COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

DIVISION OF ADMINISTRATION

WATER QUALITY CONTROL DIVISION

In re: Notice of Violation/Cease and Desist Order, Number: IO-130321-1

AGREEMENT TO HOLD MATTER IN ABEYANCE

The Colorado Department of Public Health and Environment ("Department"), through the Water Quality Control Division ("Division"), and the London Mine Limited Liability Company ("LM LLC"), hereby agree to hold in abeyance the matter of London Mine LLC, Notice of Violation/Cease and Desist Order, Number WQ-2013-002 including the hearing that is currently scheduled for April 14-16, 2014. The Division and the LM LLC may be referred to collectively as "the Parties." In support of the agreement to hold the matter in abeyance, the Parties state as follows:

1. The LM LLC holds Colorado Discharge Permit System Discharge Permit No. CO-0038334 ("Discharge Permit").

2. On March 21, 2013, the Division served the LM LLC with a Notice of Violation/Cease and Desist Order, Number: IO-130321-1 ("NOV").

3. The NOV asserts that the LM LLC has failed to comply with the Discharge Permit effluent limitations.

4. On April 19, 2013, the LM LLC submitted to the Division its Answer to the NOV. In its Answer, the LM LLC sets forth defenses and affirmative defenses in response to the allegations set forth in the NOV, which include that the alleged violations were caused by a third party.

5. By letter dated July 5, 2013, the Division agreed to suspend the required corrective action outlined in paragraph 18 of the NOV (ordering LM LLC to cease and desist from all alleged violations of the Colorado Water Quality Control Act) until such time as the liability issues raised by LM LLC are resolved.

6. A hearing on the NOV is currently set for April 14 -16, 2014 before the Colorado Office of Administrative Courts, case number WQ-2013-002.

7. Since the issuance of the NOV through the present, the Parties have been engaged in discussions concerning the NOV. LM LLC has recently identified a technical opportunity that may address current and future water quality issues at the London Water Tunnel as alleged in the NOV.

8. As described in detail in Attachment A to this Agreement, Alexco Resource U.S. Corp. ("Alexco") has treatment technologies that may potentially address the quality of certain waters discharged via the London Water Tunnel.

9. The Parties have agreed to allow LM LLC the opportunity to focus its resources on facilitating a potential solution with Alexco to address current and future water quality issues at the London Water Tunnel.

10. In order to determine whether Alexco's proposed treatment technologies may address the current and future water quality issues at the London Water Tunnel, Alexco requires time to establish and operate a pilot project at the London Water Tunnel ("Pilot Project"). A general overview of the Pilot Project and the associated milestones necessary to develop and implement the Pilot Project are set forth in Attachment A.

11. So as to allow time to implement and evaluate whether the Pilot Project may successfully address current and future water quality issues at the London Water Tunnel, the Parties agree that the matter, including the April 14-16, 2014 hearing, shall be held in abeyance. The Parties further agree that all remaining deadlines set forth in the March 4, 2014 Scheduling Order shall be held in abeyance.

12. Either the Division or the LM LLC may petition the Court for a new hearing date to determine the validity of the allegations set forth in the NOV upon one of the following occurrences:

a. If within 45 days after completion of the Pilot Project or early termination of the Pilot Project, it has been determined that the Pilot Project failed to provide a remedy to address current and future water quality issues at the London Water Tunnel;

b. If at any point during the term of the Pilot Project (as outlined in Attachment A), it has been mutually agreed that the Pilot Project will not be an effective remedy to address current and future water quality issues at the London Water Tunnel; or

c. The LM LLC's failure to meet a milestone for the Pilot Project, subject to Section 15 below.

13. The Division further agrees that its suspension of the required corrective action outlined in paragraph 18 of the NOV shall remain in place during the period of time this matter is held in abeyance or until this matter is otherwise finally resolved, subject to the specific terms and conditions outlined in the Division's July 5, 2013 letter.

