

Exhibit 1

1 **PROPOSED AMENDMENTS OF LOS ALAMOS NATIONAL LABORATORY**
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5 NMED’s proposed changes to the current 20.6.4. NMAC are shown with additions
6 underlined and deletions indicated by strikethrough. In some cases, for clarity, NMED’s
7 deletions are shown with strikethrough and brackets. LANL’s proposed modifications to
8 NMED’s proposed changes as provided in the Amended Petition are noted in ***bold italics***, and its
9 proposed deletions to NMED’S Amended Petition or existing regulatory language are noted in
10 double strikethrough.

11
12 **20.6.4.7 DEFINITIONS:** Terms defined in the New Mexico Water Quality Act,
13 but not defined in this part will have the meaning given in the Water Quality Act.
14
15

16 **C. Terms beginning with the letter “C”.**

17 (1) **“CAS number”** means an assigned number by chemical abstract service
18 (CAS) to identify a substance. CAS numbers index information published in chemical abstracts
19 by the American chemical society.

20 (2) **“Chronic toxicity”** means toxicity involving a stimulus that lingers or
21 continues for a relatively long period relative to the life span of an organism. Chronic effects
22 include, but are not limited to, lethality, growth impairment, behavioral modifications, disease
23 and reduced reproduction.

24 (3) **“Classified water of the state”** means a surface water of the state, or
25 reach of a surface water of the state, for which the commission has adopted a segment
26 description and has designated a use or uses and applicable water quality criteria in 20.6.4.101
27 through 20.6.4.899 NMAC.

28 (4) **“Climate change”** refers to any significant change in the measures of
29 climate lasting for an extended period of time, typically decades or longer, and includes major
30 changes in temperature, precipitation, wind patterns or other weather-related effects. Climate
31 change may be due to natural processes or human-caused changes of the atmosphere, or a
32 combination of the two.

33 (5) **“Closed basin”** is a basin where topography prevents the surface outflow
34 of water and water escapes by evapotranspiration or percolation.

35 (6) **“Coldwater”** in reference to an aquatic life use means a surface water of
36 the state where the water temperature and other characteristics are suitable for the support or
37 propagation or both of coldwater aquatic life.

38 ~~(7) **“Contaminants of emerging concern” or “CECs” refer to water**~~
39 ~~contaminants including, but not limited to, pharmaceuticals and personal care products that may~~
40 ~~cause significant ecological or human health effects at low concentrations. CECs are generally~~
41 ~~chemical compounds that, although suspected to potentially have impacts, may not have~~
42 ~~regulatory standards, and the concentrations to which negative impacts are observed have not~~
43 ~~been fully studied.~~

44 (6)(7) **“Coolwater”** in reference to an aquatic life use means the water
45 temperature and other characteristics are suitable for the support or propagation of aquatic life

1 whose physiological tolerances are intermediate between and may overlap those of warm and
2 coldwater aquatic life.

3
4 ~~(7)~~(8) “**Commission**” means the New Mexico water quality control commission.

5 ~~(8)~~(9) “**Criteria**” are elements of state water quality standards, expressed as
6 constituent concentrations, levels or narrative statements, representing a quality of water that
7 supports a use. When criteria are met, water quality will protect the designated use.

8
9 **L. Terms beginning with the letter “L”.**

10 (1) “**LC-50**” means the concentration of a substance that is lethal to fifty
11 percent of the test organisms within a defined time period. The length of the time period, which
12 may vary from 24 hours to one week or more, depends on the test method selected to yield the
13 information desired.

14 (2) “**Limited aquatic life**” as a designated use, means the surface water is
15 capable of supporting only a limited community of aquatic life. This subcategory includes
16 *ephemeral, intermittent, or perennial* surface waters that support aquatic species selectively
17 adapted to take advantage of naturally occurring rapid environmental changes, ~~ephemeral or~~
18 ~~intermittent water~~, low-flow, high turbidity, fluctuating temperature, low dissolved oxygen
19 content or unique chemical characteristics.

20 (3) “**Livestock watering**” means the use of a surface water of the state as a
21 supply of water for consumption by livestock.

22 **M. Terms beginning with the letter “M”.**

23 (1) “**Marginal coldwater**” in reference to an aquatic life use means that
24 natural [~~intermittent or low flows, or other natural~~] *intermittent or low flows, or other natural*
25 habitat conditions severely limit maintenance of a coldwater aquatic life population during at
26 least some portion of the year or historical data indicate that the temperature ~~in~~ of the surface
27 water of the state may exceed ~~that which could continually support aquatic life adapted to~~
28 coldwater 25°C (77°F).

29 (2) “**Marginal warmwater**” in reference to an aquatic life use means natural
30 intermittent or low flow or other natural habitat conditions severely limit the ability of the
31 surface water of the state to sustain a natural aquatic life population on a continuous annual
32 basis; or historical data indicate that natural water temperature routinely exceeds 32.2°C (90°F).

33 (3) “**Maximum temperature**” means the instantaneous temperature not to be
34 exceeded at any time.

35 (4) “**Minimum quantification level**” means the minimum quantification
36 level for a constituent determined by official published documents of the United States
37 environmental protection agency.

38
39 **S. Terms beginning with the letter “S”.**

40 (1) “**Secondary contact**” means any recreational or other water use in which
41 human contact with the water may occur and in which the probability of ingesting appreciable
42 quantities of water is minimal, such as fishing, wading, commercial and recreational boating and
43 any limited seasonal contact.

44 (2) “**Segment**” means a classified water of the state described in 20.6.4.101
45 through 20.6.4.899 NMAC. The water within a segment should have the same uses, similar
46 hydrologic characteristics or flow regimes, and natural physical, chemical and biological

1 characteristics and exhibit similar reactions to external stresses, such as the discharge of
2 pollutants.

3 (3) “**Specific conductance**” is a measure of the ability of a water solution to
4 conduct an electrical current.

5 (4) “**State**” means the state of New Mexico.

6 (5) “*Sufficiently sensitive*” means any method approved under 40 CFR part
7 136 for the analysis of pollutants or pollutant parameters for which (1) the method minimum
8 level (ML) is at or below the level of the effluent limit established in the permit; or (2) the
9 method has the lowest ML of the analytical methods approved under 40 CFR part 136 for the
10 measured pollutant or pollutant parameter.

11 (5)(6) “**Surface water(s) of the state**” means all surface waters situated wholly
12 or partly within or bordering upon the state, including lakes, rivers, streams (including
13 intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows,
14 playa lakes, reservoirs or natural ponds. Surface waters of the state also means all tributaries of
15 such waters, including adjacent wetlands, any manmade bodies of water that were originally
16 created in surface waters of the state or resulted in the impoundment of surface waters of the
17 state, and any “waters of the United States” as defined under the Clean Water Act that are not
18 included in the preceding description. Surface waters of the state does not include private waters
19 that do not combine with other surface or subsurface water or any water under tribal regulatory
20 jurisdiction pursuant to Section 518 of the Clean Water Act. Waste treatment systems, including
21 treatment ponds or lagoons designed and actively used to meet requirements of the Clean Water
22 Act (other than cooling ponds as defined in 40 CFR Part 423.11(m) that also meet the criteria of
23 this definition), are not surface waters of the state, unless they were originally created in surface
24 waters of the state or resulted in the impoundment of surface waters of the state.

25 **T. Terms beginning with the letter “T”.**

26 (1) “**TDS**” means total dissolved solids, also termed “total filterable residue.”

27 (2) “**Toxic pollutant**” means those pollutants, or combination of pollutants,
28 ~~including disease-causing agents, that after discharge and upon exposure, ingestion, inhalation or~~
29 ~~assimilation into any organism, either directly from the environment or indirectly by ingestion~~
30 ~~through food chains, will cause death, shortened life spans, disease, adverse behavioral changes,~~
31 ~~reproductive or physiological impairment or physical deformations in such organisms or their~~
32 ~~offspring listed by the EPA Administrator under section 307(a) of the federal Clean Water Act,~~
33 *33 U.S.C. § 1313(a) or in the list below.*

34 (3) “**Tributary**” means a perennial, intermittent or ephemeral waterbody that
35 flows into a larger waterbody, and includes a tributary of a tributary.

36 (4) “**Turbidity**” is an expression of the optical property in water that causes
37 incident light to be scattered or absorbed rather than transmitted in straight lines.

38 **U. Terms beginning with the letter “U”. [RESERVED]**

39 (1) “*Use Attainability Analysis*” means a structured scientific assessment of
40 *the factors affecting the attainment of the use, which include physical, chemical, biological,*
41 *and economic factors as described in 40 CFR 131.10(g).*

42
43 **20.6.4.10 REVIEW OF STANDARDS; NEED FOR ADDITIONAL STUDIES:**

44 **A.** Section 303(c)(1) of the federal Clean Water Act requires that the state hold
45 public hearings at least once every three years for the purpose of reviewing water quality
46 standards and proposing, as appropriate, necessary revisions to water quality standards.

1 **B.** In accordance with 40 CFR 131.10(~~g~~), when an existing use of a water, as defined
2 in 20.6.4.7 NMAC, is higher quality water requires a higher level of protection than prescribed
3 by the current designated use and new supporting evidence demonstrates the presence of that
4 use, the designated use shall be amended accordingly to protect be no less stringent than the
5 existing use. This action can only be taken after the commission has established formal
6 procedures, through the water quality management plan continuing planning process, to
7 amend a designated use that is found to be less restrictive than an existing use. The process
8 described in this section may not be used where the commission has already made a
9 determination concerning the existing use of classified waters of the state.

10 ~~[B.][C.]~~ It is recognized that, in some cases, numeric criteria have been adopted that
11 reflect use designation rather than existing conditions of surface waters of the state. for a
12 particular designated use may not adequately reflect the local conditions or the aquatic
13 communities adapted to those localized conditions. In these cases, a water quality criterion may
14 be modified to reflect the natural condition of a specific waterbody. The modification of the
15 criterion does not change the designated use; the modification only changes the criterion for that
16 specific waterbody. Narrative criteria are required for many constituents because accurate data
17 on background levels are lacking. More intensive water quality monitoring may identify surface
18 waters of the state where existing quality is considerably better than the established criteria.
19 When justified by sufficient data and information, a numeric the water quality criteria criterion
20 will may be adopted or modified in accordance with 20.6.4.10(F) and 20.6.4.10(G) NMAC, to
21 protect the attainable uses of the waterbody.

22 **D.C.** The removal or amendment of a designated use to a designated use with less
23 stringent criteria can only be done through a use attainability analysis in accordance with
24 20.6.4.15 NMAC.

25 ~~[C.][E.]~~ **D.** It is also recognized that contributions of water contaminants by diffuse
26 nonpoint sources of water pollution may make attainment of certain criteria difficult. Revision of
27 these criteria may be necessary as new information is obtained on nonpoint sources and other
28 problems unique to semi-arid regions.

29 ~~[E.][F.]~~ **E. Site-specific criteria.**

30 (1) The commission may adopt site-specific numeric criteria applicable to all
31 or part of a surface water of the state based on relevant site-specific conditions such as:

32 (a) actual species at a site are more or less sensitive than those used in
33 the national criteria data set;

34 (b) physical or chemical characteristics at a site such as pH or
35 hardness alter the biological availability and/or toxicity of the chemical;

36 (c) physical, biological or chemical factors alter the bioaccumulation
37 potential of a chemical;

38 (d) the concentration resulting from natural background exceeds
39 numeric criteria for aquatic life, wildlife habitat or other uses if consistent with Subsection E of
40 20.6.4.10 NMAC; or

41 (e) other factors or combination of factors that upon review of the
42 commission may warrant modification of the default criteria, subject to EPA review and
43 approval.

44 (2) Site-specific criteria must fully protect the designated use to which they
45 apply. In the case of human health-organism only criteria, site-specific criteria must fully protect
46 human health when organisms are consumed from waters containing pollutants.

1 (3) Any person may petition the commission to adopt site-specific criteria. A
2 petition for the adoption of site-specific criteria shall:
3 (a) identify the specific waters to which the site-specific criteria would
4 apply;
5 (b) explain the rationale for proposing the site-specific criteria;
6 (c) describe the methods used to notify and solicit input from potential
7 stakeholders and from the general public in the affected area, and present and respond to the
8 public input received;
9 (d) present and justify the derivation of the proposed criteria.

10 (4) A derivation of site-specific criteria shall rely on a scientifically defensible
11 method, such as one of the following:

12 (a) the recalculation procedure, the water-effect ratio for metals
13 procedure or the resident species procedure as described in the water quality standards handbook
14 (EPA-823-B-94-005a, 2nd edition, August 1994);

15 (b) the streamlined water-effect ratio procedure for discharges of
16 copper (EPA-822-R-01-005, March 2001);

17 (c) the biotic ligand model as described in aquatic life ambient
18 freshwater quality criteria - copper (EPA-822-R-07-001, February 2007);

19 (d) the methodology for deriving ambient water quality criteria for the
20 protection of human health (EPA-822-B-00-004, October 2000) and associated technical support
21 documents; or

22 (e) a determination of the natural background of the water body as
23 described in Subsection ~~EGF~~ of 20.6.4.10 NMAC.

24 ~~[E.]~~ **G. F. Site-specific criteria based on natural background.** The commission
25 may adopt site-specific criteria equal to the concentration resulting from natural background
26 where that concentration protects the designated use. The concentration resulting from natural
27 background supports the level of aquatic life and wildlife habitat expected to occur naturally at
28 the site absent any interference by humans. Domestic water supply, primary or secondary
29 contact, or human health-organism only criteria shall not be modified based on natural
30 background *unless such uses would be protected at natural background concentrations*. A
31 determination of natural background shall:

32 (1) consider natural spatial and seasonal to interannual variability as
33 appropriate;

34 (2) document the presence of natural sources of the pollutant;

35 (3) document the absence of human sources of the pollutant or quantify the
36 human contribution; and

37 (4) rely on analytical, statistical or modeling methodologies to quantify the
38 natural background.

39 ~~[F.]~~ ~~H.~~ **G. Temporary standards.**

40 (1) Any person may petition the commission to adopt a temporary standard
41 applicable to all or part of a surface water of the state as provided for in this section and
42 applicable sections in 40 CFR Part 131, Water Quality Standards; specifically, Section 131.14.
43 The commission may adopt a proposed temporary standard if the petitioner demonstrates that:

44 (a) attainment of the associated designated use may not be feasible in
45 the short term due to one or more of the factors listed in 40 CFR 131.10(g), or due to the
46 implementation of actions necessary to facilitate restoration such as through dam removal or

1 other significant wetland or water body reconfiguration activities as demonstrated by the petition
2 and supporting work plan requirements in Paragraphs (4) and (5) of Subsection [F]HG of
3 20.6.4.10 NMAC;

4 (b) the proposed temporary standard represents the highest degree of
5 protection feasible in the short term, limits the degradation of water quality to the minimum
6 necessary to achieve the original standard by the expiration date of the temporary standard, and
7 adoption will not cause the further impairment or loss of an existing use;

8 (c) for point sources, existing or proposed discharge control
9 technologies will comply with applicable technology-based limitations and feasible
10 technological controls and other management alternatives, such as a pollution prevention
11 program; and

12 (d) for restoration activities, nonpoint source or other control
13 technologies shall limit downstream impacts, and if applicable, existing or proposed discharge
14 control technologies shall be in place consistent with Subparagraph (c) of Paragraph (1) of
15 Subsection [F]HG of 20.6.4.10 NMAC.

16 (2) A temporary standard shall apply to specific designated use(s),
17 pollutant(s), or permittee(s), and to specific water body segment(s). The adoption of a temporary
18 standard does not exempt dischargers from complying with all other applicable water quality
19 standards or control technologies.

20 (3) Designated use attainment as reported in the federal Clean Water Act,
21 Section 305(b)/303(d) Integrated Report shall be based on the original standard and not on a
22 temporary standard.

23 (4) A petition for a temporary standard shall:

24 (a) identify the currently applicable standard(s), the proposed
25 temporary standard for the specific pollutant(s), the permittee(s), and the specific surface water
26 body segment(s) of the state to which the temporary standard would apply;

27 (b) include the basis for any factor(s) specific to the applicability of
28 the temporary standard (for example critical flow under Subsection B of 20.6.4.11 NMAC);

29 (c) demonstrate that the proposed temporary standard meets the
30 requirements in this subsection;

31 (d) present a work plan with timetable of proposed actions for
32 achieving compliance with the original standard in accordance with Paragraph (5) of Subsection
33 [F]HG of 20.6.4.10 NMAC;

34 (e) include any other information necessary to support the petition.

35 (5) As a condition of a petition for a temporary standard, in addition to
36 meeting the requirements in this Subsection, the petitioner shall prepare a work plan in
37 accordance with Paragraph (4) of Subsection [F]HG of 20.6.4.10 NMAC and submit the work
38 plan to the department for review and comment. The work plan shall identify the factor(s) listed
39 in 40 CFR 131.10(g) or Subparagraph (a) of Paragraph (1) of Subsection [F]HG of 20.6.4.10
40 NMAC affecting attainment of the standard that will be analyzed and the timeline for proposed
41 actions to be taken to achieve the uses attainable over the term of the temporary standard,
42 including baseline water quality, and any investigations, projects, facility modifications,
43 monitoring, or other measures necessary to achieve compliance with the original standard. The
44 work plan shall include provisions for review of progress in accordance with Paragraph (8) of
45 Subsection [F]HG of 20.6.4.10 NMAC, public notice and consultation with appropriate state,
46 tribal, local and federal agencies.

1 (6) The commission may condition the approval of a temporary standard by
2 requiring additional monitoring, relevant analyses, the completion of specified projects,
3 submittal of information, or any other actions.

4 (7) Temporary standards may be implemented only after a public hearing
5 before the commission, commission approval and adoption pursuant to Subsection [F]HG of
6 20.6.4.10 NMAC for all state purposes, and the federal Clean Water Act Section 303 (c)
7 approval for any federal action.

8 (8) All temporary standards are subject to a required review during each
9 succeeding review of water quality standards conducted in accordance with Subsection A of
10 20.6.4.10 NMAC. The petitioner shall provide a written report to the commission documenting
11 the progress of proposed actions, pursuant to a reporting schedule stipulated in the approved
12 temporary standard. The purpose of the review is to determine progress consistent with the
13 original conditions of the petition for the duration of the temporary standard. If the petitioner
14 cannot demonstrate that sufficient progress has been made the commission may revoke approval
15 of the temporary standard or provide additional conditions to the approval of the temporary
16 standard.

17 (9) The commission may consider a petition to extend a temporary standard.
18 The effective period of a temporary standard shall be extended only if demonstrated to the
19 commission that the factors precluding attainment of the underlying standard still apply, that the
20 petitioner is meeting the conditions required for approval of the temporary standard, and that
21 reasonable progress towards meeting the underlying standard is being achieved.

22 (10) A temporary standard shall expire no later than the date specified in the
23 approval of the temporary standard. Upon expiration of a temporary standard, the original
24 standard becomes applicable.

25 (11) Temporary standards shall be identified in 20.6.4.97-899 NMAC as
26 appropriate for the surface water affected.

27 (12) “Temporary standard” means a time-limited designated use and criterion
28 for a specific pollutant(s) or water quality parameter(s) that reflect the highest attainable
29 condition during the term of the temporary standard.
30

31 **20.6.4.11 APPLICABILITY OF WATER QUALITY STANDARDS:**

32 **A. [RESERVED]**

33 **B. Critical low flow:** The critical low flow of a stream at a particular site shall be
34 used in developing point source discharge permit requirements to meet numeric criteria set in
35 20.6.4.97 through 20.6.4.900 NMAC and Subsection F of 20.6.4.13 NMAC.

36 (1) For human health-organism only criteria, the critical low flow is the
37 harmonic mean flow; ~~“harmonic mean flow” is the number of daily flow measurements divided~~
38 ~~by the sum of the reciprocals of the flows; that is, it is the reciprocal of the mean of reciprocals.~~
39 For ephemeral waters the calculation shall be based upon the nonzero flow intervals and
40 modified by including a factor to adjust for the proportion of intervals with zero flow. The
41 equations are as follows:
42

$$43 \text{ Harmonic Mean} = \frac{n}{\sum 1/Q}$$

44
45
46 where n = number of flow values

1 and Q = flow value
2 Modified Harmonic Mean =
3 where Q_i = nonzero flow
4 N_t = total number of flow values
5 and N_o = number of zero flow values
6

7 (2) For all other narrative and numeric criteria, the critical low flow is the
8 minimum average four consecutive day flow that occurs with a frequency of once in three years
9 (4Q3). The critical low flow may be determined on an annual, a seasonal or a monthly basis, as
10 appropriate, after due consideration of site-specific conditions.

11 **C. Guaranteed minimum flow:** The commission may allow the use of a
12 contractually guaranteed minimum streamflow in lieu of a critical low flow determined under
13 Subsection B of this section on a case-by-case basis and upon consultation with the interstate
14 stream commission. Should drought, litigation or any other reason interrupt or interfere with
15 minimum flows under a guaranteed minimum flow contract for a period of at least 30
16 consecutive days, such permission, at the sole discretion of the commission, may then be
17 revoked. Any minimum flow specified under such revoked permission shall be superseded by a
18 critical low flow determined under Subsection B of this section. A public notice of the request
19 for a guaranteed minimum flow shall be published in a newspaper of general circulation by the
20 department at least 30 days prior to scheduled action by the commission. These water quality
21 standards do not grant to the commission or any other entity the power to create, take away or
22 modify property rights in water.

23 **D. Mixing zones:** A limited mixing zone, contiguous to a point source wastewater
24 discharge, may be allowed in any stream receiving such a discharge. Mixing zones serve as
25 regions of initial dilution that allow the application of a dilution factor in calculations of effluent
26 limitations. Effluent limitations shall be developed that will protect the most sensitive existing,
27 designated or attainable use of the receiving water.

28 **E. Mixing zone limitations:** Wastewater mixing zones, in which the numeric
29 criteria set under Subsection F of 20.6.4.13 NMAC, 20.6.4.97 through 20.6.4.899 NMAC or
30 20.6.4.900 NMAC may be exceeded, shall be subject to the following limitations:

31 (1) Mixing zones are not allowed for discharges to lakes, reservoirs, or playas;
32 these effluents shall meet all applicable criteria set under Subsection F of 20.6.4.13 NMAC,
33 20.6.4.97 through 20.6.4.899 NMAC and 20.6.4.900 NMAC at the point of discharge.

34 (2) The acute aquatic life criteria, as set out in Subsection I, Subsection J, and
35 Subsection K of 20.6.4.900 NMAC, shall be attained at the point of discharge for any discharge
36 to a surface water of the state with a designated aquatic life use.

