

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

**BOARD ORDER NO. R6V-2015-0057-A1
WDID NO. 6B152004001**

**AMENDED WASTE DISCHARGE REQUIREMENTS
FOR**

**U.S. BORAX, INC., RIO TINTO MINERALS,
CLEAN ENERGY FUELS COMPANY, BORON FACILITY**

_____Kern County_____

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

1. Discharger

On August 2, 2017, August 23, 2017, and December 7, 2017, U.S. Borax, Inc. submitted information that collectively constitutes a complete amended Report of Waste Discharge (RWD) to support a proposed amendment to Waste Discharge Requirements (WDRs), Board Order No. R6V-2015-0057. U.S. Borax, Inc., a subsidiary of Rio Tinto Minerals, owns and operates the U.S. Borax Mine in Boron, California. Clean Energy Fuels Company (CEFC) is an independent clean energy producer that operates a liquid natural gas plant which produces cooling tower blowdown. U.S. Borax, Inc., Rio Tinto Minerals, and CEFC are hereinafter collectively referred to as the "Discharger." The Discharger submitted an amended RWD for proposed changes in waste discharges to incorporate additional engineered alternative liner systems for the retrofit of Reclamation Ponds (R-Ponds) 3 through 5 and for the construction of Boric Acid Pond 7 (BAP 7) and future boric acid surface impoundments at the Boron Facility.

2. Reasons for Action

The Discharger is proposing additional engineered alternative liner systems for R-Ponds 3 through 5 retrofits, BAP 7, and future boric acid surface impoundments that are easier to construct, more economically feasible, and still protective of water quality, including compliance with the requirements of California Code of Regulations (CCR), title 27. Board Order No. R6V-2015-0057, Finding 10, describes the accepted engineered alternative liner systems for the Group A and B surface impoundments known as the R-Ponds 1 through 7 and BAPs 1 through 7. Board Order No. R6V-2015-0057 is being amended to allow the Discharger to construct additional engineered alternative liner systems for retrofit of R-Ponds 3 through 5 and for construction of BAP 7 and for future boric acid surface impoundments.

3. California Environmental Quality Act Compliance

This amendment to Board Order No. R6V-2015-0057 is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000

et seq.) in accordance with CCR, title 23, section 15301. The amendment consists of permitting an existing facility with no expansion of use beyond that which is already existing, and therefore, fits within the Class 1 exemption. No exceptions to the exemptions, as set forth in CCR, title 14, section 15300.2, have been identified.

4. Notice to Interested Parties and Public

The Water Board has notified the Discharger and all known interested parties and persons of its intent to issue amended WDRs for the Boron facility.

5. Consideration of Comments

The Water Board, in a public meeting, heard and considered all comments pertaining to the discharges.

IT IS HEREBY ORDERED that Waste Discharge Requirements, Board Order No. R6V-2015-0057 is amended by the following modifications:

1. Amend the "R-Ponds" and "Boric Acid Ponds" portion of Finding No. 10 to read as follows, all other language in Finding No. 10 will remain unmodified:

R-Ponds

R-Ponds 1 through 7 contain Group A and B mining waste, defined in CCR, title 27, section 22480, subdivision (b)(1) and (b)(2), respectively, from the sources described in Table 1. The R-Ponds also receive groundwater from the groundwater pump and treat operations at the Boron site, liquid from tailings in Former Pond 5, and stormwater runoff from Former Ponds 1, 2, 3 and Former Ponds A through E.

R-Ponds 1 through 6 were constructed with a compacted 15-inch-thick clay liner with a permeability of 1.9×10^{-9} centimeters per second (cm/sec). Subdrain systems installed below the clay liner of each pond are connected to leachate collection sumps. The existing structure is proposed to remain in place during retrofit activities.

The Discharger has constructed new surface impoundment R-Pond 7 to contain the Group A and B discharges while the remaining R-Ponds are either systematically taken out of service or retrofitted. The R-Pond 7 surface impoundment liner system is constructed from bottom to top with a compacted subgrade below the bottom liner, which is moisture conditioned and compacted to 90% of the maximum dry density per American Society for Testing and Materials (ASTM) Standard D1557; a geosynthetic clay liner (GCL); a secondary geonet leakage collection layer; a secondary 60-mil high density polyethylene (HDPE) geomembrane liner; a primary geonet leakage collection layer; a primary 60-mil HDPE geomembrane liner, and incorporating a dual drainage system (eastern and western) for the primary and secondary leachate collection and recovery system (LCRS).

Since constructing R-Pond 7, the Discharger has begun systematically removing R-Ponds 1 through 6 from service, either permanently or for retrofit. Retrofit activities have commenced in the footprint of the existing R-Pond 6, which will consist of the same liner system as R-Pond 7. R-Pond 2 has been permanently taken out of service, and R-Pond 1 will be taken permanently out of service in late 2018. Retrofit activities begin by first removing the sacrificial sandy material that is currently on the upper portion of the liner that functions as a protectant for the clay layer during harvesting operations. Following clay subgrade preparation, the engineered alternative liner system is constructed.

In December 2017, the Discharger submitted a proposal for additional engineered alternative liner systems for the retrofit of R-Ponds 3 through 5. Proposed Liner System Alternative 1, from bottom to top, is a GCL, a 60-mil HDPE Drain Liner[®] geomembrane, and an 80-mil HDPE (single sided textured, with textured side facing up). Proposed Liner System Alternative 2, from bottom to top, is a GCL, 60-mil smooth HDPE geomembrane, a geonet, and an 80-mil HDPE geomembrane (single sided texture, with textured side facing up). The Discharger proposes these additional engineered alternative liner systems due to a number of factors including ease of construction and economic feasibility. These proposed engineered alternative liner systems are protective of water quality and are in compliance with the requirements of CCR, title 27.