14. The Parties acknowledge that upon the occurrence of any Force Majeure Event, it may be necessary to amend or extend the milestones set forth in Attachment A. A "Force Majeure Event" shall mean any event beyond a party's control, including but not limited to: acts of war, acts of public enemies, terrorist attacks, governmental orders relating to the foregoing, insurrections, riots, sabotage, earthquakes, landslides, floods, acts of God, embargoes, authority of laws, labor disputes (including strikes, lockouts, job actions or boycotts), fires, explosions, or failure in electrical power, heat, light, air conditioning or communications equipment for a period of time exceeding seventy-two consecutive hours and which prohibits Alexco or any party hereto from proceeding with the Pilot Project. As such, the Parties agree that upon the occurrence of a Force Majeure Event, any milestone set forth in this Agreement shall either be either waived, extended or amended upon mutual agreement by the Parties. Such consent shall not be unreasonably withheld by any party.

15. Notwithstanding the provisions of Section 14, the Parties agree that the Division may at any time waive any milestone set forth in this Agreement, or that the Parties may mutually agree to amend or extend any milestone set forth in this Agreement. Such agreement to waive, amend or extend shall be set forth in writing and agreed to by both Parties. Such consent shall not be unreasonably withheld by any party.

16. Without limiting rights to any current or future affirmative defenses, the LM LLC affirms that if it transfers the Discharge Permit to another party, that third party shall assume all rights and responsibilities set forth in the Discharge Permit and that the new permit holder will assume responsibility for all conditions set forth in the Discharge Permit.

17. The Parties agree that this Agreement does not resolve the allegations set forth in the NOV. The Division reserves all rights to pursue the NOV against the LM LLC if the Parties are unable to resolve the allegations set forth in the NOV, as contemplated in this Agreement or otherwise.

18. The LM LLC agrees to continue to comply with all reporting requirements set forth in the NOV and in the Discharge Permit. Additionally, the LM LLC agrees that it and representatives of Alexco will be available to meet with the Division to provide quarterly updates on the progress of the Pilot Project.

19. The Division agrees that the LM LLC retains all rights to assert now or in the future before any court or at any administrative hearing any and all defenses and affirmative defenses available to it, including those set forth in the LM LLC's Answer to the NOV.

20. Notwithstanding Section 19, the LM LLC agrees not to assert any claims of laches against the Division for alleged failure to prosecute in a timely manner with respect to any future prosecution of the case arising out of this Agreement.

21. This Agreement may be executed in one or more counterparts, each of which shall be deemed original, and such counterparts together shall constitute but one and the same instrument.

The Parties have duly executed this Agreement as of the dates set forth below.

LONDON MINE LIMITED LIABILITY COMPANY

By: _____

Name: Dr. Judith A. Meyer

Title: Manager

Date: March 26, 2014

COLORADO WATER QUALITY CONTROL DIVISION

By: _____

Name: Steven H. Gunderson

Title: Director, Water Quality Control Division

Date: March 27, 2014

Attachment A

Innovations in water treatment technology enables cost-effective and sustainable approaches at London Mine