37 (3) The general criteria set out in Subsections A, B, C, D, E, G, H and J of
38 20.6.4.13 NMAC, and the provision set out in Subsection D of 20.6.4.14 NMAC are applicable
39 within mixing zones.

40 (4) The areal extent and concentration isopleths of a particular mixing zone
41 will depend on site-specific conditions including, but not limited to, wastewater flow, receiving
42 water critical low flow, outfall design, channel characteristics and climatic conditions and, if
43 needed, shall be determined on a case-by-case basis. When the physical boundaries or other
44 characteristics of a particular mixing zone must be known, the methods presented in Section
45 4.4.5, "Ambient-induced mixing," in "Technical support document for water quality-based toxics
46 control" (March 1991, EPA/505/2-90-001) shall be used.

1 (5) All applicable water quality criteria set under Subsection F of 20.6.4.13
2 NMAC, 20.6.4.97 through 20.6.4.899 NMAC and 20.6.4.900 NMAC shall be attained at the
3 boundaries of mixing zones. A continuous zone of passage through or around the mixing zone
4 shall be maintained in which the water quality meets all applicable criteria and allows the
5 migration of aquatic life presently common in surface waters of the state with no effect on their
6 populations.

7 **F. Multiple uses:** When a surface water of the state has more than a single
8 designated use, the applicable numeric criteria shall be the most stringent of those established for
9 such water.

10 **G.** Human health-organism only criteria in Subsection J of 20.6.4.900 NMAC apply
11 to those waters with a designated, existing or attainable ~~aquatic life~~ **fish consumption** use. *If a*
12 *tributary does not have an attainable fish consumption use, then HH-OO criteria do not apply*
13 *to the tributary. If the fish consumption designated use is not attained in the first downstream*
14 *segment with an attainable fish consumption designated use, then the tributary should be*
15 *assigned a load allocation as required by 40 CFR Part 130. When limited aquatic life is a*
16 ~~designated use, the human health-organism only criteria apply only if adopted on a segment-~~
17 ~~specific basis. The human health-organism only criteria for persistent toxic pollutants, as~~
18 ~~identified in Subsection J of 20.6.4.900 NMAC, also apply to all tributaries of waters with a~~
19 ~~designated, existing or attainable aquatic life use.~~

20 ~~**H. Unclassified waters of the state:** Unclassified waters of the state are those~~
21 ~~surface waters of the state not identified in 20.6.4.101 through 20.6.4.899 NMAC. An~~
22 ~~unclassified surface water of the state is presumed to support the uses specified in Section~~
23 ~~101(a)(2) of the federal Clean Water Act. As such, it is subject to 20.6.4.98 NMAC if~~
24 ~~nonperennial or subject to 20.6.4.99 NMAC if perennial. The commission may include an~~
25 ~~ephemeral unclassified surface water of the state under 20.6.4.97 NMAC only if a use~~
26 ~~attainability analysis demonstrates pursuant to 20.6.4.15 NMAC that attainment of Section~~
27 ~~101(a)(2) uses is not feasible.~~

28 ~~**[I.]H.I. Exceptions:**~~ Numeric criteria for temperature, dissolved solids, dissolved
29 oxygen, sediment or turbidity adopted under the Water Quality Act do not apply when changes
30 in temperature, dissolved solids, dissolved oxygen, sediment or turbidity in a surface water of the
31 state are attributable to:

32 (1) natural causes (discharges from municipal separate storm sewers are not
33 covered by this exception.); or

34 (2) the reasonable operation of irrigation and flood control facilities that are
35 not subject to federal or state water pollution control permitting; major reconstruction of storage
36 dams or diversion dams except for emergency actions necessary to protect health and safety of
37 the public are not covered by this exception.

38
39 **20.6.4.12 COMPLIANCE WITH WATER QUALITY STANDARDS:** The following
40 provisions apply to determining compliance for enforcement purposes; they do not apply for
41 purposes of determining attainment of uses. The department has developed assessment protocols
42 for the purpose of determining attainment of uses that are available for review from the
43 department's surface water quality bureau.

44 **A.** Compliance with acute water quality criteria shall be determined from the
45 analytical results of a single grab sample. Acute criteria shall not be exceeded.

1 **B.** Compliance with chronic water quality criteria shall be determined from the
2 arithmetic mean of the analytical results of samples collected using applicable protocols.
3 Chronic criteria shall not be exceeded more than once every three years.

4 **C.** Compliance with water quality standards for total ammonia shall be determined
5 by performing the biomonitoring procedures set out in Subsections D and E of 20.6.4.14 NMAC,
6 or by attainment of applicable ammonia criteria set out in Subsections K, L and M of 20.6.4.900
7 NMAC.

8 **D.** Compliance with the human health-organism only criteria shall be determined
9 from the analytical results of representative grab samples, as defined in the water quality
10 management plan. Human health-organism only criteria shall not be exceeded.

11 **E.** The commission may establish a numeric water quality criterion at a
12 concentration that is below the ~~minimum quantification level~~ **lowest minimum level (ML) of the**
13 **analytical methods approved by EPA under 40 CFR part 136 for the measured pollutant or**
14 **pollutant parameter**. In such cases, the water quality standard is enforceable at the ~~minimum~~
15 ~~quantification level~~ **ML of the sufficiently sensitive method approved by EPA under 40 CFR**
16 **part 136**.

17 **F.** For compliance with hardness-dependent numeric criteria, dissolved hardness (as
18 mg CaCO₃/L) shall be determined from a sample taken at the same time that the sample for the
19 contaminant is taken.

20 **G. Compliance schedules:** ~~It shall be the policy of the commission to allow on a~~
21 ~~case-by-case basis~~ The commission may allow the inclusion of a schedule of compliance in a
22 NPDES permit issued to an existing facility on a case-by-case basis. Such schedule of
23 compliance will be for the purpose of providing a permittee with adequate time to make
24 treatment facility modifications necessary to comply with water quality based permit limitations
25 determined to be necessary to implement new or revised water quality standards or wasteload
26 allocation. Compliance schedules may be included in NPDES permits at the time of permit
27 renewal or modification and shall be written to require compliance at the earliest practicable
28 time. Compliance schedules shall also specify milestone dates so as to measure progress towards
29 final project completion (e.g., design completion, construction start, construction completion,
30 date of compliance).

31 **H.** It is a policy of the commission to allow a temporary standard approved and
32 adopted pursuant to Subsection ~~[F]~~**HG** of 20.6.4.10 NMAC to be included in the applicable
33 federal Clean Water Act permit as enforceable limits and conditions. The temporary standard
34 and any schedule of actions may be included at the earliest practicable time, and shall specify
35 milestone dates so as to measure progress towards meeting the original standard.

36
37 **20.6.4.13 GENERAL CRITERIA:** General criteria are established to sustain and protect
38 existing or attainable uses of surface waters of the state. These general criteria apply to all
39 surface waters of the state at all times, unless a specified criterion is provided elsewhere in this
40 part. Surface waters of the state shall be free of any water contaminant in such quantity and of
41 such duration as may with reasonable probability injure human health, animal or plant life or
42 property, or unreasonably interfere with the public welfare or the use of property.

43
44 * * *

45
46 **F. Toxic pollutants:**

1 (1) Except as provided in 20.6.4.16 NMAC, surface waters of the state shall
2 be free of toxic pollutants, ~~including but not limited to contaminants of emerging concern and~~
3 ~~those toxic pollutants listed in 20.6.2 NMAC~~, from other than natural causes in amounts,
4 concentrations, ~~or~~ **duration, or** combinations that affect the propagation of fish or that are toxic
5 to humans, livestock or other animals, fish or other aquatic organisms, wildlife using aquatic
6 environments for habitation or aquatic organisms for food, or that will or can reasonably be
7 expected to bioaccumulate in tissues of fish, shellfish and other aquatic organisms to levels that
8 will impair the health of aquatic organisms or wildlife or result in unacceptable tastes, odors or
9 health risks to human consumers of aquatic organisms.

10 (2) Pursuant to this section, the human health-organism only criteria shall be
11 as set out in 20.6.4.900 NMAC. When a human health-organism only criterion is not listed in
12 20.6.4.900 NMAC, the following provisions shall be applied in accordance with 20.6.4.11,
13 20.6.4.12 and 20.6.4.14 NMAC.

14 (a) The human health-organism only criterion shall be the
15 recommended human health criterion for “consumption of organisms only” published by the
16 U.S. environmental protection agency pursuant to Section 304(a) of the federal Clean Water Act.
17 In determining such criterion for a cancer-causing toxic pollutant, a cancer risk of 10^{-5} (one
18 cancer per 100,000 exposed persons) shall be used.

19 (b) When a numeric criterion for the protection of human health for
20 the consumption of organism only has not been published by the U.S. environmental protection
21 agency, a quantifiable criterion may be derived from data available in the U.S. environmental
22 protection agency's Integrated Risk Information System (IRIS) using the appropriate formula
23 specified in *Methodology For Deriving Ambient Water Quality Criteria For The Protection Of*
24 *Human Health (2000)*, EPA-822-B-00-004.

25 (3) Pursuant to this section, the chronic aquatic life criteria shall be as set out
26 in 20.6.4.900 NMAC. When a chronic aquatic life criterion is not listed in 20.6.4.900 NMAC,
27 the following provisions shall be applied in sequential order in accordance with 20.6.4.11,
28 20.6.4.12 and 20.6.4.14 NMAC.

29 (a) The chronic aquatic life criterion shall be the “freshwater criterion
30 continuous concentration” published by the U.S. environmental protection agency pursuant to
31 Section 304(a) of the federal Clean Water Act;

32 (b) If the U.S. environmental protection agency has not published a
33 chronic aquatic life criterion, a geometric mean LC-50 value shall be calculated for the particular
34 species, genus or group that is representative of the form of life to be preserved, using the results
35 of toxicological studies published in scientific journals.

36 (i) The chronic aquatic life criterion for a toxic pollutant that
37 does not bioaccumulate shall be ten percent of the calculated geometric mean LC-50 value; and

38 (ii) The chronic aquatic life criterion for a toxic pollutant that
39 does bioaccumulate shall be: the calculated geometric mean LC-50 adjusted by a
40 bioaccumulation factor for the particular species, genus or group representative of the form of
41 life to be preserved, but when such bioaccumulation factor has not been published, the criterion
42 shall be one percent of the calculated geometric mean LC-50 value.

43 (4) Pursuant to this section, the acute aquatic life criteria shall be as set out in
44 20.6.4.900 NMAC. When an acute aquatic life criterion is not listed in 20.6.4.900 NMAC, the
45 acute aquatic life criterion shall be the “freshwater criterion maximum concentration” published

1 by the U.S. environmental protection agency pursuant to Section 304(a) of the federal Clean
2 Water Act.

3 (5) Within 90 days of the issuance of a final NPDES permit or 401
4 certification containing a numeric criterion selected or calculated pursuant to ~~Paragraph (2),~~
5 ~~Paragraph (3) or Paragraph (4)~~ of Subsection F of this section, the department shall petition the
6 commission to adopt such criterion into these standards.

7
8 * * *

9
10 **20.6.4.14 SAMPLING AND ANALYSIS:**

11 **A. 40 CFR Part 136 approved methods shall be used to determine compliance with**
12 **these standards and in Section 401 certifications under the federal Clean Water Act. In all**
13 **other cases, sampling** ~~Sampling~~ and analytical techniques shall conform with methods described
14 in the following references unless otherwise specified by the commission pursuant to a petition
15 to amend these standards:

16 (1) “Guidelines Establishing Test Procedures For The Analysis Of Pollutants
17 Under The Clean Water Act,” 40 CFR Part 136 or any test procedure approved or accepted by
18 EPA using procedures provided in 40 CFR Parts 136.3(d), 136.4, and 136.5;

19 (2) *Standard Methods For The Examination Of Water And Wastewater*, latest
20 edition, American public health association;

21 (3) *Methods For Chemical Analysis Of Water And Waste*, and other methods
22 published by EPA office of research and development or office of water;

23 (4) *Techniques Of Water Resource Investigations Of The U.S. Geological*
24 *Survey*;

25 (5) *Annual Book Of ASTM Standards*: volumes 11.01 and 11.02, water (I)
26 and (II), latest edition, ASTM international;

27 (6) *Federal Register*, latest methods published for monitoring pursuant to
28 Resource Conservation and Recovery Act regulations;

29 (7) *National Handbook Of Recommended Methods For Water-Data*
30 *Acquisition*, latest edition, prepared cooperatively by agencies of the United States government
31 under the sponsorship of the U.S. geological survey; or

32 (8) *Federal Register*, latest methods published for monitoring pursuant to the
33 Safe Drinking Water Act regulations.

34 **B. Bacteriological Surveys:** The monthly geometric mean shall be used in
35 assessing attainment of criteria when a minimum of five samples is collected in a 30-day period.

36 **C. Sampling Procedures:**

37 (1) Streams: Stream monitoring stations below discharges shall be located a
38 sufficient distance downstream to ensure adequate vertical and lateral mixing.

39 (2) Lakes: Sampling stations in lakes shall be located at least 250 feet from a
40 discharge.

41 (3) Lakes: Except for the restriction specified in Paragraph (2) of this
42 subsection, lake sampling stations shall be located at any site where the attainment of a water
43 quality criterion is to be assessed. Water quality measurements taken at intervals in the entire
44 water column at a sampling station shall be averaged for the epilimnion, or in the absence of an
45 epilimnion, for the upper one-third of the water column of the lake to determine attainment of
46 criteria, except that attainment of criteria for toxic pollutants shall be assessed during periods of

1 complete vertical mixing, e.g., during spring or fall turnover, or by taking depth-integrated
2 composite samples of the water column.

3 **D.** Acute toxicity of effluent to aquatic life shall be determined using the procedures
4 specified in U.S. environmental protection agency “*Methods For Measuring The Acute Toxicity*
5 *Of Effluents And Receiving Waters To Freshwater And Marine Organisms*” (5th Ed., 2002, EPA
6 821-R-02-012), or latest edition thereof if adopted by EPA at 40 CFR Part 136, which is
7 incorporated herein by reference. Acute toxicities of substances shall be determined using at
8 least two species tested in whole effluent and a series of effluent dilutions. Acute toxicity due to
9 discharges shall not occur within the wastewater mixing zone in any surface water of the state
10 with an existing or designated aquatic life use.

11 **E.** Chronic toxicity of effluent or ambient surface waters of the state to aquatic life
12 shall be determined using the procedures specified in U.S. environmental protection agency
13 “*Short-Term Methods For Estimating The Chronic Toxicity Of Effluents And Receiving Waters*
14 *To Freshwater Organisms*” (4th Ed., 2002, EPA 821-R-02-013), or latest edition thereof if
15 adopted by EPA at 40 CFR Part 136, which is incorporated herein by reference. Chronic
16 toxicities of substances shall be determined using at least two species tested in ambient surface
17 water or whole effluent and a series of effluent dilutions. Chronic toxicity due to discharges
18 shall not occur at the critical low flow, or any flow greater than the critical low flow, in any
19 surface water of the state with an existing or designated aquatic life use more than once every
20 three years.

21 22 **20.6.4.15 USE ATTAINABILITY ANALYSIS:**

23 **A.** ~~Authority to remove a designated use. A use attainability analysis is a scientific~~
24 ~~study conducted for the purpose of assessing the factors affecting the attainment of a use.~~
25 ~~Whenever a use attainability analysis is conducted, it shall be subject to the requirements and~~
26 ~~limitations set forth in 40 CFR Part 131, Water Quality Standards; specifically, Subsections~~
27 ~~131.3(g), 131.10(g), 131.10(h) and 131.10(j) shall be applicable. In accordance with 40 CFR~~
28 ~~131.10(i), and 20.6.4.10 NMAC, the amendment of a designated use *to a different use that*~~
29 ~~*requires, based on a more stringent existing use water quality criteria,* does not require a use~~
30 ~~*attainability analysis. A use attainability analysis must be conducted when designating uses do*~~
31 ~~*not include uses specified in Section 101(a)(2) of the federal Clean Water Act or when*~~
32 ~~*designating sub-categories of these uses require less restrictive criteria than previously*~~
33 ~~*applicable. When removing designated uses that are not Section 101(a)(2) uses, a use*~~
34 ~~*attainability analysis is not required.*~~

35 (1) The commission may remove a designated use, that is not an existing use,
36 specified in Section 101(a)(2) of the federal Clean Water Act or adopt subcategories of a use in
37 Section 101(a)(2) of the federal Clean Water Act use requiring less stringent criteria only if a use
38 attainability analysis demonstrates that attaining the use is not feasible because of a factor listed
39 in 40 CFR 131.10(g). Uses in Section 101(a)(2) of the federal Clean Water Act uses, which refer
40 to the protection and propagation of fish, shellfish and wildlife and recreation in and on the
41 water, are also specified in Subsection B of 20.6.4.6 NMAC.

42 (2) A designated use cannot be removed if it is an existing use unless a use
43 requiring more stringent criteria is designated.

44 **B.** ~~The mechanism to remove a designated use~~ ***Conducting a use attainability***
45 ***analysis.*** A use attainability analysis shall assess the physical, chemical, biological, economic or

1 other factors affecting the attainment of a use. The analysis shall rely on scientifically defensible
2 methods such as the methods described in the following documents:

3 (1) *Technical Support Manual: Waterbody Surveys And Assessments For*
4 *Conducting Use Attainability Analyses*, volume I (November 1983) and volume III (November
5 1984) or latest editions, United States environmental protection agency, office of water,
6 regulations and standards, Washington, D.C., for the evaluation of aquatic life or wildlife uses;

7 (2) the department's *Hydrology Protocol*, latest edition, approved by the
8 commission, for identifying ephemeral, ~~and~~ intermittent, and perennial waters; or

9 (3) *Interim Economic Guidance For Water Quality Standards - Workbook*,
10 March 1995, United States environmental protection agency, office of water, Washington, D.C.
11 for evaluating economic impacts.

12 **C. Determining the highest attainable use.** If the use attainability analysis
13 determines that the designated use is not attainable based on one of the factors in 40 CFR
14 131.10(g), the use attainability analysis shall then determine the highest attainable use, *as*
15 *defined in 40 CFR 131.3(m)*, for the protection and propagation of fish, shellfish and wildlife
16 and recreation in and on the water based on methods described in Subsection B of this section.

17 **D. Process to amend a designated use through a use attainability analysis.**

18 (1) The process for developing a use attainability analysis and petitioning the
19 commission for removing a designated use and establishing the highest attainable use shall be
20 done in accordance with the State's ~~current~~ Water Quality Management Plan/Continuing
21 Planning Process.

22 ~~C.~~ (2) If the findings of a use attainability analysis, conducted by the
23 department, based on in accordance with the department's *Hydrology Protocol* (latest edition) ;
24 approved by the commission, demonstrates to the satisfaction of the department that federal
25 Clean Water Act Section 101(a)(2) uses, that are not existing uses, are not feasible in an
26 ephemeral water body due to the factor in 40 CFR 131.10(g)(2), the department ~~may~~ shall
27 consider proceeding with the expedited use attainability analysis process in accordance with the
28 State's ~~current~~ *Water Quality Management Plan/Continuing Planning Process*. The following
29 elements must be met for the expedited use attainability analysis process to be authorized and
30 implemented:

31 (a) The department is the primary investigator of the use attainability
32 analysis;

33 (b) The use attainability analysis determined, through the application
34 of the *Hydrology Protocol*, that the water being investigated is ephemeral and has no effluent
35 discharges of sufficient volume that could compensate for the low-flow;

36 (c) The use attainability analysis determined that the existing uses of
37 the water being investigated ~~are not~~ *do not require numeric criteria* more stringent than those in
38 20.6.4.97 NMAC;

39 (d) The designated uses in 20.6.4.97 NMAC have been determined to
40 be the highest attainable uses for the water being analyzed;

41 (e) The department shall posted the use attainability analysis on its
42 water quality standards website and ~~notify~~ notified its interested parties list of a 30-day public
43 comment period;

44 (f) ~~After reviewing~~ The department reviewed and responded to any
45 comments received during the 30-day public comment period; and

1 (g) The department ~~may proceed by submitting~~ submitted the use
2 attainability analysis and response to comments to region 6 EPA for technical approval. If EPA
3 approves the revision under section 303(c) of the Clean Water Act technical approval is granted,
4 the water shall be subject to 20.6.4.97 NMAC for federal Clean Water Act purposes. The use
5 attainability analysis, the technical support document,~~approval,~~ and the applicability of
6 20.6.4.97 NMAC to the water shall be posted on the department's water quality standards
7 website. The department shall periodically petition the commission to list ephemeral waters
8 under Subsection C of 20.6.4.97 NMAC and to incorporate changes to classified segments as
9 appropriate.

10 **D. E. Use attainability analysis conducted by an entity other than the department.**

11 Any person may submit notice to the department stating their intent to conduct a use attainability
12 analysis.

13 (1) The proponent shall provide such notice along with [develop] a work plan
14 supporting [to conduct] the development of a use attainability analysis [- and shall submit the
15 work plan] to the department and region 6 EPA for review and comment. *The department will*
16 *review and approve work plans, or provide written basis for non-approval, within thirty days of*
17 *submittal or, in the case of a previously non-approved work plan, re-submittal by a proponent.*

18 (2) Upon approval of the work plan by the department, the proponent shall
19 conduct the use attainability analysis and implement public noticing in accordance with the
20 approved work plan.

21 (3) Work plan elements. The work plan shall identify, at a minimum:

22 (a) the waterbody of concern and the reasoning for conducting a use
23 attainability analysis;

24 (b) the scope source and validity of data currently available and the
25 scope of data to be gathered to be used to demonstrate whether the current designated use is not
26 attainable;;

27 (c) the factors in 40 CFR 131.10(g) affecting use the attainment of that
28 use;

29 (d) that will be analyzed a description of the data being proposed to be
30 used to demonstrate the highest attainable use;

31 (e) and the provisions for consultation with appropriate state and
32 federal agencies;

33 (f) a description of how stakeholders and potentially affected tribes
34 will be identified and engaged;

35 (g) a description of the public notice mechanisms to be employed; and
36 consultation with appropriate state and federal agencies

37 (h) the expected timelines outlining the administrative actions to be
38 taken for a rulemaking petition, pending the outcome of the use attainability analysis.

39 (4) ~~Upon approval of the work plan by the department, the proponent shall~~
40 ~~conduct the use attainability analysis in accordance with the approved work plan. The cost of~~
41 ~~such analysis shall be the responsibility of the proponent. Upon completion of the use~~
42 ~~attainability analysis, the proponent shall submit the data, findings and conclusions to the~~
43 ~~department, and provide public notice of the use attainability analysis in accordance with the~~
44 approved work plan.