R-Ponds 3 through 5 may be proposed to be retrofitted using a dual drainage system, so that each R-Pond will have an eastern and western primary LCRS. Depending on the liner system constructed, the R-Pond may also be constructed with an eastern and western secondary LCRS. Each LCRS will be comprised of gravel enveloped by geotextile with HDPE liner with dual access pipes.

This Board Order approves the following proposed engineered alternative liner systems for retrofitting of R-Ponds 3 through 5 surface impoundments: 1) GCL, a geonet leakage collection layer, a 60-mil HDPE geomembrane liner, a geonet leakage collection layer, and a 60-mil HDPE geomembrane liner; 2) GCL, a 60-mil HDPE Drain Liner[®] geomembrane, and an 80-mil HDPE (single sided texture, with textured side facing up); and 3) GCL, a 60-mil smooth HDPE geomembrane, a geonet, and an 80-mil HDPE geomembrane (single sided texture, with textured side facing up).

During final design evaluation, the Discharger may propose to retrofit R-Ponds 3 through 5 surface impoundments in the manner described by any of the above proposed engineered alternatives. Regardless of the liner system, each finished R-Pond will be approximately 22 acres in size with approximately 200-acre feet of capacity. A final design is required to be submitted as part of this Order.

Boric Acid Ponds

BAPs 1 through 7 consists of six active surface impoundments and one proposed surface impoundment. The proposed BAP 7 will be constructed similar to the existing BAPs using liners and leachate collection systems. The BAPs contain Group B mining waste effluent discharged from the BAP plant, liquid extracted from tailings in Pond 6, and Group A mining waste transferred from R-Ponds 1 through 7. BAPs 1 through 7 are permitted to contain Group A and B mining waste effluent. BAPs 1 through 4 are approximately 32 acres each, with approximately 900- to 960-acre feet of capacity. BAP 5 is approximately 39 acres, with 1,072-acre feet of capacity. BAP 6 is approximately 34 acres, with 1,100-acre feet of capacity. The Discharger is proposing to construct a large footprint, but shallow system, as an interim design for BAP 7 with room for a vertical expansion similar to the expansion activities conducted on BAPs 1 through 5.

Processed wastes will be distributed between R-Ponds 1 through 7 and BAPs 1 through 7 to maintain total arsenic concentrations below 500 parts per million (ppm). This will prevent the formation of concentrations of arsenic in the ponds that exceed the criteria for restricted hazardous waste under the Hazardous Waste Control Law, California Health and Safety Code, Division 20, Chapter 6.5. When the total arsenic concentration in any surface impoundment approaches 500 ppm, effluent will either be diluted with incoming low arsenic effluent or transferred to a BAP where insoluble arsenic compounds precipitate when they come into contact with BAP effluent.

In 2015, the Discharger proposed to construct BAP 7 with a liner system from bottom to top with a GCL, a geonet leakage collection layer, a 60-mil HDPE geomembrane liner, and dual LCRS, but with an additional sand layer on the top with piping to remove head buildup on the top of the liner. This is proposed to alleviate the head buildup resulting from the settlement of entrained silts and clays (gangue material) in the effluent waste stream.

In August 2017, the Discharger submitted a proposal for additional engineered alternative liner systems for BAP 7 and future boric acid surface impoundments. Proposed Liner System Alternative 1 from bottom to top is a GCL, a 60-mil HDPE Drain Liner® geomembrane, and an 80-mil HDPE (single sided textured, with textured side facing up). Proposed Liner System Alternative 2 from bottom to top is a GCL, 60-mil smooth HDPE geomembrane, a geonet, and an 80-mil HDPE geomembrane (single sided texture, with textured side facing up). The Discharger proposes these additional engineered alternative liner systems due to a number of factors including ease of construction and economic feasibility. These proposed engineered alternative liner systems are protective of water quality and are in compliance with the requirements of CCR, title 27.

This Board Order approves the following proposed engineered alternative liner systems for BAP 7 and future boric acid surface impoundments: 1) GCL, a geonet leakage collection layer, a 60-mil HDPE geomembrane liner, and dual LCRS with an additional sand layer on the top with piping to remove head buildup on the top of the liner; 2) GCL, a geonet leakage collection layer, a 60-mil HDPE geomembrane liner, a geonet leakage collection layer, and a 60-mil HDPE geomembrane liner (the R-Pond liner system); 3) GCL, a 60-mil HDPE drain liner geomembrane, and an 80-mil HDPE (single sided texture, with textured side facing up); and 4) GCL, a 60-mil smooth HDPE geomembrane, a geonet, and an 80-mil HDPE geomembrane (single sided texture, with textured side facing up).

During final design evaluation, the Discharger may propose to construct BAP 7 and future boric acid surface impoundments in the manner described by any of the above proposed engineered alternatives. Regardless of the liner system, BAP 7 is proposed to be constructed to approximately 40 acres in size with approximately 846-acre feet of capacity. A final design is required to be submitted as part of this Order.

I, Patty Z. Kouyoumdjian, Executive Officer, do hereby certify 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 10, 2018.



**PATTY Z. KOUYOUMDJIAN
EXECUTIVE OFFICER**