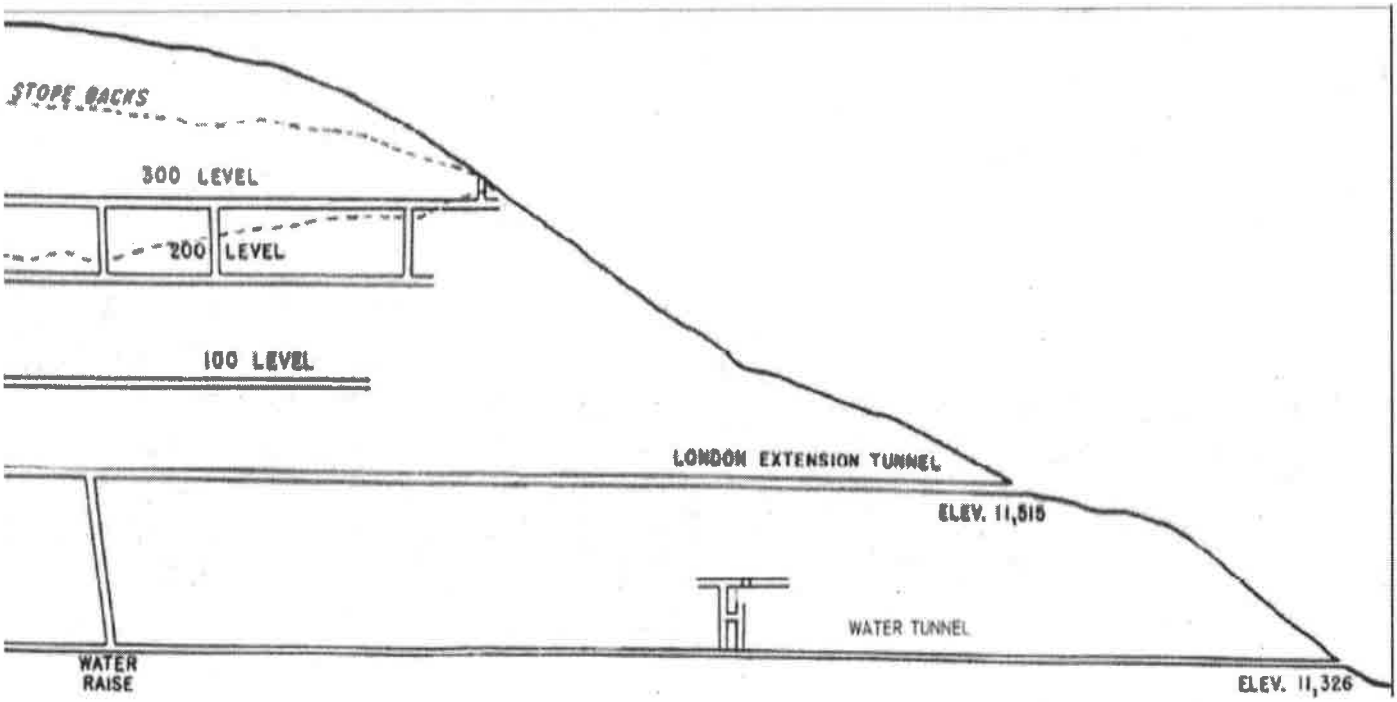
Joseph G Harrington
Alexco Resource US Corp