45 (5) Pending the conclusions of the use attainability analysis and as described
46 in the approved work plan, [the department or the proponent may petition the commission to

1 modify the designated use if the conclusions of the analysis support such action. The cost of such
2 use attainability analysis shall be the responsibility of the proponent. Subsequent costs associated
3 with the administrative rulemaking process shall be the responsibility of the petitioner.

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5 * * *

6
7 **20.6.4.126 RIO GRANDE BASIN:** - Perennial *waters within lands managed by the U.S.*
8 *Department of Energy (DOE) within Los Alamos National Laboratory (LANL), including but*
9 *not limited to:* ~~portions of Cañon de Valle from Los Alamos national laboratory (LANL)~~ stream
10 gage E256 upstream to Burning Ground Spring, Sandia canyon from Sigma canyon upstream to
11 LANL NPDES outfall 001, Pajarito canyon from *0.5 miles below* Arroyo de La Delfe upstream
12 *to Homestead Spring, Arroyo de La Delfe from Pajarito canyon to Kieling Spring,* ~~into~~
13 Starmers Gulch and Starmers Spring and Water canyon from Area-A canyon upstream to State
14 Route 501.

15 **A. Designated uses:** coldwater aquatic life, livestock watering, wildlife habitat and
16 secondary contact.

17 **B. Criteria:** the use-specific numeric criteria set forth in 20.6.4.900 NMAC are
18 applicable to the designated uses.

19
20 **20.6.4.128 RIO GRANDE BASIN:** - Ephemeral and intermittent portions of ~~water courses~~
21 waters within lands managed by U.S. ~~Department of Energy (DOE)~~ within LANL, including
22 but not limited to: Mortandad canyon, Cañada del Buey, Ancho canyon, Chaquehui canyon,
23 Indio canyon, Fence canyon, Potrillo canyon and portions of Cañon de Valle, Los Alamos
24 canyon, Sandia canyon, Pajarito canyon and Water canyon not ~~specifically~~ identified in
25 20.6.4.126 NMAC or 20.6.4.140 NMAC. (Surface waters within lands scheduled for transfer
26 from DOE to tribal, state or local authorities are specifically excluded.)

27 **A. Designated uses:** livestock watering, wildlife habitat, limited aquatic life and
28 secondary contact.

29 **B. Criteria:** the use-specific criteria in 20.6.4.900 NMAC are applicable to the
30 designated uses, except that the following segment-specific criteria apply: the acute total
31 ammonia criteria set forth in Subsection ~~K L~~ of 20.6.4.900 NMAC (~~salmonids~~ Oncorhynchus
32 spp. absent).

33
34 * * *

35
36 **20.6.4.140 RIO GRANDE BASIN:** Intermittent portions of Effluent canyon from
37 Mortandad canyon confluence upstream to its headwaters, S-Site canyon from alluvial
38 groundwater well MSC 16-06293 upstream to Martin Spring, and ~~Two Mile Twomile~~ canyon
39 from ~~its confluence with Pajarito canyon to~~ LANL stream gage E244 upstream to its confluence
40 with upper ~~Two Mile Twomile~~ canyon. (Surface waters within lands scheduled for transfer from
41 DOE to tribal, state or local authorities are specifically excluded.)

42 **A. Designated uses:** livestock watering, wildlife habitat, marginal warmwater
43 aquatic life, and secondary contact.

44 **B. Criteria:** the use-specific numeric criteria set forth in 20.6.4.900 NMAC are
45 applicable to the designated uses.

46

1 **20.6.4.900 CRITERIA APPLICABLE TO EXISTING, DESIGNATED OR**
 2 **ATTAINABLE USES UNLESS OTHERWISE SPECIFIED IN 20.6.4.97 THROUGH**
 3 **20.6.4.899 NMAC:**

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6
 7 **I.** Hardness-dependent acute and chronic aquatic life criteria for metals are
 8 calculated using the following equations. The criteria are expressed as a function of dissolved
 9 hardness (as mg CaCO₃/L). With the exception of aluminum, the equations are valid only for
 10 dissolved hardness concentrations of 0-400 mg/L. For dissolved hardness concentrations above
 11 400 mg/L, the criteria for 400 mg/L apply. For aluminum the equations are valid only for
 12 dissolved hardness concentrations of 0-220 mg/L. For dissolved hardness concentrations above
 13 220 mg/L, the aluminum criteria for 220 mg/L apply.

14 **(1) Acute aquatic life criteria for metals:** The equation to calculate acute
 15 criteria in µg/L is $\exp(m_A[\ln(\text{hardness})] + b_A)(CF)$. Except for aluminum, the criteria are based
 16 on analysis of dissolved metal. For aluminum, the criteria are based on analysis of total
 17 recoverable aluminum in a sample that has a pH between 6.5 and 9.0 and is filtered to minimize
 18 mineral phases as specified by the department. ~~The EPA has disapproved the hardness-based~~
 19 ~~equation for total recoverable aluminum in waters where the pH is less than 6.5 in the receiving~~
 20 ~~stream for federal purposes of the Clean Water Act.~~ The equation parameters are as follows:

Metal	m _A	b _A	Conversion factor (CF)
Aluminum (Al)	1.3695	1.8308	
Cadmium (Cd)	0.89680 <u>0.9789</u>	-3.5699 <u>3.866</u>	1.136672-[(ln hardness)(0.041838)]
Chromium (Cr) III	0.8190	3.7256	0.316
Copper (Cu)	0.9422	-1.700	0.960
Lead (Pb)	1.273	-1.460	1.46203-[(ln hardness)(0.145712)]
Manganese (Mn)	0.3331	6.4676	
Nickel (Ni)	0.8460	2.255	0.998
Silver (Ag)	1.72	-6.59	0.85
Zinc (Zn)	0.90940 <u>0.8473</u>	0.90950 <u>0.884</u>	0.978

21 **(2) Chronic aquatic life criteria for metals:** The equation to calculate
 22 chronic criteria in µg/L is $\exp(m_C[\ln(\text{hardness})] + b_C)(CF)$. Except for aluminum, the criteria
 23 are based on analysis of dissolved metal. For aluminum, the criteria are based on analysis of total
 24 recoverable aluminum in a sample that has a pH between 6.5 and 9.0 and is filtered to minimize
 25 mineral phases as specified by the department. ~~The EPA has disapproved the hardness-based~~
 26 ~~equation for total recoverable aluminum in waters where the pH is less than 6.5 in the receiving~~
 27 ~~stream for federal purposes of the Clean Water Act.~~ The equation parameters are as follows:

Metal	m _C	b _C	Conversion factor (CF)
Aluminum (Al)	1.3695	0.9161	
Cadmium (Cd)	0.76470 <u>0.7977</u>	-4.2180 <u>3.909</u>	1.101672-[(ln hardness)(0.041838)]
Chromium (Cr) III	0.8190	0.6848	0.860
Copper (Cu)	0.8545	-1.702	0.960

Lead (Pb)	1.273	-4.705	1.46203-[(ln hardness)(0.145712)]
Manganese (Mn)	0.3331	5.8743	
Nickel (Ni)	0.8460	0.0584	0.997
Zinc (Zn)	<u>0.90940.8473</u>	<u>0.62350.884</u>	0.986

* * *

J. Use-specific numeric criteria.

(1) **Table of numeric criteria:** The following table sets forth the numeric criteria applicable to existing, designated and attainable uses. For metals, criteria represent the total sample fraction unless otherwise specified in the table. Additional criteria that are not compatible with this table are found in Subsections A through I, K and L of this section.

Pollutant	CAS Number	DWS	Irr	LW	WH	Aquatic Life			Type
						Acute	Chronic	HH-OO	
Aluminum, dissolved	7429-90-5		5,000			<u>750 i</u>	<u>87 i</u>		

* * *

(2) Notes applicable to the table of numeric criteria in Paragraph (1) of this subsection.

(a) Where the letter “a” is indicated in a cell, the criterion is hardness-based and can be referenced in Subsection I of 20.6.4.900 NMAC.

(b) Where the letter “b” is indicated in a cell, the criterion can be referenced in Subsection C of 20.6.4.900 NMAC.

(c) Criteria are in µg/L unless otherwise indicated.

(d) Abbreviations are as follows: CAS - chemical abstracts service (see definition for “CAS number” in 20.6.4.7 NMAC); DWS - domestic water supply; Irr/Irr storage- irrigation ~~or~~ and irrigation storage; LW - livestock watering; WH - wildlife habitat; HH-OO - human health-organism only; C – criteria based on cancer-causing endpoint; P – persistent toxic pollutant.

(e) The criteria are based on analysis of an unfiltered sample unless otherwise indicated. The acute and chronic aquatic life criteria for aluminum are based on analysis of total recoverable aluminum in a sample that is filtered to minimize mineral phases as specified by the department.

(f) The criteria listed under human health-organism only (HH-OO) are intended to protect human health when aquatic organisms are consumed from waters containing pollutants. These criteria do not protect the aquatic life itself; rather, they protect the health of humans who ingest fish or other aquatic organisms.

(g) The dioxin criteria apply to the sum of the dioxin toxicity equivalents expressed as 2,3,7,8-TCDD dioxin.

(h) The criteria for polychlorinated biphenyls (PCBs) apply to the sum of all congeners, to the sum of all homologs or to the sum of all aroclors.

~~(i) The acute and chronic aquatic life criteria for dissolved aluminum only apply when the concurrent pH is less than 6.6 or greater than 9.0 S.U. If the concurrent pH is~~

1 ~~between 6.6 and 9.0 S.U. then the hardness dependent total recoverable aluminum criteria in~~
2 ~~Paragraphs (1) and (2) of Subsection I of 20.6.4.900 NMAC apply.~~

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* * *

Exhibit 2

**STATE OF NEW MEXICO
BEFORE THE WATER QUALITY CONTROL COMMISSION**

IN THE MATTER OF:

**THE PETITION TO AMEND
THE STANDARDS FOR INTERSTATE
AND INTRASTATE SURFACE WATERS,
20.6.4 NMAC**

WQCC No. 20-51(R)

**DIRECT TESTIMONY OF RICHARD D. MEYERHOFF
ON BEHALF OF TRIAD NATIONAL SECURITY, LLC
AND THE U.S. DEPARTMENT OF ENERGY, NATIONAL NUCLEAR SECURITY
ADMINISTRATION**

May 3, 2021

**Direct Testimony of Richard D. Meyerhoff
Case No. WQCC 20-51(R)**

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. Richard D. Meyerhoff. My business address is 4601 DTC Boulevard, Suite 900, Denver, Colorado 80237.

Q. ON WHOSE BEHALF ARE YOU SUBMITTING DIRECT TESTIMONY?

A. I am submitting this direct testimony on behalf of Triad National Security, LLC, (“Triad”) and the U.S. Department of Energy, National Nuclear Security Administration (“DOE”) for the Los Alamos National Laboratory (collectively “LANL”).¹

Q. BY WHOM ARE YOU EMPLOYED AND WHAT IS YOUR POSITION?

A. I am currently employed by GEI Consultants, Inc. (“GEI”) as a Senior Water Quality Specialist in Denver, Colorado and have held that position since August 1, 2017.

Q. PLEASE DESCRIBE YOUR PAST EMPLOYMENT HISTORY.

A. From 1991 to 1997, I was employed by the Arizona Department of Environmental Quality and served as the Manager for the group tasked with overseeing Arizona’s Triennial Review of water quality standards, development of Arizona’s bioassessment program, preparation of the biennial 305(b) Assessment Report and 303(d) list of impaired waters and conducting special water quality investigations, including priority pollutant studies. From 1997 to 2000, I was employed as an environmental consultant at EcoPlan Associates in Mesa, AZ. I provided regulatory and technical water quality support to a variety of private and public sector clients, including several Arizona Indian Tribes. From 2000 to 2017, I was employed by CDM Smith (previously known as “Camp Dresser & McKee”

¹ DOE and predecessor and current operators of LANL are referred to in my testimony collectively as “LANL” to avoid unnecessary entity name complications.

**Direct Testimony of Richard D. Meyerhoff
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1 and “CDM”) in Phoenix, Arizona and Denver, Colorado. In a Vice President role by 2017,
2 my work varied from providing federal and state water quality regulatory and technical
3 expertise to public and private sector clients to conducting business development,
4 managing projects and serving as a personnel manager for water resources staff.

5 **Q. WHAT ARE YOUR RESPONSIBILITIES AT GEI AS AN ENVIRONMENTAL**
6 **PROFESSIONAL?**

7 A. As a Senior Water Quality Specialist and Associate, I provide regulatory and technical
8 expertise to public and private sector clients in the areas of water quality standards
9 development and implementation, total maximum daily load (“TMDL”) compliance,
10 stormwater permit implementation and compliance and surface water and groundwater
11 quality management.

12 **Q. PLEASE DESCRIBE YOUR EXPERIENCE WITH WATER QUALITY**
13 **STANDARDS, CLASSIFICATION OF STREAM SEGMENTS, AND WATER**
14 **PERMITTING.**

15 A. From 1993 to 1997, while with the Arizona Department of Environmental Quality, I was
16 responsible for the Arizona water quality standards program. During that time I oversaw
17 revisions to the Arizona water quality standards made during the Triennial Review
18 completed in 1996. My responsibilities included developing proposed and final
19 amendments to the water quality standards through informal public meetings and formal
20 public hearings, developing the basis for the proposed changes, and working with other
21 state offices and the U.S. Environmental Protection Agency (“EPA”) to obtain approval of
22 the water quality standards amendments. Since 1997, I have worked with various firms as
23 a regulatory and technical water quality consultant to public and private sector clients. My

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1 experience with water quality standards, classification of stream segments and water
2 permitting includes:

- 3 • Developing water quality standards, including waterbody classifications, designated
4 uses and water quality criteria for the Gila River Indian Community (1997-2000).
- 5 • Developing water quality standards, including waterbody classifications, designated
6 uses and water quality criteria for the Salt River Pima-Maricopa Indian Community
7 (approximately 1998-1999).
- 8 • Providing expert testimony on behalf of DOE and the University of California
9 (predecessor operator of LANL) in the 1998 and 2003 New Mexico Triennial Reviews.
- 10 • Developing the technical basis for proposed site-specific dissolved oxygen water
11 quality standards to protect aquatic life in intermittent waters on Denver International
12 Airport property (2000-2003). Water quality standards were subsequently approved
13 by the Colorado Water Quality Control Commission and the EPA.
- 14 • Serving as Technical Program Manager for the Arid West Water Quality Research
15 Project (2001-2007) that evaluated the applicability of uses and criteria to effluent-
16 dominated, effluent-dependent, and ephemeral waters.
- 17 • Completing a Use Attainability Analysis (“UAA”) on effluent-dominated Piute Ponds
18 and upstream ephemeral waters based on a net ecological benefit analysis prepared on
19 behalf of the Los Angeles County Sanitation District (2002-2003). Proposed water
20 quality standards revisions based on the findings of the UAA were subsequently
21 approved.
- 22 • Serving as the Technical Director (2004 to 2015) for the stakeholder-led regulatory
23 process to revise the recreational uses and pathogen criteria applicable to inland

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1 freshwaters in the Santa Ana River watershed in southern California. That Project
2 included development of recreational UAAs to remove primary contact and/or
3 secondary contact uses on modified, engineered channels. The outcome was approved
4 revisions to the Water Quality Control Plan for the Santa Ana River Basin (water
5 quality standards) based, in part, on approved UAAs.

6 • Assisting numerous clients over many years with the implementation of Municipal
7 Separate Storm Sewer System (“MS4”) permit requirements in general and in particular
8 TMDL requirements contained within the MS4 Permits for these entities: City of Los
9 Angeles (Principle Permittee for Phase I Los Angeles County MS4 Permit); Riverside
10 County Flood Control & Water Conservation District (Principle Permittee for Phase I
11 Riverside County MS4 Permit); San Bernardino County Flood Control District
12 (Principle Permittee for Phase I San Bernardino County MS4 Permit); University of
13 California Riverside (Phase II MS4 Permittee); Cities of Pomona and Claremont in
14 southern California (Co-Permittees in Los Angeles County Phase I MS4 Permit); and
15 City of Boulder, Colorado (Phase 2 MS4 Permit).

16 • Serving as the Technical Program Manager for the Central Valley Salinity Alternatives
17 for Long-term Sustainability (“CV-SALTS”) stakeholder-led initiative that led to the
18 establishment of the recently adopted Salt and Nitrate Control Program for the Central
19 Valley Region of California (2012-present). That effort included: (a) developing
20 regulatory analyses regarding salinity levels and protection of municipal and domestic
21 supply (“MUN”), agricultural supply (“AGR”), industrial supply and aquatic life uses;
22 and (b) supporting preparation of UAA-like analysis that successfully justified the

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1 removal of MUN and AGR uses from a portion of the groundwater underlying the
2 Tulare Lake Basin.

3 **Q. PLEASE SUMMARIZE YOUR EDUCATIONAL EXPERIENCE.**

4 A. I received a Bachelor of Science Degree in Biology from Baylor University in 1981 and
5 earned a Master of Science Degree in Biology, also from Baylor University in 1984. I
6 earned a Ph.D. in Aquatic Ecology from Oregon State University in 1991. A copy of my
7 resume is attached to LANL's Notice of Intent to Present Technical Testimony as **LANL**
8 **Exhibit 9.**

9 **Q. HAVE YOU PREVIOUSLY TESTIFIED IN STATE OR FEDERAL**
10 **REGULATORY PROCEEDINGS ON SURFACE WATER QUALITY-RELATED**
11 **ISSUES?**

12 A. Yes, I have previously testified in the following formal state proceedings:

- 13 • I testified before the New Mexico Water Quality Control Commission ("WQCC")
14 during the 1998 Triennial Review on behalf of LANL, presenting direct and rebuttal
15 testimony on matters relating to the subcategorization of aquatic life designated uses
16 and development of numeric water quality criteria for selected pollutants to support
17 protection of those uses.
- 18 • I testified before the WQCC during the 2003 Triennial Review on behalf of LANL,
19 presenting direct and rebuttal testimony, primarily regarding determining compliance
20 with acute and chronic water quality standards.
- 21 • In addition, to the above formal regulatory proceedings, from 2013 to 2016, I
22 participated in briefings to the California Central Valley Regional Water Quality
23 Control Board ("Regional Board") and California State Water Resources Control

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1 Board on behalf of Regional Board staff and CV-SALTS stakeholders (including
2 agriculture, dairy, wastewater facilities, industry and other dischargers) regarding
3 technical findings relevant to the development of the Central Valley Salt and Nitrate
4 Control Program (adopted as regulations in the Water Quality Control Plans for the
5 Sacramento and San Joaquin River Basins and Tulare Lake Basin in 2018). In addition
6 to making presentations to the Regional Board, I assisted Regional Board staff with the
7 development of materials to support their presentations during formal regulatory
8 proceedings.

9 **II. PURPOSE OF TESTIMONY**

10 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

11 A. The purpose of my testimony is to: (a) review the history of the adoption of classified
12 waters and designated uses in 20.6.4.126 NMAC (“Section 126”) and 20.6.4.128 NMAC
13 (“Section 128”);² (b) review current proposals to reclassify waters in Section 126 and
14 Section 128 within the context of the reviewed history; (c) review current proposals to
15 reclassify waters in Section 128 and create a new 20.6.4.140 NMAC (“Section 140”)
16 classification within the context of the reviewed history; and (d) discuss the process to
17 evaluate existing uses in classified waters.

18 **III. LANL’S EVALUATION OF AND PROPOSED CHANGES**
19 **TO NMED’S PROPOSED AMENDMENTS**

20 **Q. PLEASE IDENTIFY THE AMENDMENTS PROPOSED BY NMED THAT YOU**
21 **ARE ADDRESSING IN THIS TESTIMONY.**

² In the 2003 Triennial Review proceedings the new classifications were referred to as “Segment 126” and “Segment 128.” Currently, they are more commonly referred to as Section 126 and Section 128. To avoid confusion, I refer to them as Sections throughout my testimony.

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1 A. My testimony will focus on the following sections of 20.6.4 NMAC:

- 2 • 20.6.4.126 NMAC – Classified portions of waters on LANL property that are perennial.
- 3 • 20.6.4.128 NMAC – Classified portions of waters on LANL property that are
- 4 ephemeral or intermittent.
- 5 • 20.6.4.140 NMAC – New section proposed by NMED in its Original Petition (dated
- 6 August 19, 2020) and Amended Petition (dated March 12, 2021) to amend the water
- 7 quality standards.

8 Related to my testimony on the above sections of 20.6.4 NMAC, I will provide testimony

9 on the process to evaluate existing uses and reclassify a waterbody from Section 128 to

10 Section 126 or Section 140.

11 **Q. HAVE YOU REVIEWED NMED’S STATEMENT OF REASONS FOR THE NMED**

12 **PROPOSED AMENDMENTS, FILED AS ATTACHMENT 3 TO NMED’S**

13 **ORIGINAL PETITION?**

14 A. Yes, I have reviewed NMED’s Statement of Reasons for the NMED proposed

15 amendments.

16 **Q. HAVE YOU REVIEWED LANL’S JANUARY 6, 2021 COMMENTS TO THESE**

17 **PROPOSED AMENDMENTS?**

18 A. Yes, I have reviewed LANL’s “Comments on the Public Comment Draft of NMED’s

19 Proposed Amendments to Standards for Interstate and Intrastate Surface Waters, 20.6.4

20 NMAC,” dated January 6, 2021 (“LANL’s Original Petition Comments”), commenting on

21 NMED’s Original Petition proposed amendments.

22 **Q. HAVE YOU ALSO REVIEWED NMED’S REVISIONS TO THESE PROPOSED**

23 **AMENDMENTS SET FORTH IN NMED’S AMENDED PETITION?**

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1 A. Yes, I have reviewed NMED’s revisions to the proposed amendments as set forth in
2 NMED’s Amended Petition.

3 **1. HISTORICAL CONTEXT FOR THE DEVELOPMENT OF SECTION 126 AND**
4 **SECTION 128 WATERS**

5 **Q. PLEASE DESCRIBE HOW SECTIONS 20.6.4.126 NMAC and 20.6.4.128 NMAC**
6 **CAME TO BE ESTABLISHED.**

7 A. Waters within Section 126 and Section 128 became classified waters during the 2003
8 Triennial Review, resulting in all waters within the lands managed by DOE within LANL
9 being classified. The new regulations became effective as state law on May 23, 2005. The
10 following testimony summarizes the process and decisions that resulted in the
11 establishment of these classified water segments.

