Water Quality Control Board REF. NO.: 061451

CC: Tim Franceschini, Shell Exploration and Production

FROM: Frederick W. Blickle/hc/1 *Fwb* DATE: 11/29/2012

RE: **Comments on Tentative Rescission - Waste Discharge Requirements**
Standard Hill Mine, Mojave, California

On behalf of Shell Exploration and Production Company, Conestoga-Rovers & Associates, Inc. (CRA) offers into the record the following two comments on the *Tentative Rescission Waste Discharge Requirements for Billiton Minerals USA and Shell Oil Company, Standard Hill Project, Kern County* dated November 7, 2012:

- 1) Footnote 1 on page 3 of the tentative order should be made more specific. CRA recommends the following language: *U.S. EPA VLEACH is a One-Dimensional, Finite Difference Vadose Zone Leaching Model (Ravi and Johnson, 1997; Harter, 2006; and Stacy et al., 2007) for making preliminary assessments of the effects on groundwater from the leaching of volatile, sorbed contaminants through the vadose zone. The program models four main processes: liquid-phase advection, solid-phase sorption, vapor-phase diffusion, and three-phase equilibration. In an individual run, VLEACH can simulate leaching in a number of distinct polygons, which may differ in terms of soil properties, recharge rates, depth of water, or initial conditions. Modeling results in an overall, area-weighted assessment of ground-water impact.*
- 2) For Footnote 2 on page 3, CRA recommends the following language: *Metal speciation, solubility equilibria, and sorption were modeled using Visual MINTEQ, which was originally released as a user interface to the USEPA program MINTEQA2. Since that time, Visual MINTEQ has expanded and revised its thermodynamic databases to account for the most current of available thermodynamic coefficients. The numerical engine of the current version of Visual MINTEQ (i.e., Version 3.0) still relies on the same subroutines employed by MINTEQA2 (i.e., MINEQL developed by Westall et al. 1976). Visual MINTEQ is an equilibrium speciation model that can be used to calculate the equilibrium composition of dilute aqueous solutions in the laboratory or in natural aqueous systems.*

CRA appreciates this opportunity to comment and looks forward to the succession rescission of the waste discharge requirements for this project.

Please feel free to contact me at fwblickle@croworld.com or 510-420-0700 if you have any questions on these comments.

Notice
Submittal of Written Material for Regional Board Consideration

In order to ensure that the State of California Lahontan Regional Water Quality Control Board has the opportunity to fully study and consider written material, it is necessary to submit it at least ten (10) days before the Regional Board Meeting. Pursuant to Title 23 of the California Code of Regulations, Section 648.2, the Regional Board may refuse to admit written testimony into evidence unless the proponent can demonstrate why he or she was unable to submit the material on time or that compliance with the deadline would otherwise create a hardship. If any other party demonstrates prejudice resulting from admission of the written testimony, the Regional Board may refuse to admit it.

COMPLETE FORM AND RETURN

To: CA Regional Water Quality Control Board, Lahontan Region
14440 Civic Drive, Suite 200
Victorville, CA 92392
ATTN: Christy Hunter

**TENTATIVE RESCISSION OF WASTE DISCHARGE REQUIREMENTS FOR
BILLITON MINERALS USA AND SHELL OIL COMPANY, STANDARD HILL
PROJECT, KERN COUNTY**

We concur with proposed requirements

We concur; comments attached

We do not concur; comments attached

 (Sign)

Frederick W. Blickle, Vice-President (Type or print name)

Conestoga-Rovers & Associates, Inc. (Organization)

5900 Hollis Street, Suite A (Address)

Emeryville, CA 94608 (City and State)

510-420-0700 (Telephone)

ENCLOSURE 3

R T C

Hunter, Christy@Waterboards

From: Hunter, Christy@Waterboards
Sent: Thursday, November 29, 2012 3:15 PM
To: jbeery@roadrunner.com
Cc: Niemeyer, Kim@Waterboards
Subject: Water Board response draft Standard Hill Proj Rescission Order 6B154520005

Mr Beery
Standard Hill Mines Company
4361 West Ave N-8
Palmdale, CA 93551
661 305 7229

Upon advise of our council, Water Board staff do not think that it would be appropriate to include your company (Standard Hill Mines Company) as land owner in a finding in the draft Rescission Order scheduled for consideration at our regular January 2013 Board Meeting.

http://www.waterboards.ca.gov/lahontan/board_info/agenda/index.shtml

If you would like to discuss this issue further, you are welcome to contact our council, her contact info is as follows:
Kim Niemeyer
Lahontan Regional Water Board
916 341 5547

You have been added to the mailing list for future mailings of this item.
I would be happy to address any other question you may have on this item.

Regards,

Christy Hunter, Engineering Geologist, P.G.
California Regional Water Quality Control Board
Lahontan Region 6
14440 Civic Drive, Suite 200
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