LONDON MINE APPLICATION

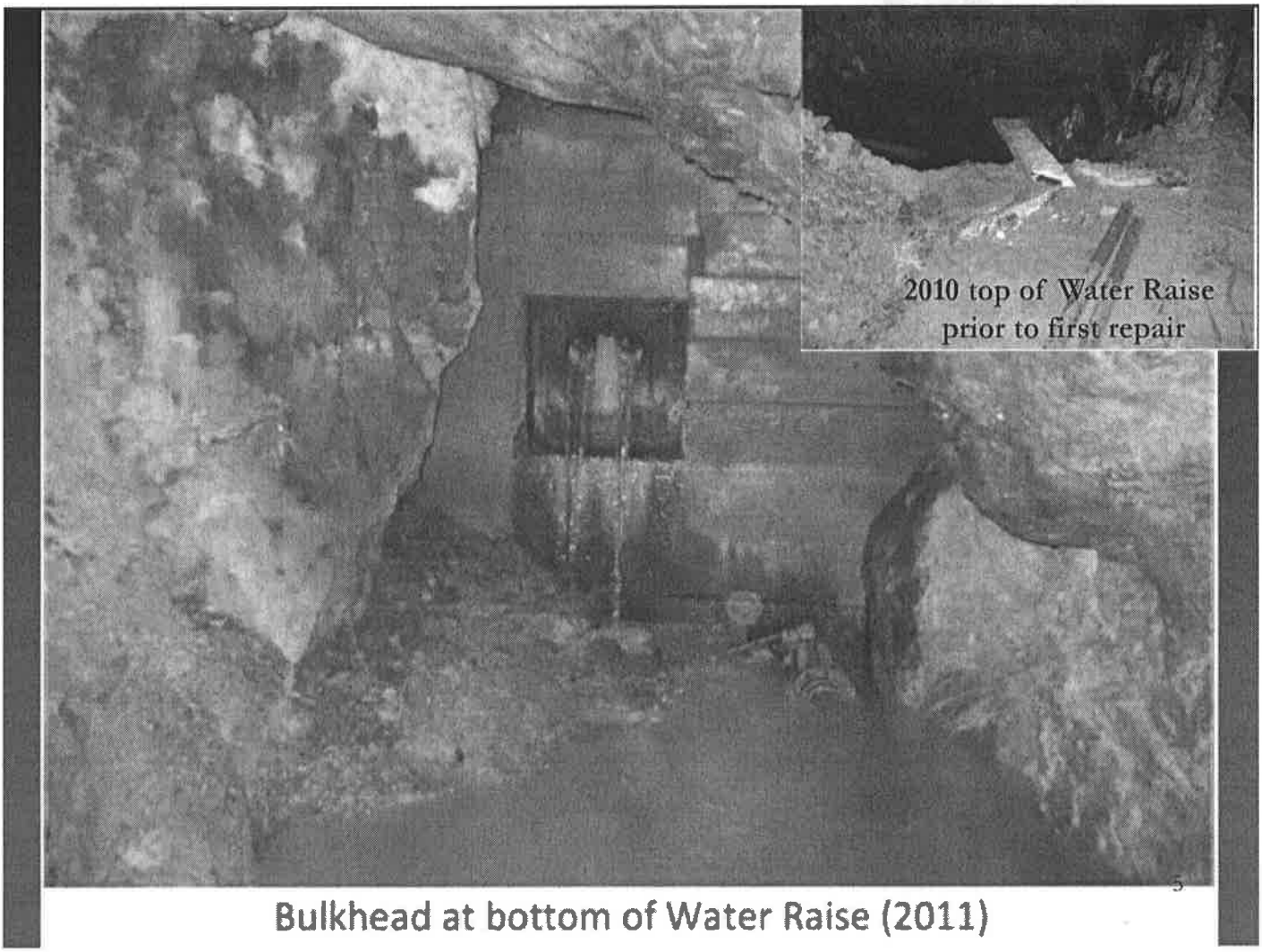
Pilot: Separate and treat the water

- Install a cofferdam in Water Raise crosscut
- Convey collected water to the London Butte mine pool
- Amend the water during transit with molasses (or other sugar source) and with alcohol (methanol or ethanol)
- Inject the amended Extension water into the London Butte mine pool
- Monitor the quality of the mine pool for zinc and cadmium to ensure in-place treatment to form metal sulfides (ZnS/CdS) and redox.