12 **Q. WHAT WAS THE PROCESS USED TO CLASSIFY WATERS INTO SECTIONS**
13 **126 AND 128?**

14 A. The federal Clean Water Act (“CWA”), 33 U.S.C. § 1313(c)(1), and state regulations,
15 20.6.4.10(A) NMAC, require the State of New Mexico to, at least once every three years,
16 hold public hearings for the purpose of reviewing applicable water quality standards and
17 proposing, as appropriate, necessary revisions to water quality standards. This process is
18 generally known as the Triennial Review. The Triennial Review that began in 2003 was
19 the process that resulted in the establishment of Sections 126 and 128. NMED initiated the
20 2003 Triennial Review when it filed its petition to amend the water quality standards
21 (20.6.4 NMAC) on August 15, 2003. Following the submittal of proposals by other parties,
22 NMED filed a revised petition, dated October 1, 2003. The WQCC held public hearings
23 from February 24, 2004 until March 4, 2004. Based on submitted data and arguments

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1 presented orally or in writing, the WQCC deliberated on the proposed revisions to 20.6.4
2 NMAC during its November 2004, December 2004 and January 2005 meetings. As stated
3 in the Hearing Officer’s Report, “unless otherwise noted, the Commission approved these
4 changes based on credible scientific data.” See **LANL Exhibit 16**, Statement of Reasons
5 for Amendment of Standards (“2005 Statement of Reasons”) (May 13, 2005) at 4. The
6 amended water quality standards were certified by the Assistant Attorney General on July
7 1, 2005. See **LANL Exhibit 17**, 2006 EPA Triennial Review Letter to NMED (Dec. 29,
8 2006).

9 The revised water quality standards were submitted by New Mexico to the EPA for
10 review and approval as required under federal regulations at 40 CFR 131.20(c). The EPA
11 received the documents on July 7, 2005. *Id.* In its December 29, 2006 letter to NMED,
12 the EPA took no action on the adoption of Sections 126 and 128 due to a lack of information
13 regarding the basis for use designations. *Id.* NMED subsequently provided the necessary
14 information through submittal of a UAA that addressed the applicability of a secondary
15 contact use in Sections 126 and 128 and a limited aquatic life use in Section 128. See
16 **LANL Exhibit 18**, NMED UAA (Aug. 2007). Following receipt of the UAA, EPA
17 approved the classification of all surface waters on LANL property into Sections 126 and
18 128. See **LANL Exhibit 19**, 2007 EPA Letter (Aug. 31, 2007).

19 **Q. WHICH WATERS ON LANL PROPERTY WERE PUT INTO SECTIONS 126 AND**
20 **128, WHAT WERE THE ASSIGNED DESIGNATED USES, AND WHAT WAS**
21 **THE BASIS FOR THESE DECISIONS?**

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1 A. Through the 2003 Triennial Review process, NMED and LANL filed petitions and
2 presented testimony that led to the adoption of Sections 126 and 128 with approved
3 designated uses:

- 4 • NMED’s August 15, 2003 petition to amend the water quality standards proposed
5 adoption of a new Section 20.6.4.121a that would classify perennial portions of selected
6 waters with the following designated uses: coldwater aquatic life, irrigation, livestock
7 watering, wildlife habitat, secondary contact and primary contact. *See LANL Exhibit*
8 **20**, Excerpt from 2003 NMED Petition at 42 (Aug. 15, 2003). It proposed:

9 20.6.4.121a. RIO GRANDE BASIN - Perennial portions of Los Alamos
10 Canyon below Los Alamos Reservoir and Perennial Portions of Cañon de
11 Valle, Sandia and Pajarito Canyons.
12

- 13 • NMED’s petition stated that the basis for its proposal was, “New segment to classify
14 waters based upon study by Fish and Wildlife Service,” *id.* at 43, which was a
15 reference to: “A Water Quality Assessment of Four Intermittent Streams in Los
16 Alamos County, New Mexico,” a report prepared by the United States Fish and
17 Wildlife Service in 2002 on behalf of DOE, NMED, and LANL (“FWS Report”).

- 18 • In response to NMED’s petition, LANL submitted its proposed amendments and
19 statement of basis that included an alternative proposal for new Section 121a. LANL
20 proposed a more precise definition of the perennial portions of four waters on LANL
21 property. The LANL proposal also included different designated uses: limited aquatic
22 life, wildlife habitat and secondary contact. *See LANL Exhibit 21*, Excerpt from 2003
23 LANL Petition at 7 (Sept. 5, 2003). It proposed:

24 20.6.4.121a RIO GRANDE BASIN - Perennial portions of Cañon de Valle
25 from Los Alamos National Laboratory (LANL) stream gage E256 upstream to
26 Burning Ground Spring, Sandia Canyon from Sigma Canyon upstream to

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1 LANL NPDES Outfall 001, Pajarito Canyon from Arroyo de La Delfe upstream
2 into Starmers Gulch and Starmers Spring, and Water Canyon from Area-A
3 Canyon upstream to State Route 501.
4

- 5 • The basis for LANL’s Section 121a proposal was also the FWS Report, and LANL
6 stream gauge data and observations regarding livestock use on LANL property. *Id.*
7 at 7.
- 8 • LANL also proposed amending 20.6.4 NMAC to classify non-perennial waters located
9 within LANL property in a new Section 121c (*id.* at 9):

10 20.6.4.121c. RIO GRANDE BASIN - Ephemeral and intermittent portions of
11 watercourses within lands managed by US Department of Energy (DOE) within
12 Los Alamos National Laboratory, including but not limited to, Mortandad
13 Canyon, Cañada del Buey, Ancho Canyon, Chaquehui Canyon, Indio Canyon,
14 Fence Canyon, Potrillo Canyon, and portions of Cañon de Valle, Los Alamos
15 Canyon, Sandia Canyon, Pajarito Canyon, and Water Canyon not specifically
16 identified in 20.6.4.121a. (Surface waters within lands scheduled for transfer
17 from DOE to tribal, state and/or local authorities are specifically excluded.)
18

- 19 • LANL’s Section 121c proposal would include all waters on LANL property not
20 included in Section 121a; these waters would have designated uses of limited aquatic
21 life, wildlife habitat and secondary contact. *Id.* at 9. The basis for LANL’s proposed
22 Section 121c stated: “This subsection is intended to clarify applicable standards to
23 ephemeral and intermittent waters within Los Alamos National Laboratory.” *Id.*
- 24 • NMED’s October 1, 2003 revised petition to amend 20.6.4 NMAC modified Section
25 121a to align with LANL’s proposed description of classified Section 121a and
26 removed irrigation and primary contact uses. **LANL Exhibit 22**, Excerpt from 2003
27 NMED Revised Petition at 43 (Oct. 1, 2003). It proposed:

28 20.6.4.121a - RIO GRANDE BASIN [Perennial portions of Los Alamos
29 Canyon below Los Alamos Reservoir and] Perennial Portions of Cañon de
30 Valle from Los Alamos National Laboratory (LANL) stream gage E256
31 upstream to Burning Ground spring, Sandia canyon from Sigma canyon

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1 upstream to LANL NPDES outfall 001, Pajarito canyon from Arroyo de La
2 Delfe upstream into Starmers Gulch and Starmers spring, and Water canyon
3 from Area A canyon upstream to State Route 501.
4

- 5 • NMED’s revised petition to amend 20.6.4 NMAC incorporated LANL’s proposed
6 Section 121c, except NMED added livestock watering as a proposed designated use
7 (*id.* at 44):

8 20.6.4.121c RIO GRANDE BASIN - Ephemeral and intermittent portions of
9 water courses within lands managed by US Department of Energy (DOE)
10 within Los Alamos National Laboratory, including but not limited to,
11 Mortandad Canyon, Cañon del Buey, Ancho Canyon, Chaquehui Canyon, Indio
12 Canyon, Fence Canyon, Potrillo Canyon, and portions of Cañon de Valle, Los
13 Alamos Canyon, Sandia Canyon, Pajarito Canyon, and Water Canyon not
14 specifically identified in 20.6.4.121a. (Surface waters within lands scheduled
15 for transfer from DOE to tribal, state or local authorities are specifically
16 excluded).
17

- 18 • NMED stated the basis for proposed Section 121c was the FWS Report (*id.* at 45):

19 NMED proposes a new segment to classify waters based on a study by the U.S.
20 Fish and Wildlife Service. Exhibit 23. The segment is identical to LANL's
21 original proposal. Criteria and uses proposed are those included in the
22 proposal/or all other ephemeral and intermittent surface waters in Section
23 20.6.4.98. Livestock watering is an appropriate use because it has historically
24 been presumed to be a use for all surface waters of the state.
25

- 26 • Notwithstanding differences in the proposed designated uses, LANL’s direct Triennial
27 Review testimony noted the similarity in the proposed classification of waters on
28 LANL property into Sections 121a and 121c. **LANL Exhibit 23**, Excerpt of Direct
29 Testimony of Dr. Fredrick M. Fisher, Triennial Review Public Hearing at 10 (Oct. 31,
30 2003):

31 Both the Laboratory and the Bureau have proposed to classify all watercourses
32 draining Los Alamos National Laboratory and the proposals are similar. Both
33 the Laboratory and the Bureau proposals reference Lusk et al. 2002, over 70
34 stream-gaging stations (Koch et al. 2001, 2002, 2003, Shaull et al. 1996a,
35 1996b, 1998, 1999, 2000, 2001, 2002, 2003), and observations by Laboratory
36 and NM Environment Department personnel to segment the streams based

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1 upon clear differences in hydrology and associated aquatic life...The segments
2 in both proposals consist of approximately 85 miles of watercourses located
3 within the Laboratory...Of the 85 miles of watercourse within the Laboratory,
4 approximately 2.2 miles are proposed for classification as naturally perennial
5 and approximately 2.7 miles are perennial waters created by effluent. The
6 naturally perennial waters within the Laboratory have been designated in 3
7 segments ranging in length from about 1700 ft to about 6800 ft. The major
8 differences in the two proposals are the proposed designated uses...
9

- 10 • The Statement of Reasons renumbered proposed Section 121a and Section 121c to
11 Sections 126 and 128, respectively. **LANL Exhibit 16** at 58, ¶ 235.
- 12 • The WQCC adopted Section 126 with designated uses of coldwater aquatic life,
13 livestock watering, wildlife habitat and secondary contact. *Id.* at 58. As adopted,
14 Section 126 read:

15 20.6.4.126 RIO GRANDE BASIN - Perennial portions of Cañon de Valle
16 from Los Alamos national laboratory (LANL) stream gage E256 upstream to
17 Burning Ground spring, Sandia canyon from Sigma canyon upstream to LANL
18 NPDES outfall 001, Pajarito canyon from Arroyo de La Delfe upstream into
19 Starmers gulch and Starmers spring and Water canyon from Area-A canyon
20 upstream to State Route 501.
21

- 22 • The WQCC adopted Section 126 and its designated uses for the following reasons (*id.*
23 at 58, ¶ 236):

24 The Commission adopts this new segment to classify waters based upon an
25 intensive study by the USFWS [“FWS Report”]. The study supports the
26 designated uses of coldwater aquatic life, wildlife habitat, secondary contact,
27 and livestock watering. The aquatic life, wildlife habitat and recreation uses are
28 required by CWA Section 101(a)(2) unless a UAA supports not designating
29 them. For this segment, coldwater is the appropriate subcategory of aquatic life
30 use because it is supported by the USFWS report and is consistent with the
31 aquatic life use in adjacent Section 20.6.4.121, which includes tributaries of the
32 Rio Grande in Bandelier National Monument (where high quality coldwater is
33 the designated use). For this segment, secondary contact is the appropriate
34 subcategory of recreation because full-body contact in these small streams is
35 unlikely and infrequent, and if it does occur the proposed criteria offer a proper
36 level of protection. Finally the uses of wildlife habitat and livestock watering
37 are appropriate. The WQCC has historically presumed these uses for all
38 unclassified surface waters. There is no question about wildlife using these

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1 streams. There also is evidence that livestock watering is an existing use.
2 Laboratory publications acknowledge the presence of livestock on or adjacent
3 to this segment, including horseback riding, cattle grazing and free-range
4 chickens and dairy goats. The designation of livestock watering is based on both
5 the existing use of these waters by livestock, as well as for the protection of
6 downstream livestock watering uses.
7

- 8 • The WQCC adopted Section 128 with designated uses of limited aquatic life, livestock
9 watering, wildlife habitat and secondary contact. *Id.* at 60. As adopted, Section 128
10 read:

11 20.6.4.128 RIO GRANDE BASIN - Ephemeral and intermittent portions of
12 watercourses within lands managed by U.S. department of energy (DOE) within
13 Los Alamos national laboratory, including but not limited to: Mortandad
14 Canyon, Cañada del Buey, Ancho canyon, Chaquehui canyon, Indio canyon,
15 Fence canyon, Potrillo canyon and portions of Canon de Valle, Los Alamos
16 canyon, Sandia canyon, Pajarito canyon and Water canyon not specifically
17 identified in 20.6.4.126 NMAC. (Surface waters within lands scheduled for
18 transfer from DOE to tribal, state or local authorities are specifically excluded.)
19

- 20 • The basis for the WQCC’s adoption of Section 128 was: “The Commission adopts
21 another new segment proposed by NMED and UC [predecessor LANL operator], for
22 the same reasons as set out above in paragraphs 235-236. The proposed uses are
23 appropriate, as discussed above.” *Id.* at 61, ¶ 243.
24 • As noted above, following WQCC adoption of Sections 126 and 128 and certification
25 by the New Mexico Assistant Attorney General, the revised water quality standards
26 were submitted to EPA for approval as required by 40 CFR 131.20(c). **LANL Exhibit**
27 **17.**

28 **Q. WHAT WAS THE PROCESS THAT LED TO THE EPA’S APPROVAL OF THESE**
29 **SECTION CLASSIFICATIONS?**

30 A. EPA reviews revisions to State water quality standards to ensure the adopted regulations
31 are consistent with the requirements of the federal CWA, as required by the CWA Section

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1 303(c)(2) and regulations at 40 CFR 131.20(c). After its preliminary review, the EPA took
2 no action on either Section 126 or 128 (*i.e.*, EPA neither approved nor disapproved) for the
3 following reasons:

- 4 • EPA noted that the basis for the secondary contact use was unclear. Because secondary
5 contact use is not consistent with the fishable/swimmable goal of the CWA Section
6 101(a)(2), a UAA is required (**LANL Exhibit 24**, Excerpt of 2006 EPA Record of
7 Decision at 64 (attached to December 29, 2006 EPA Letter)):

8 The basis for designating a secondary contact recreation use is unclear given
9 that the Service’s study [“FWS Report”] indicates that there is evidence of pools
10 of sufficient size for primary contact in the Sandia canyon stream. As discussed
11 previously, EPA’s current water quality regulation effectively establishes a
12 rebuttable presumption that “fishable/swimmable” uses are attainable unless it
13 can be demonstrated that such uses are not attainable. A secondary contact use
14 does not meet that presumption. Based on a review of the 2005 Triennial
15 Submission record supplied by the State, the secondary contact use is not
16 adequately supported. 40 CFR 131.6(b) and (f) requires the submission of
17 supporting analyses and other general information that will assist EPA in
18 determining the adequacy of standards that don’t include uses specified in Sec.
19 101(a)(2) of the Act. To comply with the regulation, New Mexico must submit
20 a UAA to demonstrate why attaining the secondary contact recreation uses are
21 not feasible based on one of the factors listed in 40 CFR 131.10(g). The most
22 logical factor is 40 CFR 131.10(g)(2) - natural, ephemeral, intermittent, or low-
23 flow conditions or water levels prevent attainment of the use. Although the
24 Service’s intensive study is not a UAA in itself, the State could draw on
25 information in that and other related intensive studies or information to support
26 the secondary contact recreation use designation.
27

- 28 • Similarly, EPA noted that the basis for the limited aquatic life use on Section 128, while
29 based on the FWS Report, did not meet federal requirements for establishing an aquatic
30 life use that is not consistent with the fishable/swimmable goal of the CWA and thus,
31 a UAA was required (*id.* at 65):

32 As with the two previous Sections, New Mexico has established this segment,
33 classifying waters within LANL property. The State based use designations for
34 this segment on the same intensive study by the Service (Lusk and MacRae
35 2002) [FWS Report] mentioned in the previous sections. This segment has been

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1 designated for limited aquatic life and secondary contact based on likelihood of
2 exposure by ingestion and a light frequency of use, as well as the State’s default
3 livestock watering and wildlife habitat uses that have been applied. The limited
4 aquatic life and secondary contact uses may be the highest uses that can be
5 attained in this segment. However, as discussed in Section 20.6.4.126, such
6 designations are not compatible with the uses specified in section 101(a)(2) of
7 the Act and must be supported by a UAA based on one of the factors listed in
8 40 CFR 131.10(g). Again, the most logical factor is 131.10(g)(2) - natural,
9 ephemeral, intermittent, or low-flow conditions or water levels prevent
10 attainment of the use. The supporting UAA for waters in this segment and
11 Section 20.6.4.126 may be combined.
12

- 13 • In response to EPA’s request for a supporting UAA, NMED submitted the, “Use
14 Attainability Analysis for Waters Located on Los Alamos National Laboratory as
15 described in Sections 20.6.4.126 and 128 NMAC Mexico Water Quality Standards,
16 July 17, 2005.” **LANL Exhibit 18**, NMED UAA August 2007. The UAA included
17 the following findings:

- 18 ○ With regard to secondary contact use, the UAA concluded (*id.* at 4):

19 In conclusion, secondary contact recreation is an existing and attainable use
20 for the stream reaches in Segments 126 and 128. Hydrologic modifications
21 do not currently affect recreational opportunities, and water quality likely
22 supports both secondary and primary contact activities. Nevertheless,
23 primary contact is not an attainable use because flows and water levels are
24 generally too low for full body immersion or prolonged and intimate contact
25 with the water. This is the factor identified in 40 CFR 131.10(g)(2):
26 “Natural, ephemeral, intermittent or low flow conditions or water levels
27 prevent the attainment of the use...” Hazardous high-flow conditions and
28 restricted access also limit the feasibility of primary contact recreation.
29

- 30 ○ With regards to limited aquatic life use, the UAA concluded (*id.* at 5-6):

31 Based on the habitat requirements shown in Table 4 [fish species native to
32 Rio Grande drainage] and the guild assignments in Table 5 [fish of the
33 Jemez Mountains], populations of these species do not survive and
34 propagate in ephemeral or intermittent streams. The waters in Segment 128,
35 therefore, cannot support a Section 101(a)(2) aquatic life use. Because a
36 number of non-fish aquatic life populations are sustained along these
37 streams, the “limited aquatic life” use subcategory is appropriate to protect
38 both existing and attainable aquatic life uses...In conclusion, a limited
39 aquatic life use is attainable on stream reaches in Segment 128. Because

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1 fish species in Ecoregion 21 cannot survive in ephemeral and intermittent
2 streams, Segment 128 streams cannot attain the Section 101(a)(2) aquatic
3 life use.
4

- 5 • Based on the UAA findings, EPA quickly approved the classified waters and
6 designated uses applicable to Sections 126 and 128, thereby classifying all waters
7 within lands managed by DOE within LANL. **LANL Exhibit 19**, EPA Letter, August
8 31, 2007:

9 I would like to inform you that we have completed our review of supporting
10 documentation related to the State's 2005 triennial revisions. I would also like
11 to express my appreciation for the efforts of the New Mexico Environment
12 Department in the development of this documentation. EPA's review was of a
13 use attainability analysis, supporting the addition of sections 20.6.4.126 and 128
14 of the Standards for Interstate and Intrastate Surface Waters 20.6.4. NMAC.
15 These revisions were adopted by the Commission and became effective as
16 State law on May 23, 2005, with revisions effective on July 17, 2005. The
17 original amendments were certified by the Assistant Attorney General by letter
18 dated July 1, 2005, and were submitted to EPA as required under federal
19 regulations at 40 CFR 131.20(c). EPA received this supporting use attainability
20 analysis (UAA) on August 17, 2007. In today's action, EPA is approving
21 sections 20.6.4.126 and 128 NMAC.

22 **2. REGULATORY REVIEW OF SECTION 126 AND 128 WATERS**

23 **Q. PLEASE DESCRIBE THE REQUIREMENTS TO CONDUCT REGULATORY**
24 **REVIEWS OF WATERS THAT DO NOT INCLUDE USES SPECIFIED IN**
25 **SECTION 101(a)(2) OF THE CWA.**

26 **A.** Federal regulations (40 CFR 131.20(a)) require that States re-examine any section with
27 water quality standards that do not include the uses specified in section 101(a)(2) of the
28 Act every 3 years to determine if any new information has become available. If such new
29 information indicates that the uses specified in section 101(a)(2) of the Act are presently
30 attainable, the State shall revise its standards accordingly. The WQCC conducts these
31 regular reviews of the New Mexico water quality standards as required by 20.6.4.10

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1 NMAC. The following testimony summarizes the status of implementation of these
2 requirements.

3 **Q. SINCE EPA’S APPROVAL OF SECTION 126 AND 128 USES BASED ON THE**
4 **FINDINGS OF THE UAA, HAVE THE USES BEEN RE-EXAMINED?**

5 A. Since the completion of the 2003 Triennial Review, the WQCC has completed the 2009
6 and 2013 Triennial Reviews of New Mexico Water Quality Standards. During the 2013
7 Triennial Review (WQCC 14-05(R)), LANL summarized its efforts to regularly evaluate
8 the appropriateness of the secondary contact and limited aquatic life uses assigned to
9 Section 128. *See LANL Exhibit 25*, Rebuttal Testimony, Michael T. Saladen at 4 (Feb.
10 12, 2015):

11 All stream segments at LANL are assessed on an essentially continuous
12 basis through a combination of an extensive gage network that is monitored
13 daily, and field teams that routinely walk canyons and observe stream
14 conditions. Moreover, Segment 128 and its designated uses have been
15 addressed in every Triennial since that segment was adopted...
16 Additionally, each assessment unit within Segment 128 is addressed every
17 two years in NMED’s CWA Section 303/305 Integrated Report. In 2014,
18 LANL field teams photographed gaging station sites, evaluated whether
19 there was water in the channel, looked for evidence of base flows, identified
20 if benthic macroinvertebrates were present, and evaluated vegetative cover.
21 Based on information gathered during these field visits, it was determined
22 that, of the 73 miles of Segment 128, approximately 71 miles are ephemeral
23 and approximately two miles are intermittent (97% ephemeral and 3%
24 intermittent). Segment 128 has been evaluated in line with, and indeed
25 beyond, the requirements of 40 C.F.R. §131.20(a). All LANL monitoring
26 information, Triennial documents, and reports are publicly available. None
27 of this information reveals any changes or concerns warranting a different
28 designated aquatic life use for Segment 128.