London Mine

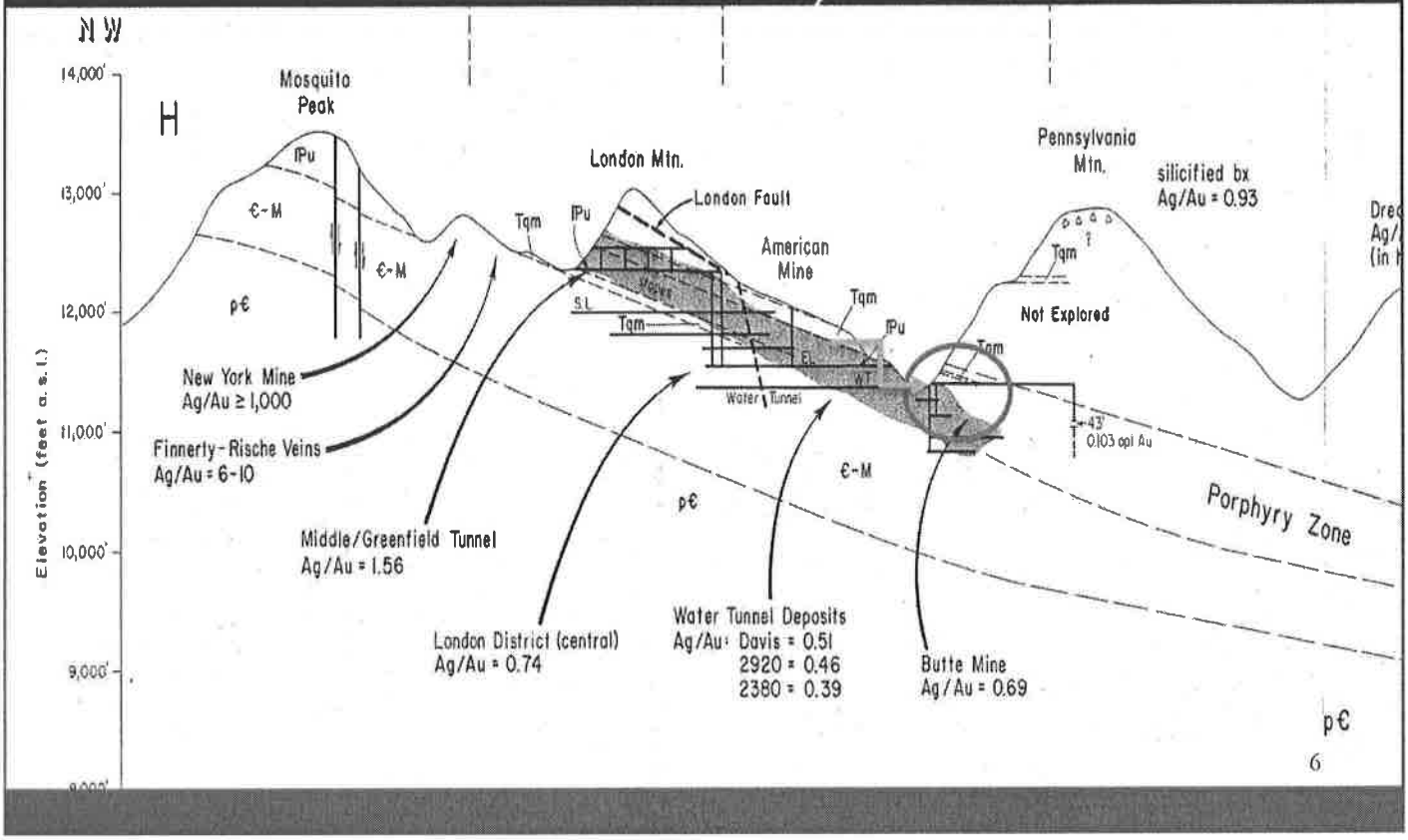


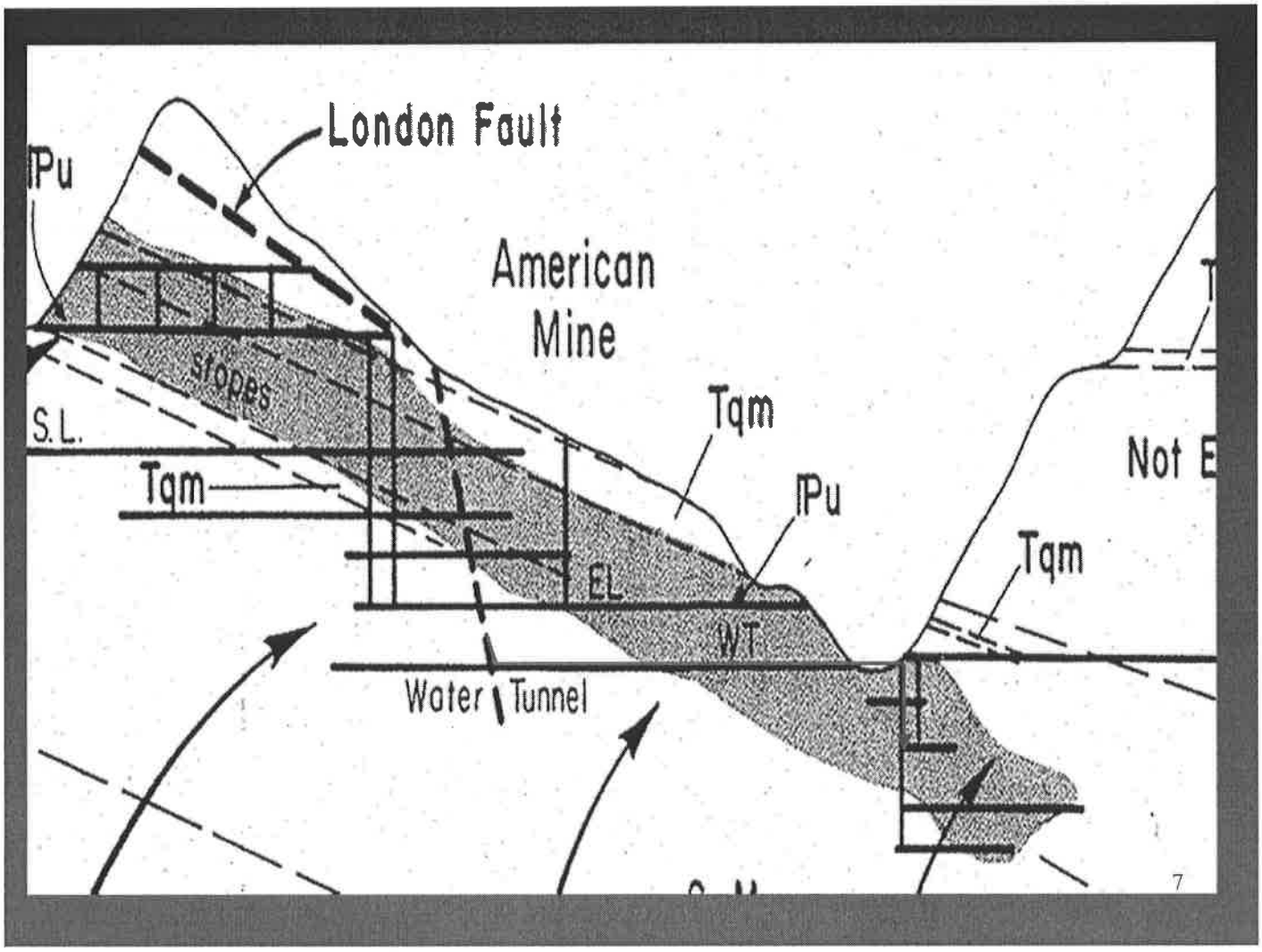
Modified from London Mine Longitudinal Section Map, (July, 1942)