29
30 LANL continues to routinely implement the surveillance work described above on LANL
31 property. The findings from this work are regularly made available to the public at:
32 <https://www.lanl.gov/environment/environmental-report.php>.

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1 Following WQCC adoption of revised water quality standards after each Triennial
2 Review and certification by the State, the Triennial Review record was submitted to EPA
3 for review. The WQCC-approved revisions to the water quality standards during the 2009
4 and 2013 Triennial Reviews did not include any amendments to Sections 126 or 128
5 because there was no information in the record supporting changes to the water quality
6 standards in these Sections. In its record of decision for the 2009 Triennial Review, the
7 EPA reaffirmed its previous approval of the designated uses for Sections 126 and 128 based
8 on the findings of the NMED 2007 UAA. **LANL Exhibit 26**, Excerpt of EPA Record of
9 Decision on 2009 Triennial Review (April 12, 2011). Following completion of the 2013
10 Triennial Review, the EPA did not indicate any concerns with the previously approved
11 Section 126 and 128 designated uses. **LANL Exhibit 27**, 2017 EPA Letter to NMED with
12 Amended Technical Support Document (June 8, 2017).

13 **Q. HAVE THERE BEEN ANY OTHER PROCESSES IMPLEMENTED TO VERIFY**
14 **THAT THE DESIGNATED USES ARE APPROPRIATE FOR SECTION 128**
15 **WATERS?**

16 A. An outcome of the 2013 Triennial Review was the establishment of the October 9, 2015
17 Joint Stipulation Regarding Proposed Changes to 20.6.4.128 NMAC (“2015 Joint
18 Stipulation”) signed by Amigos Bravos, DOE, Los Alamos National Security LLC and
19 NMED. This agreement was established because in September 2014, Amigos Bravos filed
20 proposed amendments to change the designated use for all waters in Section 128 from
21 limited aquatic life to marginal warmwater aquatic life, arguing that these waters were
22 under-protected. **LANL Exhibit 28**, Excerpt of Amigos Bravos’ 2014 Proposed
23 Amendments and Statement of Basis at 6-7(Sept. 30, 2014). Per the 2015 Joint Stipulation,

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1 Amigos Bravos withdrew its proposed changes to Section 128 waters in exchange for DOE
2 and LANL agreeing to share information (**Exhibit 29**, 2015 Joint Stipulation, Finding 4 at
3 pages 1-2), including:

4 . . . any new information, maps, or data obtained or developed since
5 completion of the August 2007 “Use Attainability Analysis for Waters
6 Located on Los Alamos National Laboratory as described in Sections
7 20.6.4.126 and 20.6.4.128 NMAC New Mexico Water Quality Standards
8 July 17, 2005” that would assist in the identification of: (a) which Segment
9 128 waters are ephemeral and which are intermittent; (b) the existing uses
10 of the Segment 128 waters; (c) the presence of macroinvertebrates or
11 shellfish in the Segment 128 waters; and (d) any significant change to the
12 chemical, physical, or biological integrity of the Segment 128 waters.

13
14 In addition, per the 2015 Joint Stipulation: (a) NMED would share any new information
15 that it has; (b) all parties would meet and confer regarding the appropriate level of water
16 quality protections afforded to Section 128 waters through a series of meetings to take place
17 between January and July of 2016 (to inform this dialogue, the parties recognized that
18 additional data collection and analysis may be helpful or necessary); and (c) the parties
19 would work to reach agreement regarding the appropriate level of water quality protections
20 afforded to Section 128 by September 2016. Finally, the parties agreed to work towards
21 reaching consensus on decisions regarding appropriate protections (*id.*, Finding 7 at 3):

22 In submitting this joint stipulation, the parties, while endeavoring to reach
23 a consensus agreement regarding the appropriate level of water quality
24 protections afforded to Segment 128, but did not waive the right to
25 independently propose, support or oppose proposed changes 20.6.4.128
26 NMAC at any time, including in future triennial reviews or to otherwise
27 propose, support, or oppose proposed changes to the level of water quality
28 protections afforded to Segment 128 through other means.

29
30 **Q. CAN YOU SUMMARIZE THE WORK COMPLETED UNDER THE 2015 JOINT**
31 **STIPULATION?**

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1 A. In general, as required by the 2015 Joint Stipulation, LANL provided Amigos Bravos and
2 NMED new information, maps, or data obtained or developed since completion of the
3 August 2007 UAA, including, but not limited to Level 1 assessments using the Hydrology
4 Protocol (“HP”) in NMED’s Water Quality Management Plan and Continuing Planning
5 Process (“WQMP/PPP”), Appendix C ([https://www.env.nm.gov/surface-water-](https://www.env.nm.gov/surface-water-quality/hp/)
6 [quality/hp/](https://www.env.nm.gov/surface-water-quality/hp/)) and photographs, stream gage and precipitation data, water quality data and
7 riparian inventory results. Beginning in 2016, LANL staff worked collaboratively with
8 Amigos Bravos and NMED to complete numerous HP assessments on LANL property and
9 have transmitted completed assessments and associated data to NMED and Amigos
10 Bravos, thereby making that information publicly available. **LANL Exhibit 3**, Direct
11 Testimony of Robert Gallegos at 5 and **LANL Exhibit 30**, Affidavit of Michael T. Saladen
12 at 8-9 provide summaries of the work completed to date.

13 **Q. IN THE CURRENT TRIENNIAL REVIEW ARE THERE ANY PROPOSALS TO**
14 **RECLASSIFY SECTION 126 WATERS BASED ON WORK COMPLETED**
15 **UNDER THE 2015 JOINT STIPULATION?**

16 A. NMED filed a petition proposing amendments to 20.6.4 NMAC on August 19, 2020
17 (“Original Petition”). The Original Petition proposed to modify the description of Section
18 126 waters. This proposal was withdrawn in NMED’s Amended Petition of March 12,
19 2021. Accordingly, at this time, NMED has not proposed any changes to Section 126
20 waters based on the 2015 Joint Stipulation. LANL supports reclassification of three Section
21 128 waters to Section 126 waters consistent with the proposed amendments to Section 126
22 waters at 20.6.4.126 NMAC in NMED’s Original Petition.

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1 **Q. IN THE CURRENT TRIENNIAL REVIEW ARE THERE ANY PROPOSALS TO**
2 **RECLASSIFY SECTION 128 WATERS BASED ON WORK COMPLETED**
3 **UNDER THE 2015 JOINT STIPULATION?**

4 A. Yes. In NMED’s Original Petition it proposed amendments to modify 20.6.4.128 NMAC,
5 including a proposal to reclassify a number of Section 128 waters into a new Section 140.

6 **Q. HAVE YOU REVIEWED NMED’S ORIGINAL PETITION TO MODIFY**
7 **SECTION 128 AND CREATE A NEW SECTION 140 AND CAN YOU**
8 **SUMMARIZE YOUR UNDERSTANDING OF THE PROPOSAL?**

9 A. Yes, I have reviewed NMED’s Original Petition. NMED proposed to redefine Section 128
10 so that it only included ephemeral waters or portions of ephemeral waters. Intermittent
11 waters would be moved to new Section 140 and have warmwater aquatic life, primary
12 contact, wildlife habitat and livestock watering designated uses. NMED stated that the
13 basis for the proposed changes to Section 128 was identification by NMED of ephemeral
14 waters “through application of the *Hydrology Protocol* as part of the Joint Stipulation
15 between the Department, DOE, Los Alamos National Security LLC and Amigos Bravos
16 executed pursuant to WQCC 14-05(R).” NMED Original Petition, Reason 23 at 4. With
17 regard to the new Section 140, NMED stated that it “identified intermittent waters through
18 application of the *Hydrology Protocol* as part of the Joint Stipulation between the
19 Department, LANL, and Amigos Bravos executed pursuant to WQCC 14-05(R).” NMED
20 also stated that the designation of uses for Section 140 waters was based on an analysis of
21 existing uses. *See* NMED Original Petition, Reason 24 at 4.

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1 **Q. HAVE YOU REVIEWED LANL'S RESPONSE TO NMED'S ORIGINAL**
2 **PETITION AND CAN YOU SUMMARIZE YOUR UNDERSTANDING OF THEIR**
3 **RESPONSE?**

4 A. Yes, I have reviewed LANL's response to NMED's Original Petition. LANL agreed in
5 principle with the proposal to establish a new Section 140 for intermittent waters within
6 LANL property. However, LANL asserted that waters should only be classified in Section
7 140 where it was demonstrated that the proposed change is supported by data and new
8 information. LANL proposed that Section 140 only include the following waters based on
9 work completed under the 2015 Joint Stipulation: (a) Effluent canyon from Mortandad
10 canyon confluence upstream to its headwaters; (b) S-Site canyon from MSC 16-06293
11 upstream to Martin Spring; and (c) Twomile canyon from LANL stream gage E244
12 upstream to its confluence with upper Twomile canyon. LANL also proposed alternative
13 designated uses for Section 140: marginal warmwater aquatic life, secondary contact,
14 wildlife habitat and livestock watering. LANL's Original Petition Comments at Comment
15 16.

16 **Q. HAVE YOU REVIEWED NMED'S AMENDED PETITION AND CAN YOU**
17 **SUMMARIZE YOUR UNDERSTANDING OF THE AMENDED PROPOSAL?**

18 A. Yes, I have reviewed NMED's Amended Petition. NMED's Amended Petition
19 incorporated the recommendations applicable to Sections 128 and 140 contained in
20 LANL's proposal, with one exception. NMED stated that the basis for the Amended
21 Petition was, "Amended language to reflect those waters to which all parties to the joint
22 stipulation were in agreement." NMED Amended Petition at 4, ¶¶ 28-29. The one
23 remaining difference between NMED's Amended Petition and LANL's proposal relates to

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1 Twomile canyon.³ There, NMED would include Twomile canyon from its confluence with
2 Pajarito Canyon upstream to its confluence with upper Twomile canyon, which is
3 approximately 0.2 miles more than LANL proposes. The basis for the difference in
4 LANL’s Section 140 description is provided in other LANL direct testimony. **LANL**
5 **Exhibit 3**, Direct Testimony, Robert Gallegos.

3. PROCESS TO RECLASSIFY A WATERBODY

7 **Q. CAN YOU FIRST SUMMARIZE THE IMPORTANCE OF HAVING A CLEAR,**
8 **ESTABLISHED PROCESS TO RECLASSIFY A WATERBODY?**

9 A. EPA has established regulations and issued direction to States and tribes regarding the need
10 to ensure that the uses being assigned to a waterbody represent the highest attainable use
11 and that existing uses are protected. **LANL Exhibit 31**, 80 Fed. Reg. 51,020 (August 21,
12 2015); **LANL Exhibit 32**, Letter from EPA to State of Oklahoma Water Resources Board
13 with Attachment (Sept. 5, 2008). This direction includes several key points:

- 14 • Regardless of whether a UAA is required to modify a designated use, the EPA has
15 emphasized the need to get the uses assigned to a waterbody right.
- 16 • When determining whether a use is existing, it is important to have a high degree of
17 confidence in the findings because, once established, an existing use may not be
18 removed regardless of whether the existing use remains attainable.
- 19 • Establishment of uses should reflect the best data and information available.

³ NMED’s Amended Petition proposing the establishment of 20.6.4.140 NMAC identifies this canyon as “Two Mile.” NMED Amended Petition at 32. The published U.S. Geological Survey topographic map for the area identifies the name of the canyon as “Twomile.” Accordingly, that spelling is used here.

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- 1 • The process to modify a use should engage the public so that they have the opportunity
2 to participate in use designation decisions.

3 **Q. ALTHOUGH THE AMENDED NMED PETITION WAS RESPONSIVE TO**
4 **LANL’S COMMENTS ON THE ORIGINAL PETITION, DO YOU HAVE ANY**
5 **ADDITIONAL CONCERNS REGARDING THE PROCESS TO RECLASSIFY A**
6 **WATER FROM SECTION 128 TO SECTION 126 OR NEW SECTION 140?**

7 A. Yes. 20.6.4 NMAC identifies the procedures to conduct a UAA and remove a designated
8 use that is not an existing use at 20.4.6.15 NMAC. In contrast, NMED’s process and
9 evidentiary requirements to reclassify a water to assign a more protective designated use
10 are unclear. For example, NMED proposed to reclassify many waters on LANL property
11 from Section 128 to Section 140, “based on an existing use analysis.” NMED Original
12 Petition, Reason 24 at 4. The proposed change would have modified the aquatic life use
13 from limited aquatic life to warmwater aquatic life – a significant change to increase the
14 level of protection assigned to such waters. The technical basis for the need to require a
15 higher level of aquatic life use protection was not provided with the Original Petition;
16 therefore, the appropriateness of the proposal could not be evaluated. LANL supports the
17 reclassification of a waterbody, where appropriate, to provide the necessary level of
18 protection. But decisions to reclassify a waterbody should be based on the best available
19 data and information that is made available to the public through an open, transparent
20 process.

21 In 2006, EPA sent a memorandum to its regions regarding the need to improve the
22 effectiveness of the UAA process and the importance of getting the uses assigned to a
23 waterbody right. **LANL Exhibit 33**, 2006 EPA Memorandum at 2 (Mar. 13, 2006):

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1 It is critical for EPA, states and tribes to engage the public in meaningful
2 discussions regarding the importance and value of getting uses right in
3 maintaining and restoring water quality. WQS that reflect the best available
4 data and information should be used to direct the process of managing water
5 quality. They are essential to informed decision making. Just as important,
6 public understanding and acceptance of WQS is central to broader
7 community support for addressing potentially difficult pollution control
8 management decisions.

9 **Q. WHAT ARE EPA’S EXPECTATIONS REGARDING MODIFYING A**
10 **DESIGNATED USE ESTABLISHED FOR A CLASSIFIED WATER IN ORDER**
11 **TO PROTECT THE HIGHEST ATTAINABLE USE OR AN EXISTING USE?**

12 Although a UAA is typically used to remove a use altogether or establish a use that does
13 not meet the “fishable/swimmable” goals of the CWA (Section 101(a)(2)), the principles
14 described above by EPA to make sure the UAA process is effective (*id.*) should also apply
15 to the process of modifying designated uses assigned to a waterbody – regardless if the
16 purpose is to remove the use or upgrade to a more protective use, such as the “highest
17 attainable use” or an existing use. Federal regulation 40 CFR 131.3(m) defines “highest
18 attainable use” as follows:

19 Highest attainable use is the modified aquatic life, wildlife, or recreation
20 use that is both closest to the uses specified in section 101(a)(2) of the Act
21 and attainable, based on the evaluation of the factor(s) in section 131.10(g)
22 that preclude(s) attainment of the use and any other information or analyses
23 that were used to evaluate attainability. There is no required highest
24 attainable use where the State demonstrates the relevant use specified in
25 section 101(a)(2) of the Act and sub-categories of such a use are not
26 attainable.

27 EPA previously approved a limited aquatic life use for all Section 128 waters based on the
28 UAA submitted by NMED in 2007. **LANL Exhibits 18 and 19.** NMED is now proposing
29 to move selected waters from Section 128 to a new Section 140. For waters moved to new
30 Section 140, the previously UAA-approved aquatic life designated use would change from

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1 limited aquatic life use to marginal warmwater aquatic life use. NMED Amended Petition
2 at 32. In its Original Petition, NMED stated the following reason for moving waters on
3 LANL property from Section 128 to the new Section 140 (NMED Original Petition,
4 Reason 24 at 4):

5 The Department proposes to add a new section, 20.6.4.140 NMAC, to
6 designate the highest attainable uses and criteria for non-perennial waters
7 and intermittent or intermittent portions of waters within LANL as
8 demonstrated through an analysis of existing uses for these waters. The
9 Department identified intermittent waters through application of the
10 Hydrology Protocol as part of the Joint Stipulation between the Department,
11 LANL, and Amigos Bravos executed pursuant to WQCC 14-05(R)
12 (emphasis added).

13 This reason indicates that NMED conducted an analysis of existing uses and made a finding
14 that a higher aquatic life use (*i.e.*, marginal warmwater aquatic life) is attainable in Section
15 140 waters. The water quality criteria to protect the marginal warmwater aquatic life use
16 are more stringent than the criteria to protect the limited aquatic life use. Federal
17 regulations at 40 CFR 131.10(k)(2) state that a UAA is not required if designating a use
18 with criteria at least as stringent as currently applicable or a use with more stringent criteria:

19 40 CFR 131(k) - A State is not required to conduct a use attainability
20 analysis whenever:...(2) The State designates a sub-category of a use
21 specified in section 101(a)(2) of the Act that requires criteria at least as
22 stringent as previously applicable;

23 The purpose of this regulation, which was incorporated into the federal water quality
24 standards regulations in 2015, is to provide additional clarity regarding the establishment
25 of designated uses to ensure that when a State designates a use that is not a CWA 101(a)(2)
26 use that the State designates the highest attainable use (**LANL Exhibit 31** at page 51,021):

27 The provisions related to designated uses help states and authorized tribes
28 restore and maintain resilient and robust ecosystems by requiring that states
29 and authorized tribes evaluate and adopt the highest attainable use when
30 changing designated uses. The rule provides clearer expectations for when

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1 an analysis of attainability of designated uses is or is not required. Such
2 clarity allows for better and more transparent communication among EPA,
3 states, authorized tribes, stakeholders and the public about the designated
4 use revision process, and the appropriate level of protection necessary to
5 meet the purposes of the CWA.

6 LANL agrees that a UAA, as defined by EPA at 40 CFR 131.3(g),⁴ is not required to
7 modify the designated uses of waters reclassified into new Section 140, where the revised
8 use is deemed an existing use and it has a higher level of aquatic life use protection.

9 However, the proposed re-classification included a finding that marginal
10 warmwater aquatic life is the “highest attainable use,” rather than other aquatic life uses,
11 such as a warmwater aquatic life use or coldwater aquatic life use. Consistent with EPA’s
12 discussion regarding the use revision process (**LANL Exhibit 31** at 51,021 and **LANL**
13 **Exhibit 33** at 2), proposals to reclassify a waterbody should be made only through a process
14 that provides clarity and more “transparent communication” among all parties involved in
15 the decision-making process. This is especially important when the highest attainable use
16 is also an existing use. Existing uses, once designated, cannot be removed (40 CFR
17 131.10(h)):

18 States may not remove designated uses if: (1) They are existing uses, as
19 defined in Section 131.3, unless a use requiring more stringent criteria is
20 added; or (2) Such uses will be attained by implementing effluent limits
21 required under sections 301(b) and 306 of the Act and by implementing
22 cost-effective and reasonable best management practices for nonpoint
23 source control.

⁴ Per 40 CFR 131.3(g), a Use Attainability Analysis is a structured scientific assessment of the factors affecting the attainment of the use which may include physical, chemical, biological, and economic factors as described in 40 CFR 131.10(g).

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1 Given this regulatory requirement, EPA also has stated how important it is to be
2 certain that a use is actually existing before making such a finding (**LANL Exhibit 32** at
3 10):

4 It is appropriate to describe the existing uses of a waterbody in terms of both
5 actual use and water quality because doing so provides the most
6 comprehensive means of describing the baseline conditions that must be
7 protected. In identifying an existing use, it is important to have a high degree
8 of confidence because a state or tribe may not remove an existing use when
9 revising designated uses, regardless of whether the existing use remains
10 attainable. This is also important because EPA's antidegradation provisions
11 require any CWA authorization of a discharge or activity that may result in
12 a discharge to protect the existing use.

13 To further emphasize the importance of getting existing uses right, EPA also has
14 stated its expectations for how a State should determine the existing use for a waterbody
15 (*id.* at 3):

16 A state or tribe should determine existing uses on a site-specific basis to
17 ensure it has identified the highest degree of uses and water quality
18 necessary to support the uses that have been achieved since November 28,
19 1975. When describing existing uses, states and tribes should articulate not
20 only the use(s) that has been achieved, but also the water quality supporting
21 the specific use(s) that has been achieved...For aquatic life, states and tribes
22 should consider the available biological data as an indicator of both water
23 quality and the actual use, in conjunction with any available chemical water
24 quality data.

25 Although EPA interprets the definition of "existing use" to require
26 consideration of the available data and information on both actual use and
27 water quality, all the necessary data may not be available. In these
28 circumstances, a state or tribe may choose, in implementing its water quality
29 standards program, to determine an existing use based on the strength of
30 evidence that a use has actually been achieved or the strength of evidence
31 that water quality supporting a use has been achieved. In other words, where
32 data may be limited or inconclusive, EPA expects states and tribes to
33 consider the quantity, quality, and reliability of the different types of
34 available data to describe the existing use as accurately and completely as
35 possible and to resolve any apparent discrepancies based upon that
36 evaluation.

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1 EPA emphasizes the need to evaluate all the available data so that the existing use is
2 described as accurately and completely as possible. This direction provided by EPA
3 implies that there should be a clear process for making findings regarding the
4 reclassification of a waterbody (*e.g.*, from Section 128 to the new proposed new Section
5 140, or for that matter from Section 128 to Section 126), regardless of whether a UAA is
6 required.

7 **Q. WHAT IS YOUR UNDERSTANDING REGARDING NMED’S PROCESS TO**
8 **CONDUCT AN EXISTING USE ANALYSIS?**

9 A. 20.6.4 NMAC does not provide any direction regarding the evaluation of existing uses. I
10 am also not aware of any formally adopted guidance that has been developed by NMED to
11 explicitly evaluate existing uses. However, NMED has developed a draft “Existing Use
12 Analysis Work Plan for Classified Waters Within Los Alamos National Laboratory
13 Identified Under 20.6.4.128 NMAC,” dated October 2020 (“EUA Work Plan”). **LANL**
14 **Exhibit 34.** The EUA Work Plan, which is specific to Section 128 waters, states that an
15 EUA is “similar in function to a Use Attainability Analysis.” *Id.* at 3. If it is intended to
16 be similar in function to a UAA, then a process similar to the preparation and approval of
17 a UAA should be implemented when conducting an analysis of existing uses. However,
18 the draft EUA Work Plan was not provided to interested parties until October 27, 2020,
19 well after the release of NMED’s Original Petition to amend 20.6.4.128 NMAC.
20 Nonetheless, LANL provided substantive comments to the EUA Work Plan. **LANL**
21 **Exhibit 35.**

22 **Q. DO YOU HAVE ANY PROCESS CONCERNS REGARDING USE OF THE EUA**
23 **WORK PLAN FOR RECLASSIFYING SECTION 128 WATERS?**

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1 A. Yes. While the EUA Work Plan does include many of the data gathering elements that one
2 would expect in an evaluation of existing uses (or for that matter a UAA, especially since
3 it is intended to be similar in function to a UAA), such as physical, chemical and biological
4 characterization of the waterbody, a potential outcome of the EUA Work Plan as applicable
5 to Section 128 is of significant concern. **LANL Exhibit 34** at 17:

6 If there are no data for a non-perennial tributary currently classified in
7 20.6.4.128 NMAC, it is presumed that the tributary is able to attain water
8 quality sufficient enough to support a more stringent criteria use than
9 provided for under the limited aquatic life designated use. Those tributaries
10 that are undetermined would be identified as a general reference under a
11 new section in 20.6.4 NMAC until such a time that the designated use is
12 changed through the UAA process.