Bulkhead at bottom of Water Raise (2011)

District long-section (NW-SE section)




London Fault
Pu
American
Mine
stopes
S.L.
Tqm
Tqm
Pu
Tqm
EL
WT
Water Tunnel
Not E
7

Expected results of pilot test

- London Water Tunnel discharge quality will immediately improve (at least 80% reduction for zinc and cadmium);
- London Butte mine pool will be maintained at a low redox (sulfate-reducing conditions) conducive for the precipitation of sphalerite (ZnS) and greenockite (CdS) along with iron monosulfide (FeS) coating the mine workings beneath the water line.
- Contaminants will be permanently treated to form an encapsulated inert, non-acid-forming metal sulfide mineral

Likelihood of success is high

- London Extension Tunnel water comingling with Water Tunnel at the Water Raise Cross-cut is the source of 92% of the zinc and 83% of the cadmium presently in the London Water Tunnel drainage
- Zn standard is 654 ppb, Cd is 3.2; projected quality is 328 ppb and 3.0 ppb after removal and treatment of Extension Tunnel water within the London Butte Mine Pool.

Water Source	Dis - Zn	Dis - Cd	Dis - Cu	Dis - Fe	Dis - Pb	Dis -	Dis - Ni	Flow, MGD
London Mine, Water Tunnel, ppb	3,810	17	77	3,200	2	450	14	1.12
loading from Water Tunnel, lbs/day	35.6	0.16	0.72	29.9	0.02	4.20	0.13	
London Extension Mine Water	77,700	315						0.050
Loading from Extension, lbs/day	32.7	0.13	-	-	-	-	-	
Projected Quality, Water Tunnel, ppb	**328**	**3.0**						

Milestones

- In order to determine whether the Alexco metals immobilization treatment technology will succeed in abating discharges in excess of the effluent limits set forth in Discharge Permit No. CO-0038334 (Discharge Permit), Alexco will undertake a one year (365 day) pilot project that includes the construction and operation of an in-situ treatment system to treat water within the London Water Tunnel and inject the amended water into the London Butte mine pool (Pilot Project). Since the Pilot Project includes the utilization of underground injection, the Pilot Project shall not begin until Alexco receives the legally enforceable approval for the underground injection components of the Pilot Project from United States Environmental Protection Agency Underground Injection Control (US EPA UIC) Program. Alexco's application to US EPA UIC Program shall be submitted to the US EPA UIC Program by no later than April 11, 2014. Alexco shall submit a copy of the US EPA UIC Program's approval of the project to the Division within two (2) calendar days of receipt (hereinafter the "EPA Approval"). Contingent upon EPA Approval, the Pilot Project milestones are as follows:

Milestones

- 1. Construction start date shall be fourteen (14) calendar days after receipt of EPA Approval, or July 1, 2014 whichever is later. Construction shall commence with a survey of the London Water Tunnel to determine necessary steps to address any safety issues for construction activities within the London Water Tunnel.
- 2. Construction completion date shall be seventy five (75) calendar days after the construction start date. A Construction Completion report shall be submitted to the Division within fourteen (14) calendar days after the construction completion date and shall include:
- a. Results of the electrical conductivity survey of the contributing water sources within the London Water Tunnel;
- b. Constructability assessment report for separation of the highly conductive waters presumed to contain the most zinc and cadmium;
- c. Sampling report to indicate the concentrations of zinc and cadmium contained in the contributing water sources;
- d. Construction documentation report with system designs and photographic evidence demonstrating the capture and collection of contributing sources of zinc and cadmium, the conveyance system transporting water to the reinjection point at the London Butte mine pool, the reinjection point, the reagent addition point(s) and the reagent storage system, as constructed;
- e. Laboratory results (including chain of custody forms completed by Alexco personnel) of the collected water and of the remaining London Water Tunnel discharge (sampled at Discharge Permit outfall 001) after the construction of the capture system (to the extent that such results are available); and
- f. This report will have a cover letter certifying the construction of the system by an officer of Alexco and by a Colorado registered Professional Engineer.

Milestones

- 3. System start up date shall be not later than fourteen (14) calendar days after the construction completion date. System startup shall commence with injecting the collected water with molasses and or alcohol as described in the EPA Approval or incorporated by reference in the EPA Approval documents from Alexco's Application.
- 4. Progress report(s) on system operation shall be submitted to the Division at least every ninety one (91) calendar days after the system startup date; the progress report(s) shall include:
- a. Analytical results received from the analytical laboratory of, at a minimum, all samples collected at Discharge Permit outfall 001;
- b. A description of the actions taken and results received to-date, including;
- i. Volumes or masses of reagents injected (which shall constitute Alexco's Confidential Business Information pursuant to protection under Colorado Law);
- ii. Measured or estimated volumes of water collected and injected into the London Butte mine pool; and
- iii. Any observations made about the efficacy of the treatment or any problem that may require early termination of the Pilot Project.
- c. If an observation is made that may require early termination of the Pilot Project, or that requires any notice to US EPA UIC Program pursuant to the EPA Approval, then a report shall be submitted to the Division within seven (7) calendar days of the observation containing as much as possible all of the above information in this item #4.

Milestones

- 5. Pilot Project completion date shall be 365 calendar days after the construction start date or fifteen (15) calendar days after an early termination due to item 4.c. (Project Completion date). A project completion report shall be submitted within thirty (30) calendar days after the Project Completion date and shall include summary information of the Pilot Project and in particular a conclusion by Alexco signed by an officer of Alexco and certified by a Colorado registered Professional Engineer who shall have had access to and been able to review all relevant data pertaining to the Pilot Project. This conclusion statement shall address the efficacy or lack thereof of the pilot test to meet the objectives. The objectives of the Pilot Project that shall be addressed in this report are:
- a. The viability of separating zinc and/or cadmium contaminated water from the remaining water in the London Water Tunnel;
- b. The treatability of the separated contaminated water within the London Butte mine pool; or any other treatment area approved in the EPA Approval;
- c. Compliance with the Discharge Permit; and
- d. Scientific evidence developed by Alexco throughout the test that can address the balancing factors of the technology compared against the presumptive remedy (lime coagulation/settling) as tested in the Pilot Project, including:
- i. reduction in toxicity, mobility and volume of the contamination;
- ii. short-term effectiveness;
- iii. long-term effectiveness/permanence;
- iv. implementability; and
- v. cost effectiveness (that the cost of the technology is proportional to the benefits obtained compared to the expected costs of the presumptive remedy).