13 The WQCC and EPA have already approved the classification of waters into Section 128
14 and the assignment of designated uses through a public, transparent process consistent with
15 the requirements of State law and the CWA. These decisions, which were based on the
16 scientific data available at that time, including an EPA-approved UAA, have been
17 reaffirmed in two subsequent Triennial Review proceedings. Moreover, reclassification
18 by NMED staff in this manner would disregard the work already being conducted under
19 the 2015 Joint Stipulation.

20 Any effort to modify waters already classified as Section 128 or modify the
21 assigned designated uses must be supported by the best available data and science. If the
22 data and science indicate that a higher level of protection is warranted then, as already
23 noted in LANL's response to NMED's Original Petition amending 20.6.4.128, LANL
24 supports reclassification of Section 128 waters into a new section. In fact, LANL has
25 already agreed that three specific waters should be reclassified from Section 128 to Section
26 140 and provided a higher level of aquatic life protection. LANL's Original Petition

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1 Comments at Comments 14 and 15. Likewise, LANL agrees that waters should be
2 reclassified from Section 128 to 126 and provided a higher level of aquatic life protection
3 where the data and science demonstrate that the higher level of protection is warranted. *Id.*
4 at Comments 13 and 14.

5 **Q. DO YOU HAVE ANY TECHNICAL CONCERNS REGARDING USE OF THE**
6 **EUA WORK PLAN FOR RECLASSIFYING SECTION 128 WATERS?**

7 A. After reviewing NMED’s EUA Work Plan and LANL’s written response to the Draft EUA
8 Work Plan (**LANL Exhibit 35**), I have identified the following technical concerns. The
9 Draft Work Plan states that an EUA has a similar function to a UAA and then appropriately
10 identifies many of the types of data that should be evaluated as part of an evaluation of existing
11 uses. However, the Work Plan precludes the use of selected data. For example, the Draft
12 EUA Work Plan states (**LANL Exhibit 34** at 21):

13 Data collected under the Level 2 Hydrology Protocol survey methodology,
14 to which NMED was not present, does not carry the same affirmations to
15 which NMED could defend and is not being proposed for use under this
16 analysis...Data collected under LANL’s independent Level 2 hydrology
17 protocol surveys will not be used as evidence supporting a highest attainable
18 designated aquatic life use.

19 When considering a waterbody’s classification, all available and relevant scientific data
20 must be used to ensure a thorough and defensible analysis of existing uses. To do otherwise
21 could lead to inconsistent re-classifications of stream segments across the State and
22 inappropriate use determinations. Not considering all of the available data is also
23 inconsistent with EPA expectations for evaluations of existing uses as previously
24 discussed. **LANL Exhibit 32** at 3. For Section 128, much of the data that NMED needs
25 to consider in their EUA have been collected pursuant to the 2015 Joint Stipulation since
26 its inception, including HP Level 1 surveys conducted when NMED was not present, and

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1 a substantial amount of HP Level 2 data. These data include gage flow data, mapping,
2 precipitation data, hydrology protocol information, photographs, surface water data and
3 riparian inventory results spanning many years, 2019 HP Level 2 results and photographs,
4 complete results of Level 2 HPs and macroinvertebrate metrics from Level 2 HP sites,
5 alluvial well hydrograph data, temperature, pH, and dissolved oxygen data. The parties to
6 the 2015 Joint Stipulation should be working collaboratively to reach agreement regarding
7 the appropriate level of water quality protections afforded to Section 128 waters.
8 Establishing an EUA Work Plan that arbitrarily decides which data will be used to evaluate
9 Section 128 existing uses is not only contrary to EPA guidance and the spirit and intent of
10 the 2015 Joint Stipulation, but disincentivizes parties to collect and share data.

11 **Q. IN YOUR OPINION, WHAT PROCESS SHOULD BE TAKEN TO RE-CLASSIFY**
12 **WATERS ON LANL PROPERTY OR ELSEWHERE IN THE STATE?**

13 A. We understand that the EUA Work Plan is a draft and it represents only a part of the first
14 step in a process to conduct the evaluation of existing uses. That is, the Work Plan itself
15 is not the EUA investigation, it would be used to determine if sufficient information exists
16 to warrant conducting an investigation and then describes the process for how to conduct
17 the investigation. We recognize NMED's authority to investigate existing uses in Section
18 128 waters; however, given the intent of the 2015 Joint Stipulation, finalization of the EUA
19 Work Plan should be conducted collaboratively with all parties to the agreement.
20 Finalization of the Work Plan would complete Step 1. Subsequent steps could include:

- 21 • Step 2 would be to implement the investigation by compiling existing data, as required
22 by the Work Plan, and collecting additional data, where necessary, to fill critical data
23 gaps.

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- 1 • Step 3 would be the actual EUA, *i.e.*, determining if a higher attainable use is applicable
2 to the waterbody (for example, marginal warmwater aquatic life instead of limited
3 aquatic life).
- 4 • Step 4 would be to prepare and submit a petition to the WQCC to modify the designated
5 use or uses for the studied waters, if warranted by the analysis.
- 6 • Step 5 would be dependent on the findings of the WQCC. If the WQCC adopts
7 revisions to 20.6.4 NMAC as a result of the EUA, then under this step, the revised
8 water quality standards and all supporting evidence would be submitted to the EPA
9 Regional Administrator for review and approval. If the WQCC rejects the petition,
10 then the proponents would need to determine whether to revise the petition for
11 submittal again at a later date.

12 Importantly, any such process for re-designating or re-classifying waters needs to follow a
13 rigorous, data-driven, and publicly transparent process, whether or not the process leads to
14 a demonstration that a designated use should be amended based on a more, or less, stringent
15 existing use. The process followed by NMED should be broadly similar in terms of data
16 needs, analysis, and public review and should be applicable to any classified segment in
17 the State of New Mexico. Moreover, in my opinion because the EUA is intended to be
18 similar to a UAA, implementation of a UAA-like process is important, regardless of
19 whether the outcome is re-designation of a waterbody to a more or less stringent use or
20 level of aquatic life protection. Accordingly, a EUA process should be consistent with
21 elements of EPA’s guidance on *Improving the Effectiveness of the Use Attainability*
22 *Analysis (UAA) Process (LANL Exhibit 33)*, including for example:

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- 1 • Getting the uses right requires both a useful set of designated uses and an effective
2 process for conducting credible and defensible UAAs.
- 3 • A credible UAA can result in a change in designated use in either direction.
- 4 • There is nothing wrong with changing designated uses after completion of a credible
5 UAA.
- 6 • Improved public communication leads to improved public acceptance.
- 7 Finally, the approach used to conduct an existing use analysis should be adopted by the
8 WQCC and included as a process in the WQMP/CPP.

IV. CONCLUSION

10 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

11 A. Yes.

Exhibit 3

**STATE OF NEW MEXICO
BEFORE THE WATER QUALITY CONTROL COMMISSION**

IN THE MATTER OF:

**THE PETITION TO AMEND
THE STANDARDS FOR INTERSTATE
AND INTRASTATE SURFACE WATERS,
20.6.4 NMAC**

WQCC No. 20-51(R)

**DIRECT TESTIMONY OF ROBERT M. GALLEGOS
ON BEHALF OF TRIAD NATIONAL SECURITY, LLC
AND THE U.S. DEPARTMENT OF ENERGY, NATIONAL NUCLEAR SECURITY
ADMINISTRATION**

May 3, 2021

Direct Testimony of Robert M. Gallegos
Case No. WQCC 20-51(R)

I. INTRODUCTION

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Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. Robert M. Gallegos. My office is located in Technical Area 59, Building 96 at Los Alamos National Laboratory.

Q. ON WHOSE BEHALF ARE YOU SUBMITTING DIRECT TESTIMONY?

A. I am submitting this direct testimony on behalf of Triad National Security, LLC, (“Triad”) and the U.S. Department of Energy, National Nuclear Security Administration (“DOE”) (collectively “LANL”).¹

Q. BY WHOM ARE YOU EMPLOYED AND WHAT IS YOUR POSITION?

A. I am currently employed by Triad as an Environmental Professional at Los Alamos National Laboratory and have held that position for the last ten years.

Q. PLEASE DESCRIBE YOUR PAST EMPLOYMENT HISTORY.

A. Throughout my thirty-six year professional career, I have focused on water quality matters and have worked in a variety of positions related to drinking water and water quality evaluation and protection, with increasing responsibilities. Prior to being employed at Los Alamos National Laboratory, I was an adjunct professor from 2010 to 2012 at the Santa Fe Community College where I taught a course entitled Water Permits and Regulations. For the seven years prior to that, from 2003 to 2010, I was employed as an Environmental Compliance Specialist at the City of Santa Fe Public Utility Department. From 1985 to 2003, I served in various capacities with the New Mexico Environment Department (“NMED”) in the Drinking Water Bureau, starting as a Water Resource Specialist and

¹ DOE and predecessor and current operators of LANL are referred to in my testimony collectively as “LANL” to avoid unnecessary entity name complications.

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1 advancing to Environmental Scientist, then Program Manager, and eventually Bureau
2 Chief. As Bureau Chief, I was responsible for the administration and implementation of
3 the federal Safe Drinking Water Act and the New Mexico Drinking Water Regulations
4 throughout the State of New Mexico. I started my professional career in 1984 in the New
5 Mexico Health Department Scientific Laboratory Division where I worked for one year as
6 a Laboratory Scientist.

7 **Q. WHAT ARE YOUR RESPONSIBILITIES AT LANL AS AN ENVIRONMENTAL**
8 **PROFESSIONAL?**

9 A. I work in the LANL Environmental Compliance Programs group, on the Water Quality
10 Team. I am responsible for supporting the LANL management team in development and
11 implementation of, and compliance with, New Mexico Water Quality Standards under
12 20.6.4 NMAC at LANL. My responsibilities are varied but focus on studying and
13 understanding the water quality in all LANL watersheds, reducing effluents, and improving
14 site water quality. Of particular relevance to these 2020 Triennial Review proceedings,
15 during the 2013 Triennial Review, I supported the work of LANL’s senior testifying expert,
16 by developing technical testimony, conducting supporting research, and providing
17 background information.

18 My current responsibilities include: (i) conducting assessments using the
19 Hydrology Protocol (“HP”) in NMED’s Water Quality Management Plan and Continuing
20 Planning Process (“WQMP/PPP”), Appendix C ([https://www.env.nm.gov/surface-water-](https://www.env.nm.gov/surface-water-quality/hp/)
21 [quality/hp/](https://www.env.nm.gov/surface-water-quality/hp/))² across all LANL watersheds beginning in 2017, many of which were also

² The Hydrology Protocol is provided for in the WQMP/PPP (Section II and Appx C), and provides a methodology for distinguishing among ephemeral, intermittent, and perennial streams and rivers in New Mexico. It also generates documentation of the uses supported by those waters as a result of the flow regime.

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1 conducted in compliance with the requirements of the October 9, 2015 “Joint Stipulation
2 Regarding Proposed Changes to 20.4.6.128 NMAC” between LANL, NMED and Amigos
3 Bravos (the “2015 Joint Stipulation”); (ii) leading the stream temperature study for the
4 effluent dominated/perennial reach of Upper Sandia Canyon; (iii) preparing the Use
5 Attainability Analysis (“UAA”) work plan, and assisting in its implementation, for review
6 of Upper Sandia Canyon coldwater aquatic life use (the final UAA is currently pending);
7 (iv) developing the Category 4b Document to establish total maximum daily loads
8 (“TMDLs”) for Sandia Canyon assessment units (“AU”); (v) assisting with LANL’s
9 environmental compliance programs, striving for zero permit exceedances and reducing
10 effluent discharges, including implementing the Outfall Reduction Program; (vi) preparing
11 related compliance reports for NMED, DOE, the U.S. Environmental Protection Agency
12 (“EPA”), and other regulatory agencies; (vii) preparing comments to NMED draft
13 documents and reports including: the HP, Integrated Report, State of New Mexico
14 Statewide WQMP/ CPP and Comprehensive Assessment and Listing Methodology; (viii)
15 water program permitting for point source and dredge and fill permits; and (ix) completing
16 training at the U.S. Fish and Wildlife Service (“USFWS”) National Conservation Training
17 Center in Macroinvertebrate Ecology and Identification and Freshwater Biomonitoring
18 using Benthic Macroinvertebrates in April of 2017 and May of 2018, respectively.

19 **Q. ADDRESSING A NUMBER OF YOUR CURRENT RESPONSIBILITIES IN**
20 **MORE DETAIL, FIRST PLEASE DESCRIBE YOUR EXPERIENCE WITH THE**
21 **USE ATTAINABILITY ANALYSIS PROCESS AND ITS IMPLEMENTATION,**
22 **AND OVERSIGHT AND IMPLEMENTATION OF SURFACE WATER STUDIES**
23 **AT LANL.**

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1 A. I led the LANL team conducting a UAA to determine if coldwater aquatic life is an
2 attainable designated use for the Sandia Canyon water quality assessment unit NM-
3 9000.A_047 (Upper Sandia Canyon Assessment Unit). The UAA was conducted as part
4 of the water quality standards development process. I prepared a work plan pursuant to
5 20.6.4.15(D) NMAC to determine if natural thermal conditions are preventing the
6 attainment of coldwater aquatic life use in the perennial reach of the Upper Sandia Canyon
7 AU. I worked with NMED and received approval of the work plan. I led the LANL team
8 responsible for preparation of the UAA, in accordance with the approved work plan and in
9 compliance with 20.6.4.15(D) NMAC. The final results of the UAA are undergoing
10 internal LANL review. I am not testifying about the Upper Sandia Canyon UAA work in
11 my direct testimony because this is not an issue in the Triennial Review, but my experience
12 developing the work plan and preparing the UAA informs my direct written testimony to
13 the Water Quality Control Commission (“WQCC”) here.

14 **Q. TURNING NEXT TO THE HYDROLOGY PROTOCOL, PLEASE DESCRIBE**
15 **YOUR EXPERIENCE WITH THE HYDROLOGY PROTOCOL AND**
16 **HYDROLOGY PROTOCOL ASSESSMENTS.**

17 A. I have extensive experience with the HP. It was developed by NMED in 2011 and recently
18 updated. The LANL team participated in the original development of the HP and in the
19 recent updates. Pursuant to the 2015 Joint Stipulation, I led LANL’s team to conduct HP
20 assessments on all 20.6.4.128 NMAC (“Section 128”) waters at LANL from 2016 through
21 2020.³ During this period, 117 HP assessments were conducted on Section 128 waters.

³ A chronology of activities performed pursuant to the 2015 Joint Stipulation, including HP assessments conducted on Section 128 waters, is attached to LANL’s Notice of Intent to Present Technical Testimony (“LANL’s Notice of Intent”) filed concurrently with this technical testimony, as **LANL Exhibit 36**.

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1 The HP assessments were all conducted using procedures established in the New Mexico
2 WQMP/PPP, Appendix C – Hydrology Protocol. Approximately 44% of the HP
3 assessments were conducted jointly with NMED and in a few instances with NMED and
4 Amigos Bravos. NMED was invited to participate in all HP assessments conducted at
5 LANL, but in some cases, NMED did not have staff availability to participate in joint
6 sampling and surveying efforts. All HP assessments were conducted following the same
7 approved procedures whether NMED staff participated or not. All HP assessment data has
8 been provided to NMED and Amigos Bravos, thereby making it publicly available. In June
9 of 2018, NMED, Amigos Bravos and LANL participated in a joint quality review of HP
10 assessments completed under the 2015 Joint Stipulation. The review included an
11 evaluation of attribute scores and final determination and concurrence on the total numeric
12 scores.

13 Additionally, in 2017, LANL conducted over 35 additional HP assessments to
14 fulfill requirements of a Supplemental Environmental Project (“SEP”) pursuant to a
15 Settlement Agreement and Stipulated Final Order between the NMED and DOE. I
16 participated as a SEP team member and assisted in implementing these HP assessments,
17 which were conducted within the Pueblo Canyon Watershed and in undeveloped
18 watersheds, all of which were outside of LANL boundaries. These HP assessments were
19 conducted using the same NMED-developed methodologies to distinguish between
20 perennial, intermittent, and ephemeral streams and rivers in New Mexico. Specifically, the
21 SEP team uniformly applied the HP methods in NMED’s WQMP/PPP Appendix C.
22 NMED staff jointly participated in a number of the HP assessments.

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1 In conclusion, from 2016 through 2020, I have participated in or led over 150 HPs
2 following NMED’s approved protocols, and many of these HP assessments were jointly
3 conducted by LANL and NMED staff.

4 **Q. PLEASE DESCRIBE YOUR EXPERIENCE WITH WATER QUALITY**
5 **STANDARDS, CLASSIFICATION OF STREAM SEGMENTS, AND WATER**
6 **PERMITTING.**

7 A. My first experience with water quality standards (“WQS”) and classification of stream
8 segments was during the time I was employed by the City of Santa Fe. I was responsible
9 for supporting the Santa Fe Wastewater Treatment Plant (“SFWWTP”) operations staff
10 with their preparation of discharge monitoring reports (“DMRs”), permit applications and
11 with a hardness study that was used to address metals limits contained in the City’s NPDES
12 permit (Permit No. NM0022292) and discharges to 20.6.4.113 NMAC (a perennial reach
13 below SFWWTP). The City’s Water Utility Department maintains an important drinking
14 water source for the City, the Buckman Well Wellfield. Prior to 2010, the operation of
15 these wells included discharges to unclassified ephemeral (20.6.4.97 NMAC) tributaries to
16 the Rio Grande. I worked with operations staff to convert the purge water discharges to
17 the environment to a zero discharge system that recycled the water back into the City’s
18 distribution system. The conversion allowed the City to obtain termination of NPDES
19 permit requirements. In addition to the water quality standards development work
20 described above, I supported the LANL Permit team in the preparation of an NPDES permit
21 (Permit No. NM00028355) application, DMRs, and other reporting requirements.

22 **Q. PLEASE SUMMARIZE YOUR EDUCATIONAL EXPERIENCE.**

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1 A. I received a Bachelor of Science Degree in Biology from New Mexico State University in
2 1982 and earned a Master of Science Degree in Biology, also from New Mexico State
3 University in 1984. A copy of my resume is attached to LANL's Notice of Intent as **LANL**
4 **Exhibit 10.**

5 **Q. HAVE YOU PREVIOUSLY TESTIFIED IN STATE OR FEDERAL**
6 **REGULATORY PROCEEDINGS ON SURFACE WATER QUALITY-RELATED**
7 **ISSUES?**

8 A. Yes, I have testified numerous times before the New Mexico Environmental Improvement
9 Board when I worked for NMED. I testified regarding a range of waste management and
10 Safe Drinking Water Act matters. During the 2013 Triennial Review, I directly supported
11 LANL's senior testifying expert by developing technical testimony, conducting supporting
12 research, and providing background information. I have also provided information to the
13 WQCC on behalf of the City of Santa Fe regarding the proposed standard for uranium in
14 ground water.

II. PURPOSE OF TESTIMONY

16 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

17 A. The purpose of my testimony is to provide the technical basis for LANL's evaluation of
18 the NMED Surface Water Quality Bureau's ("SWQB") proposed amendments and
19 statement of reasons for proposed amendments to the Standards for Interstate and Intrastate
20 Surface Waters, 20.6.4 NMAC ("Standards") set forth in NMED's August 18, 2020
21 Petition ("Original Petition") and NMED's March 12, 2021 Notice of Amended Petition
22 ("Amended Petition"). My testimony includes the historical context for use classifications
23 of waters within the LANL property, specifically 20.6.4.126 NMAC ("Section 126") and

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1 Section 128. I also identify and provide the technical basis for certain changes LANL has
2 proposed to those Standards in its Notice of Intent.

3 **III. LANL’S EVALUATION OF AND PROPOSED CHANGES TO NMED’S**
4 **PROPOSED AMENDMENTS**

5 **Q. PLEASE IDENTIFY THE AMENDMENTS PROPOSED BY NMED THAT YOU**
6 **ARE ADDRESSING IN THIS TESTIMONY.**

7 A. In addition to my testimony providing historical context for use classifications of waters
8 within the LANL property, by reference to the specific regulatory sections addressed in the
9 NMED’s Petition, I will be addressing the following Standards sections:

- 10 • Rio Grande Basin (20.6.4.126 NMAC): proposed reclassification of certain stream
11 segments from ephemeral and intermittent (under 20.6.4.128 NMAC) to perennial
12 (under 20.6.4.126 NMAC) and the specific identification of such stream segments and
13 related designated uses and criteria;
- 14 • Rio Grande Basin (20.6.4.128 NMAC): proposed reclassification of certain stream
15 segments from ephemeral and intermittent (under 20.6.4.128 NMAC) to a new section
16 (20.6.4.140 NMAC (“Section 140”)) establishing standards for intermittent stream
17 segments and related designated uses and criteria;
- 18 • Rio Grande Basin (20.6.4.140 NMAC): proposal to establish a new classification for
19 intermittent stream segments and related designated uses and criteria.
- 20 • Review of Standards; Need for Additional Studies (20.6.4.10.C NMAC) and Use
21 Attainability Analysis (20.6.4.15.D NMAC): proposed revisions to increase NMED’s
22 discretion by revising “shall” to “may;”

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- 1 • Review of Standards; Need for Additional Studies section (20.6.4.10(B) NMAC):
2 NMED’s proposed new subsection to clarify the required process for amending a
3 designated use where the existing use is more stringent than the designated use in
4 accordance with 40 CFR 131.10(i); and
- 5 • Review of Standards; Need for Additional Studies section (20.6.4.10(C) NMAC):
6 NMED’s’ proposed amendment describing how a designated use or numeric criterion
7 can be amended to be less stringent.

8 **Q. HAVE YOU REVIEWED NMED’S STATEMENT OF REASONS FOR THESE**
9 **PROPOSED AMENDMENTS, FILED AS ATTACHMENT 3 TO NMED’S**
10 **ORIGINAL PETITION?**

11 A. Yes, I have evaluated NMED’s Original Petition and Statement of Reasons to determine
12 potential implications for LANL’s NPDES permits. Of particular concern were provisions
13 dealing with the 2015 Joint Stipulation and implications for LANL due to changes to
14 Section 126 and 128 waters. Since the last Triennial Review, LANL has conducted 117
15 HP assessments on Section 128 waters. In my testimony, I will provide an overview of
16 those studies to the WQCC, describe the HP procedures used, and provide the data
17 generated, to document that robust processes are in place and they have been followed.
18 Adherence to the HP procedures enables the WQCC to support its decisions regarding
19 LANL waters with data and the necessary technical support to obtain EPA approvals.

20 **Q. HAVE YOU REVIEWED LANL’S JANUARY 6, 2021 COMMENTS TO THESE**
21 **PROPOSED AMENDMENTS?**

22 A. Yes, I participated in developing a number of specific comments to LANL’s January 6,
23 2021 comments and have reviewed the comments that were submitted.

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1 **Q. HAVE YOU ALSO REVIEWED NMED’S REVISIONS TO THESE PROPOSED**
2 **AMENDMENTS SET FORTH IN NMED’S AMENDED PETITION?**

3 A. Yes.

4 **1. HISTORICAL CONTEXT FOR THE DEVELOPMENT OF SECTION 126 AND**
5 **SECTION 128 WATERS**

6 **Q. PLEASE PROVIDE AN OVERVIEW OF WHAT WATERS ARE WITHIN**
7 **LANDS MANAGED BY THE UNITED STATES DEPARTMENT OF ENERGY**
8 **WITHIN LANL.**

9 A. LANL is a large national laboratory with a footprint of approximately 40 square miles.
10 The Laboratory property covers an area that is quite geographically diverse. The western
11 portion of the Laboratory sits at an elevation of 7800 feet and slopes downward to the east-
12 southeast, covering a distance of more than 15 miles to the Rio Grande at an elevation of
13 5400 feet. Several deep canyons cut through the Laboratory. Laboratory lands contain all
14 or parts of seven watersheds that drain into the Rio Grande basin. As shown on the map,
15 attached as **LANL Exhibit 37** (LA-UR-20-30297), listed from north to south, the major
16 canyons for these watersheds are Los Alamos, Sandia, Mortandad, Pajarito, Water, Ancho,
17 and Chaquehui Canyons. Each of these watersheds includes tributary canyons of various
18 sizes. Los Alamos, Pajarito, and Water Canyons have their headwaters west of the
19 Laboratory in the eastern Jemez Mountains, mostly within the Santa Fe National Forest.
20 The remainder of the watersheds have their headwaters on the Pajarito Plateau within the
21 LANL boundary. Only the Ancho Canyon watershed is located entirely on Laboratory
22 land. Sources of surface water in these watersheds include snowmelt, stormwater runoff,
23 treated effluent, and discharges at springs.

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1 Within these seven watersheds that are within the exterior boundary of the
2 Laboratory, there are approximately 80 miles of surface waters. All of these surface waters
3 within the Laboratory boundaries are classified. Since LANL surface waters were
4 originally classified, numerous physical changes to LANL stream reaches have occurred.
5 The 2000 Cerro Grande and the 2011 Los Conchas fires devastated much of the upper
6 watershed. Major flood events in 2011 and 2013 damaged gages and structures and altered
7 stream hydrology. Flood control, grade control, weirs, and retention structures were
8 installed to prevent flooding, repair head cutting, and control sediment transport. These
9 changes have required the need for continuous monitoring and evaluation. New gages were
10 installed to collect flow and water quality information. Agreements with regulators
11 resulted in extensive canyon investigations and monitoring across all LANL watersheds.
12 Since classification, NMED has evaluated all LANL watersheds for water quality
13 assessment purposes and produced the biennial 303(d)/305(b) Integrated Report and
14 Impaired Waters Listing.

15 Since the last Triennial Review, LANL (and NMED) have continued to evaluate
16 and refine the current understanding of stream hydrology at the Laboratory based on
17 changes (such as fires, NPDES permit modifications, installation of permitted monitoring
18 structures, etc.). Through the application of the HP assessment work conducted across all
19 watersheds, the LANL team, working with NMED, has produced information furthering
20 our understanding of the hydrology changes of Laboratory surface waters. In addition to
21 HP assessment work, LANL maintains a network of stream gages and meteorological
22 stations which are used to further our understanding of the hydrology at LANL. LANL
23 has issued numerous studies and reports on surface water monitoring, riparian habitats,

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1 surface water flows, canyon investigations and macroinvertebrate studies. The NMED
2 assesses LANL surface waters every two years to determine water quality impairments.

3 Based upon LANL's current understanding of site hydrology, approximately 8
4 miles, or about 10% of the waters at LANL, are perennial waters. These waters flow year
5 round, but often experience low-flow conditions and are insufficient to maintain surface
6 flow across the Laboratory. The perennial waters are most frequently located on the
7 western side of the Laboratory in the higher elevations and are usually very short segments
8 of about a quarter mile to up to three miles. Spring discharges near the Rio Grande may
9 also support perennial flows. These waters typically contain a variety of riparian
10 vegetation and aquatic life. When I refer to Section 126 waters, these perennial waters are
11 the waters to which I am referring. These Section 126 waters are shown on the map, **LANL**
12 **Exhibit 37** (LA-UR-20-30297), in red.

13 Approximately 20 miles, or about 25% of the waters at LANL, are intermittent.
14 These waters flow seasonally in the springtime in addition to when we have significant
15 enough precipitation events. The vast majority of our water bodies, approximately 52 miles
16 or about 65% of the water bodies at LANL, are ephemeral. These water bodies are
17 temporary streams that flow for brief periods only as a direct result of a significant enough
18 precipitation event. In past Triennial Reviews, these have often been described as dry
19 arroyos. When I refer to current Section 128 waters, I am referring to these approximately
20 72 miles of intermittent and ephemeral waters.

21 **Q. ARE ALL WATERS WITHIN LANDS MANAGED BY THE UNITED STATES**
22 **DEPARTMENT OF ENERGY WITHIN LANL CLASSIFIED WATERS OF THE**
23 **STATE?**

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1 A. Yes, the estimated 80 miles of LANL surface waters that I just described were classified
2 during the 2003 Triennial Review (WQCC 03-05(R)).

3 **Q. PLEASE EXPLAIN HOW THE WATERS WITHIN LANDS MANAGED BY THE**
4 **UNITED STATES DEPARTMENT OF ENERGY WITHIN LANL CAME TO BE**
5 **CLASSIFIED AS SECTION 126 AND SECTION 128 WATERS.**

6 A. My understanding is that surface waters within LANL were classified through a process
7 that began in 1992 when EPA issued a draft permit for LANL's industrial outfall permit,
8 NPDES Permit No. NM0028355. *See LANL Exhibit 30*, Affidavit of Michael T. Saladen.
9 The draft permit included a conditional certification by NMED that set effluent limits based
10 on the designated uses of Rio Grande Segments 2-111 and 2-118 (today this is WQS
11 20.6.4.114 NMAC). LANL challenged NMED's certification by filing a petition for
12 review by the WQCC. On April 20, 1993, NMED and LANL entered into a Settlement
13 Agreement. The 1993 Settlement Agreement directed a study be conducted to identify the
14 stream uses associated with the watercourses at LANL. The Settlement Agreement was
15 amended to clarify that an unbiased third party – USFWS would conduct the study – which
16 was entitled *A Water Quality Assessment of Four Intermittent Streams in Los Alamos*
17 *County, New Mexico* ("FWS Report"). *See id.*

18 The FWS Report was used to identify the proper stream uses and support for LANL
19 Segments 126 and 128. *Id.* The FWS Report was completed in 2002. During the 2003
20 Triennial Review, NMED proposed the classification of perennial, intermittent, and
21 ephemeral waters at LANL. *Id.* On May 13, 2005, the WQCC adopted Section 126
22 (perennial portions within LANL) and Section 128 (ephemeral and intermittent portions of
23 waters within LANL). *Id.* EPA took no action on the new classifications until NMED

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1 prepared a UAA in 2007, based in large part on the FWS Report, to support the use
2 designations for Sections 126 and 128. On August 31, 2007, EPA approved the classified
3 waters and designated uses for Sections 126 and 128. *Id.* EPA's approval of Sections 126
4 and 128 resulted in the classification of all waters within LANL. *See id.*

5 **Q. SINCE THE 2005 TRIENNIAL HAS THE WQCC APPROVED ANY OTHER**
6 **CHANGES TO THE SECTION 126 OR 128 WATERS?**

7 A. No. During the 2009 Triennial Review, Amigos Bravos proposed a change to the
8 designated aquatic life use for Section 128, but the WQCC did not adopt that change for a
9 number of reasons, including that Amigos Bravos did not present any new information as
10 required by 20.6.4.10(A) NMAC and 40 CFR 131.20(a). *See LANL Exhibit 30* at ¶ 14.
11 During the 2013 Triennial Review (WQCC 14-05(R)), Amigos Bravos proposed a different
12 change to the aquatic life designated use for Section 128 waters. Amigos Bravos agreed
13 to withdraw that proposal based upon an agreement, as documented in the 2015 Joint
14 Stipulation. *See id.* at ¶¶ 15, 16.

15 **Q. WHAT IS THE PURPOSE OF THE JOINT STIPULATION?**

16 A. The purpose of the 2015 Joint Stipulation is to address water quality protections for Section
17 128 waters. Under the 2015 Joint Stipulation, among other things the parties agreed to
18 exchange and summarize the data collection and stream segment assessment efforts
19 undertaken for waters within LANL and to conduct certain HP assessments jointly to
20 collect additional data for Section 128 waters. The designated use of limited aquatic life
21 may not be appropriate for some Section 128 waters as conditions over time change and
22 new data suggest a more protective designated use is warranted. Under the 2015 Joint
23 Stipulation, the parties also committed to try to reach agreement regarding the appropriate

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1 level of water quality protections for Section 128 waters. The 2015 Joint Stipulation does
2 not and was never intended to override prior WQCC and EPA decisions for Section 128
3 waters by defaulting these waters to certain categories. *See* **LANL Exhibit 29; LANL**
4 **Exhibit 30** at ¶ 17.

5 **Q. HAS A PROCEDURAL FRAMEWORK TO SUPPORT A DECISION TO**
6 **RECLASSIFY SECTION 128 WATERS BEEN DEVELOPED?**

7 A. No, a formal procedural framework has not yet been developed or adopted by the WQCC,
8 and LANL is recommending that the Commission take that action, which I describe at the
9 end of my testimony. The process to move a Section 128 water into Section 126, or a new
10 Section 140, has not been considered by EPA or NMED. The UAA is a scientific
11 assessment and method to remove a less stringent designated use and not a method that
12 was established to move Section 128 waters to a more protective Section 126 classification,
13 or a more protective new Section classification, because that move increases protection.
14 The 2015 Joint Stipulation provides a framework to review the status of Section 128 waters,
15 collect and analyze new information, and bring agreements for more protective use to the
16 WQCC. When a water is classified through the processes established by NMED and EPA,
17 the only way to increase protections is to bring data and evidence before the WQCC. *See*
18 40 CFR 131.20(b).

19 **Q. IS THERE A PROCEDURAL FRAMEWORK THAT WOULD PERMIT**
20 **REDESIGNATING A CLASSIFIED WATER AS AN UNCLASSIFIED WATER?**

21 A. No, to my knowledge there is no process in federal or New Mexico state law to redesignate
22 a classified water as an unclassified water. The water quality standards review process
23 should always endeavor to refine the classification and determine whether any new

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1 information has become available and, if so, whether such new information indicates that
2 the uses specified in Clean Water Act Section 101(a)(2) are attainable. Such new
3 information should not be used to move classified waters into an unclassified category by
4 default.

5 **Q. PLEASE EXPLAIN WHEN A UAA IS REQUIRED AND WHEN THE HP IS**
6 **REQUIRED TO SUPPORT A RECLASSIFICATION DECISION.**

7 A. A UAA is a scientific study conducted to assess the factors affecting attainment of use. A
8 use may not be attainable if attaining the designated use is not feasible due to one of six
9 factors in 40 CFR 131.10(g). A review of the water quality standard may be required if it
10 is determined that a water body is not meeting an attainable use. The HP provides a method
11 to distinguish the difference in hydrology between ephemeral, intermittent and perennial
12 streams and rivers, and generates information of the uses that may be supported. The HP
13 provides support for a UAA but is not intended to serve as the sole source of information
14 for a UAA.

15 **2. NMED PROPOSED AMENDMENTS TO RIO GRANDE BASIN (20.6.4.126**
16 **NMAC)**

17 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED'S ORIGINAL**
18 **PROPOSED AMENDMENTS TO SECTION 20.6.4.126?**

19 A. The NMED originally proposed in October 2020 to amend section 20.6.4.126 NMAC to
20 include additional perennial waters within lands managed by DOE within LANL. The
21 NMED identified these additional perennial waters through the 2015 Joint Stipulation
22 between the NMED, LANL, and Amigos Bravos executed during the 2013 Triennial
23 Review (WQCC 14-05(R)).

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1 **Q. WHAT IS YOUR POSITION ON NMED'S ORIGINAL PROPOSED**
2 **AMENDMENTS TO SECTION 126?**

3 A. LANL supports the inclusion of additional stream segments as perennial waters. However,
4 LANL recommends that the reaches to be reclassified should be precisely defined
5 geographically, from origin to terminus, to establish clear geographic boundaries.

6 **Q. ARE YOU RECOMMENDING CHANGES TO NMED'S ORIGINAL PROPOSAL?**

7 A. Yes, LANL proposes to define additional perennial stream segments to be added to Section
8 126 from origin to terminus and recommends the following revision:⁴

9 RIO GRANDE BASIN: Perennial waters within lands managed by the U.S.
10 Department of Energy (DOE) within Los Alamos National Laboratory
11 (LANL), including but not limited to: portions of Cañon de Valle from Los
12 Alamos National Laboratory (LANL) stream gage E256 upstream to
13 Burning Ground Spring, Sandia canyon from Sigma canyon upstream to
14 LANL NPDES outfall 001, Pajarito canyon from 0.5 miles below Arroyo
15 de La Delfe upstream to Homestead Spring, Arroyo de la Delfe from
16 Pajarito canyon to Kieling Spring, ~~into~~ Starmers Gulch and Starmers Spring
17 and Water canyon from Area-A canyon upstream to State Route 501.

18 **Q. PLEASE EXPLAIN THE BASIS FOR THIS PROPOSED CHANGE.**

19 A. The proposed changes for the classified segments of waters within Los Alamos National
20 Laboratory, specifically moving some waters from Section 128 to Section 126, are
21 appropriate and necessary for protecting water quality on the Pajarito Plateau. LANL
22 proposes to add language to clarify that Section 126 includes additional perennial waters
23 within lands managed by the DOE at LANL. Additional perennial waters were identified
24 by using joint HP assessments conducted by LANL and the NMED pursuant to the 2015
25 Joint Stipulation. Additional analysis of biological, physical, chemical and gage data for

⁴ Throughout this testimony proposed revisions are shown to an existing NMAC provision with underlined lettering reflecting proposed inserts and ~~strike outs~~ reflecting proposed removals.

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1 the identified waters was conducted by LANL. The changes LANL is proposing are based
2 on the joint HP work with NMED and additional analysis conducted by LANL.

3 These proposed changes, moving Section 128 waters to Section 126, appropriately
4 apply the same level of protections provided to other waters with coldwater aquatic life use
5 in New Mexico, and provide greater protection for aquatic life than is provided for
6 unclassified perennial waters in New Mexico. While LANL's proposal adds the clarifying
7 language "including but not limited to," all Section 126 and Section 128 waters should
8 similarly be reviewed and revised as appropriate so that clear geographic boundaries
9 corresponding to designated uses are provided.

10 **Q. WERE ANY STUDIES DONE TO SUPPORT THE IDENTIFICATION OF THE**
11 **SPECIFIC STREAM REACHES THAT NMED HAS PROPOSED TO**
12 **RECLASSIFY FROM SECTION 128 TO SECTION 126 THAT EXPLAIN THE**
13 **BASIS FOR CHANGE?**

14 A. Yes, the proposal for the addition of specific segments to Section 126 is based, in part, on
15 HP assessment work completed by the NMED and LANL in fulfillment of the 2015 Joint
16 Stipulation. NMED's 2007 UAA established the existing uses of limited aquatic life and
17 secondary contact for these Section 128 waters. Likewise, the NMED's UAA established
18 the existing use of secondary contact for perennial Section 126 waters. With respect to the
19 segments we propose be moved from Section 128 to Section 126, there is no new data to
20 suggest that the non-primary contact recreational use has changed. However, some new
21 data suggests that the current aquatic life use designation of limited aquatic life may no
22 longer be appropriate for some of the waters included in Section 128 currently. LANL
23 conducted monitoring for benthic organisms and analyzed key metrics, consistent with the

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1 HP, for the presence of long-lived aquatic species, EPT (*Ephemeroptera*, *Plecoptera*, and
2 *Trichoptera*) abundance and total species richness. Water quality data from springs and
3 gage stations, located within these waters, was evaluated. The data suggests that coldwater
4 aquatic life use may be attainable. Furthermore, these waters are contiguous with existing
5 perennial Section 126 waters in Pajarito Canyon. See **LANL Exhibit 37** (LA-UR-20-
6 30297). LANL proposes moving these waters from current 20.6.4.128 NMAC to Section
7 126 as a matter of consistency with the principle that the decision on which specific stream
8 segments should be moved from Section 128 to either Section 126 or new Section 140 must
9 be made based upon sound science and defensible data. Moving these waters from Section
10 128 to Section 126 results in increased protections for these waters, and in such cases the
11 NMED’s position is that a UAA is not required.

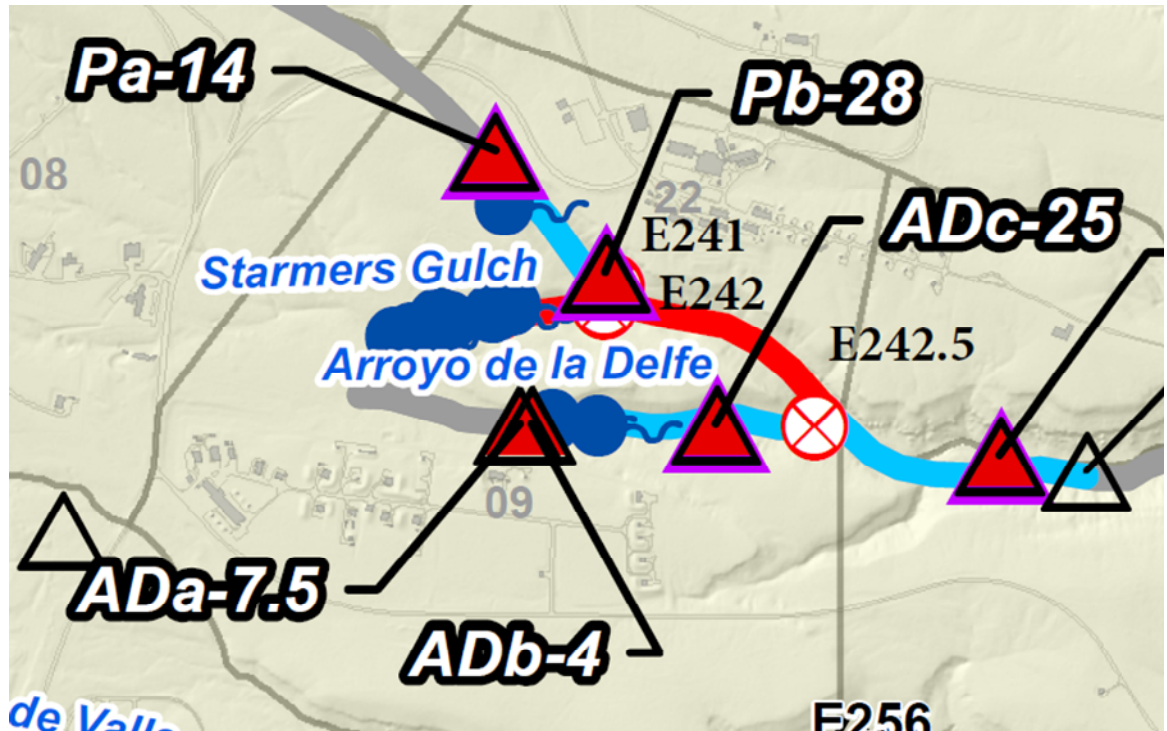
12 **Q. DOES THE NEW INFORMATION SUPPORT MOVING THE SPECIFIC**
13 **SEGMENTS FROM SECTION 128 TO SECTION 126?**

14 A. Yes, LANL is providing, with my testimony, the data and information that supports moving
15 the following two segments from Section 128 to Section 126: (1) Pajarito canyon from 0.5
16 miles below Arroyo de la Delfe upstream to Homestead Spring; and (2) Arroyo de la Delfe
17 from Pajarito canyon to Kieling Spring. As described in LANL’s proposal, the first
18 segment – Pajarito canyon from 0.5 miles below Arroyo de la Delfe upstream to Homestead
19 Spring – includes the existing Section 126 perennial water in Pajarito canyon from the
20 confluence with Arroyo de la Delfe to Starmers gulch and the following two continuous
21 reaches (see figure below):

- 22 • Pajarito canyon from 0.5 miles below Arroyo de la Delfe to the confluence with Arroyo
23 de la Delfe (“Pajarito Lower Section”).

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- 1 • Pajarito canyon from Starmers Gulch to Homestead Spring (“Pajarito Upper Section”).



2

3 **Figure 1. Portion of the map of HP Assessment Sites and Proposed Changes (LANL Exhibit**
4 **37), with the existing Section 126 reach shown in red, and reaches proposed for**
5 **reclassification to Section 126 shown in blue.**

6

7 Reclassification of the Pajarito Lower Section is supported by LANL Exhibit 38 (LA-UR-
8 21-24106), which includes HP Level 1 field sheets, HP Level 2 field sheets, photographs
9 and benthic taxa summary and EPT findings. This data and information demonstrate HP
10 Level 1 scores well into the perennial range. The presence of flowing water and benthic
11 macroinvertebrates were identified during the assessment. An evaluation using HP Level
12 2 methods followed. Sampling for macroinvertebrates was conducted and submitted to a
13 qualified laboratory for identification and evaluation. Macroinvertebrate taxa requiring
14 water for their entire life cycle were identified as well as EPT taxa and a diverse number
15 of individual species. The Pajarito Upper Section includes flow, pH, dissolved oxygen
16 (“DO”), and temperature data from gage E241 and pH, DO, and temperature data from

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1 Homestead Spring. This data is presented in the direct testimony of Mr. Goering. **LANL**
2 **Exhibit 4**; *see also* **LANL Exhibit 38** (LA-UR-21-24107). Fish and amphibians were not
3 identified during the HP assessments. However, amphibians are known to exist in these
4 reaches including: Jemez Mountains salamander, Chorus frogs, Woodhouse's toad,
5 Canyon tree frogs, and tiger salamanders.

6 Reclassification of the second segment from Arroyo de la Delfe from Pajarito
7 canyon to Kieling Spring is supported by **LANL Exhibit 39** (LA-UR-21-24109), which
8 includes HP Level 1 field sheets, HP Level 2, field sheets, photographs, benthic taxa
9 summary and EPT findings, E245.5 gage flows, temperature, DO levels and pH. This data
10 and information demonstrate HP Level 1 scores well into the perennial range. The presence
11 of flowing water and benthic macroinvertebrates were identified during the assessment.
12 An evaluation using HP Level 2 methods followed. Sampling for macroinvertebrates was
13 conducted and submitted to a qualified laboratory for identification and evaluation.
14 Macroinvertebrate taxa requiring water for their entire life cycle were identified as well as
15 EPT taxa and a diverse number of individual species. Additional data and information in
16 this reach includes flow, pH, DO and temperatures from gage E242.5 and pH, DO and
17 temperature data from Kieling Spring. This data is presented in Mr. Goering's direct
18 testimony, **LANL Exhibit 4**. Fish, amphibians and bivalves were not identified during the
19 HP assessments. However, a species of bivalve was identified through laboratory
20 examination and amphibians are known to exist in this reach including: Jemez Mountain
21 salamander, Chorus frogs, Woodhouse's toad, Canyon tree frogs, and tiger salamanders.

22 **Q. DOES LANL PROPOSE MOVING ANY OTHER WATERS FROM SECTION 128**
23 **TO SECTION 126?**

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1 A. There are potentially other perennial waters within the Laboratory property boundary.
2 Some reaches that have been jointly evaluated by HP assessment may qualify for
3 reclassification as Section 126 waters, but the available data is incomplete and there are
4 indications that coldwater aquatic life use is not being attained. If the WQCC adopts
5 LANL's proposed changes to Section 126 and adopts a reclassification process, rather than
6 remaining in Section 128, as additional data is collected and analyzed, LANL would
7 recommend that those waters qualifying as perennial be reclassified by the WQCC and
8 included in Section 126. All reclassification decisions should be based upon the science
9 and the data and since all LANL waters are already classified, none of the waters within
10 LANL should ever default to section 20.6.4.99 NMAC, including any that are determined
11 to be perennial. Upon further study, LANL may propose reclassification of additional
12 Section 128 reaches to Section 126 or modifications to the designated uses for these
13 additional unspecified perennial segments at a future time. In any event, LANL is
14 committed to further and continued evaluation of Section 128 waters to ensure that the data
15 is collected and analyzed, changed conditions are identified, and appropriate protections
16 are applied.

17 **Q. DOES NMED'S AMENDED PETITION PROPOSE REVISIONS TO ITS**
18 **PROPOSED AMENDMENT TO SECTION 126?**

19 A. Yes, NMED's Amended Petition withdrew all propose revisions to Section 126.

20 **Q. WHAT IS YOUR OPINION OF NMED'S WITHDRAWAL OF THE PROPOSED**
21 **AMENDMENT TO SECTION 126?**

22 A. LANL continues to support the inclusion of additional stream segments as perennial waters
23 and recommends that the segments added to Section 126 be precisely defined

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1 geographically, from origin to terminus, to establish clear geographic boundaries when
2 possible. Under the 2015 Joint Stipulation, the parties all agreed that certain segments are
3 consistent with perennial hydrologic criteria. These agreed upon segments should be
4 removed from Section 128 and added to Section 126.

5 **Q. DO YOU RECOMMEND CHANGES TO NMED'S REVISED PROPOSED**
6 **AMENDMENT TO SECTION 126?**

7 A. Yes. For the reasons I have discussed in my testimony, LANL recommends that the
8 WQCC approve the addition of three geographically defined stream segments to Section
9 126, consistent with the agreement of the parties under the 2015 Joint Stipulation.
10 Specifically, LANL proposes to define the perennial stream segments to be added to
11 Section 126 from origin to terminus and recommends the following revisions:

12 RIO GRANDE BASIN: Perennial waters within lands managed by the U.S.
13 Department of Energy (DOE) within Los Alamos National Laboratory
14 (LANL), including but not limited to: ~~portions of~~ Cañon de Valle from ~~Los~~
15 Alamos National Laboratory (LANL) stream gage E256 upstream to
16 Burning Ground Spring, Sandia canyon from Sigma canyon upstream to
17 LANL NPDES outfall 001, Pajarito canyon from 0.5 miles below Arroyo
18 de La Delfe upstream to Homestead Spring, Arroyo de La Delfe from
19 Pajarito canyon to Kieling Spring, ~~into~~ Starmers Gulch and Starmers Spring
20 and Water canyon from Area-A canyon upstream to State Route 501.

21 **3. NMED PROPOSED AMENDMENTS TO RIO GRANDE BASIN (20.6.4.128**
22 **NMAC)**

23 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED'S ORIGINAL**
24 **PROPOSED AMENDMENTS TO SECTION 128?**

25 A. Section 128 includes surface waters within lands managed by DOE within LANL and
26 includes waters that are currently classified as ephemeral and intermittent. NMED's
27 original proposed amendments to Section 128 would remove the intermittent waters

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1 classification from Section 128. NMED's proposal also identified those portions of stream
2 segments remaining under Section 128 and not reclassified as perennial and moved to
3 Section 126 or reclassified as intermittent and moved to proposed new Section 140.
4 NMED's proposal did not include a precise geographic boundary description of the Section
5 128 waters.

6 **Q. WHAT IS YOUR POSITION ON NMED'S ORIGINAL PROPOSED**
7 **AMENDMENTS TO SECTION 128?**

8 A. LANL supports that waters classified under Section 128 waters should remain described
9 as ephemeral/intermittent because the WQCC has already determined that the uses
10 specified in Section 128 are appropriate for these waters and EPA has approved this
11 technical determination.

12 **Q. ARE YOU RECOMMENDING CHANGES TO NMED'S ORIGINAL PROPOSAL?**

13 A. Yes, Section 128 waters should remain described as ephemeral/intermittent. Additionally,
14 if the WQCC adopts the reclassification of reaches proposed by LANL and NMED for
15 current Section 128 waters and reclassifies these under Section 126 and proposed new
16 Section 140, waters remaining in Section 128 may be defined as those that are not identified
17 in Section 126 or Section 140.

18 **Q. PLEASE EXPLAIN THE BASIS FOR THIS PROPOSED CHANGE.**

19 A. Section 128 waters should remain as ephemeral/intermittent because the WQCC has
20 already determined that the uses specified in Section 128 are appropriate for these waters
21 and EPA has approved this technical determination. Additionally, data collected at this
22 time has not been fully evaluated to support moving additional waters out of Section 128.
23 The proposed modifications will best support the addition of new Section 140 waters

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1 proposed by the NMED in the Triennial Review. This new section would provide
2 increased protections for certain waters currently in Section 128 which have experienced
3 some physical changes such that they may now be better characterized as perennial or
4 intermittent and data support increased protections.

5 **Q. PLEASE EXPLAIN WHETHER THE REMAINING STREAM SEGMENTS**
6 **CLASSIFIED AS SECTION 128 WATERS WILL REMAIN IN SECTION 128.**

7 A. LANL is committed to continue to evaluate stream segments in Section 128, when
8 warranted and as information and data becomes available that justify increased protections,
9 these segments may be moved consistent with a process approved by the WQCC. As
10 provided in 40 CFR 131.10(k)(3) and an existing use analysis (“EUA”) procedural
11 framework, if adopted by the WQCC, the classification of Section 128 waters will continue
12 to be refined.

13 **Q. DOES NMED’S AMENDED PETITION PROPOSE REVISIONS TO ITS**
14 **PROPOSED AMENDMENT TO SECTION 128?**

15 A. Yes, NMED’S Amended Petition proposes to retain the ephemeral and intermittent
16 classifications for Section 128 water, would adopt LANL’s proposed language to include
17 any waters “not specifically identified in 20.6.4.126 or 20.6.4.140 NMAC” and also retains
18 the original listing of waters within LANL in current Section 128.

19 **Q. WHAT IS YOUR OPINION ON THE PROPOSED REVISION TO NMED’S**
20 **PROPOSED AMENDMENT TO SECTION 128?**

21 A. LANL supports NMED’s most recent amendments to Section 128. The Amended Petition
22 proposal retains the ephemeral/intermittent designation and provides the basis for a process

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1 to place these waters in more protective uses if scientifically defensible data justifies
2 reclassification in the future.

3 **Q. DO YOU RECOMMEND CHANGES TO NMED’S REVISED PROPOSED**
4 **AMENDMENT TO SECTION 128?**

5 A. LANL supports NMED’s Amended Petition amendments to Section 128. However, we
6 now suggest that elimination of the word “specifically” may be appropriate if the WQCC
7 adopts LANL’s changes to Section 126. Otherwise, LANL does not propose any additional
8 changes.

9 **Q. WHAT IS THE BASIS FOR THAT RECOMMENDATION?**

10 A. Section 128 waters should remain described as ephemeral/intermittent because the WQCC
11 has already determined that the uses specified in Section 128 are appropriate for these
12 waters and EPA has approved this technical determination. Section 128 should also retain
13 all LANL waters not classified in Section 126 or Section 140.

14 **4. NMED PROPOSED AMENDMENTS TO RIO GRANDE BASIN (20.6.4.140**
15 **NMAC)**

16 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED’S ORIGINAL**
17 **PROPOSED AMENDMENTS TO CREATE A NEW SECTION 140?**

18 A. NMED’s Original Petition proposed to establish a new regulatory section, 20.6.4.140
19 NMAC, to include the non-perennial/intermittent waters or portions of waters that were
20 previously identified in Section 128. The Original Petition new Section 140 specifies
21 warmwater aquatic life and primary contact designated uses for certain intermittent waters
22 at LANL, whereas Section 128 currently specifies limited aquatic life and secondary
23 contact for all of the ephemeral and intermittent waters at LANL.

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1 **Q. WHAT IS YOUR POSITION ON NMED'S ORIGINAL PROPOSED**
2 **AMENDMENTS TO ADOPT NEW SECTION 140?**

3 A. LANL supports NMED's original proposal to establish a new Section 140, with some
4 changes to the designated uses so that they are consistent with the WQCC's previous use
5 determinations. The proposed changes for the classified segments of waters within LANL
6 are appropriate and necessary for protecting water quality on the Pajarito Plateau.

7 **Q. ARE YOU RECOMMENDING CHANGES TO NMED'S ORIGINAL PROPOSAL?**

8 A. Yes, LANL proposes to precisely define, from origin to terminus, the stream segments that
9 would be reclassified as Section 140 waters to establish clear geographic boundaries. Clear
10 geographic boundaries are needed to ensure the effective application of permit limits and
11 for definition of the level of protection needed for a specific reach or AU. Additionally,
12 LANL proposes to clarify that Section 140 waters are intermittent. The data support the
13 marginal warmwater aquatic life use for the reaches that would be reclassified from Section
14 128 to new Section 140, rather than warmwater as NMED proposed, and there is no new
15 information to support recreational use other than the current use of secondary contact.
16 Therefore, LANL proposes the following language:

17 RIO GRANDE BASIN: Intermittent portions of Effluent canyon from
18 Mortandad canyon confluence upstream to its headwaters, S-Site canyon
19 from alluvial groundwater well MSC 16-06293 upstream to Martin Spring,
20 and Two-Mile Twomile canyon from LANL stream gage E244 upstream
21 to its confluence with upper Two-Mile Twomile canyon. (Surface waters
22 within lands scheduled for transfer from DOE to tribal, state or local
23 authorities are specifically excluded.)

24
25 A. Designated uses: livestock watering, wildlife habitat, marginal
26 warmwater aquatic life, secondary contact.

27
28 B. Criteria: the use-specific numeric criteria set forth in 20.6.4.900 NMAC
29 are applicable to the designated uses.
30

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1 **Q. PLEASE EXPLAIN THE BASIS FOR THESE PROPOSED CHANGES.**

2 A. Extensive technical work, scientific data and other information suggests that some
3 intermittent waters presently classified under Section 128 have current uses that are
4 different from their previously determined existing use, based off application of the HP
5 and other technical work, including stream flow gage data and benthic data collection
6 conducted by the NMED and LANL. This work, in part, has been in fulfillment of the
7 2015 Joint Stipulation. The technical data supports that the marginal warmwater aquatic
8 life use is more appropriate for these certain segments than the limited aquatic life use
9 provided under 20.6.4.128 NMAC or the warmwater aquatic life use proposed in NMED's
10 Original Petition. There are no additional data that indicates that the other associated
11 existing uses under 20.6.4.128 NMAC, in particular the non-primary contact recreational
12 use, are invalid or have changed for these waters. Therefore, it would be appropriate to
13 move these certain segments from Section 128 to a new Section 140 to make clear that a
14 different aquatic life use applies to these certain segments. Moving these waters from
15 Section 128 to a new Section 140 results in increased protections for these waters, and in
16 such cases NMED's position is that a UAA is not required.

17 **Q. WERE ANY STUDIES DONE TO SUPPORT THE IDENTIFICATION OF THE**
18 **SPECIFIC STREAM REACHES THAT NMED HAS PROPOSED TO**
19 **RECLASSIFY FROM SECTION 128 TO NEW SECTION 140 THAT FURTHER**
20 **EXPLAIN THE BASIS FOR CHANGE?**

21 A. Yes, LANL collected benthic data in Effluent, S-Site and Twomile Canyon reaches which
22 can be used to support placement in Section 140. The HP Level 1 scores, with exception
23 of lower Twomile at gage E244, all were solidly intermittent. Although HP Level 1 scores

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1 were, on balance, intermittent we nevertheless performed HP Level 2 evaluations in 5/6
2 sites. NMED takes exception to performance of HP Level 2 when the HP Level 1 score is
3 solid perennial or intermittent. However, unlike with a Level 1 analysis, collection of
4 benthic are part of the HP Level 2 analysis. The HP Level 1 analysis informs an
5 understanding of hydrology but, by itself, does not always provide sufficient information
6 on potential use decisions. An HP Level 2 analysis provides additional information with
7 regard to the presence of persistent water and specific data on aquatic life.

8 **Q. DOES THE NEW INFORMATION SUPPORT MOVING THE SPECIFIC**
9 **SEGMENTS FROM SECTION 128 TO NEW SECTION 140?**

10 A. Yes, LANL is providing, with my testimony, the data and information that supports moving
11 the following three segments from 20.6.4.128 NMAC to new Section 140:

- 12 • Effluent canyon from Mortandad canyon confluence upstream to its headwaters. This
13 reclassification is supported by **LANL Exhibit 40** (LA-UR-21-24094), which includes
14 HP Level 1 field sheets, HP Level 2 field sheets, photographs and benthic taxa
15 summary and EPT findings. These documents demonstrate HP Level 1 scores as
16 intermittent. The presence of water and a benthic macroinvertebrate was identified
17 during the assessment. An evaluation using HP Level 2 methods followed. Sampling
18 for macroinvertebrates was conducted and submitted to a qualified laboratory for
19 identification and evaluation. No macroinvertebrate taxa requiring water for their
20 entire life cycle were identified, however, EPT taxa and a number of individual species
21 were identified.
- 22 • S-Site canyon from alluvial groundwater well MSC 16-06293 upstream to Martin
23 Spring. This reclassification is supported by **LANL Exhibit 41** (LA-UR-21-24119),

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1 which includes HP Level 1 field sheets, HP Level 2 field sheets, photographs and
2 benthic taxa summary and EPT findings. This data and information demonstrate HP
3 Level 1 scores in the intermittent range. The presence of water and a benthic
4 macroinvertebrate was identified during the assessment. An evaluation using HP Level
5 2 methods followed. Sampling for macroinvertebrates was conducted and submitted
6 to a qualified laboratory for identification and evaluation. Macroinvertebrate taxa
7 requiring water for their entire life cycle were identified as well as EPT taxa and a
8 diverse number of individual species. Fish and amphibians were not identified during
9 the HP assessments. However, a species of bivalve was identified through laboratory
10 examination.

- 11 • Twomile canyon from LANL stream gage E244 upstream to its confluence with upper
12 Twomile canyon. This reclassification is supported by **LANL Exhibit 42** (LA-UR-21-
13 24110; LA-UR-21-24111; LA-UR-21-24112; LA-UR-21-24113), which includes HP
14 Level 1 field sheets, HP Level 2 field sheets, photographs and benthic taxa summary
15 and EPT findings. This information includes additional lines of evidence supporting
16 increased protections for these waters as envisioned by the 2015 Joint Stipulation. This
17 data and information demonstrate HP Level 1 scores in the intermittent range. The
18 presence of water and benthic macroinvertebrates were identified during the
19 assessment. An evaluation using HP Level 2 methods followed. Sampling for
20 macroinvertebrates was conducted and submitted to a qualified laboratory for
21 identification and evaluation. Macroinvertebrate taxa requiring water for their entire
22 life cycle were identified as well as EPT taxa and a diverse number of individual
23 species.

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1 **Q. DOES NMED'S AMENDED PETITION PROPOSE REVISIONS TO ITS**
2 **PROPOSED NEW SECTION 140?**

3 A. Yes, NMED'S Amended Petition identifies the stream segments that would be reclassified
4 as Section 140 waters more precisely, generally adopting the geographic boundaries
5 proposed by LANL. The exception is LANL's recommendation that the reach in Twomile
6 Canyon end at gage E244 instead of the confluence at Pajarito Canyon.

7 **Q. WHAT IS YOUR OPINION OF THE PROPOSED REVISION TO NMED'S**
8 **PROPOSED NEW SECTION 140?**

9 A. LANL is in agreement with NMED's Amended Petition proposed amendments to Section
10 140, with the exception of the terminus description in Twomile Canyon. LANL's
11 recommendation, based on the available data, is that the reach should extend only to gage
12 E244.

13 **Q. DO YOU RECOMMEND CHANGES TO NMED'S REVISED PROPOSED**
14 **AMENDMENT TO NEW SECTION 20.6.4.140?**

15 A. LANL recommends that 20.6.4.140 NMAC define the terminus of Twomile at gage E244.

16 **Q. WHAT IS THE BASIS FOR THAT RECOMMENDATION?**

17 A. HP Level 1 and HP Level 2 information do not justify extension beyond gage E244. When
18 the HP Level 1 falls in the gray zone between ephemeral and intermittent, as it does here
19 with a score of 10.5, a HP Level 2 assessment is needed. Therefore, LANL performed a
20 HP Level 2 assessment. HP Level 2 indicators showed no water in the channel and
21 bivalves, amphibians, and benthic organisms were absent. Water was insufficient for
22 collection for benthic organisms. E244 gage data show seasonal periods of flow in 2017
23 and 2019. The data does not support marginal warmwater aquatic life use.

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1 **5. NMED PROPOSED AMENDMENTS TO REVIEW OF STANDARDS; NEED**
2 **FOR ADDITIONAL STUDIES SECTION (20.6.4.10(C) NMAC) AND USE**
3 **ATTAINABILITY ANALYSIS SECTION (20.6.4.15(D) NMAC)**

4 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED’S ORIGINAL**
5 **PROPOSED AMENDMENTS TO 20.6.4.10(C) AND 20.6.4.15(D) NMAC?**

6 A. In both of these sections, among other changes, NMED proposes to increase the discretion
7 held by the NMED, modifying language that directs when an action “shall” or “will” be
8 taken and making the action discretionary. One example of that shift to increase NMED’s
9 discretion is found in proposed 20.6.4.10(C) NMAC, which states: “When justified by
10 sufficient data and information, a numeric [~~the~~] water quality [~~criteria~~] criterion [~~will~~] may
11 be adopted”

12 **Q. WHAT IS YOUR POSITION ON NMED’S ORIGINAL PROPOSED NEW**
13 **SECTIONS 20.6.4.10(C) AND 20.6.4.15(D)?**

14 A. LANL does not support the NMED’s proposal that it have increased discretion when the
15 decisions addressed in these sections should be driven by data, not agency discretion.

16 **Q. ARE YOU RECOMMENDING CHANGES TO NMED’S ORIGINAL PROPOSAL?**

17 A. Yes, regarding proposed section 20.6.4.10(C) NMAC, LANL recommends deleting it in
18 its entirety. I address other aspects of the proposed new 20.6.4.10(C) NMAC in section
19 III.7. of my testimony, below and if it is not deleted, I have proposed LANL’s alternative
20 language in section III.7. of my testimony. Regarding the issue of NMED’s discretion, the
21 proposed modification from “will” to “may” should not be adopted.

22 Regarding proposed section 20.6.4.15(D)(2) concerning the process to remove a
23 designated use and establish the highest attainable use, in the Original Petition NMED
24 proposed that when a use attainability analysis shows that Clean Water Act Section

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1 101(a)(2) uses, that are not existing uses, are not feasible, NMED “may” consider
2 proceeding with the expedited use attainability analysis process in accordance with the
3 State’s current WQMP/CPP. The process should not be discretionary and, again, “may”
4 should be “shall” or “will.”

5 **Q. WHAT IS THE BASIS FOR THAT RECOMMENDATION?**

6 A. The use of the word “may” instead of “will” increases the discretion held by NMED. This
7 modifies language that directs when an action “will” be taken and makes the action
8 discretionary. Adopting this change could allow NMED to act unilaterally and bypass the
9 public regulatory process. The WQCC should maintain its oversight and increase—not
10 decrease—regulatory certainty with revision to the Standards.

11 **Q. DOES NMED’S AMENDED PETITION PROPOSE REVISIONS TO ITS
12 PROPOSED AMENDMENT TO 20.6.4.10(C) AND 20.6.4.15(D) NMAC?**

13 A. Yes, however the originally proposed changes to increase NMED’s discretion were not
14 changed. Accordingly, LANL reiterates its recommendations against those changes.

15 **6. NMED PROPOSED AMENDMENTS TO REVIEW OF STANDARDS; NEED
16 FOR ADDITIONAL STUDIES SECTION (20.6.4.10(B) NMAC)**

17 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED’S ORIGINAL
18 PROPOSED AMENDMENTS TO 20.6.4.10(B) NMAC?**

19 A. NMED proposed to add a new subsection to clarify the required process for amending a
20 designated use, as follows:

21 In accordance with 40 CFR 131.10(i), when an existing use, as defined in
22 20.6.4.7 NMAC, is more stringent than the designated use and supporting
23 evidence demonstrates the presence of that use, the designated use shall be
24 amended to be no less stringent than the existing use.

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1 **Q. WHAT IS YOUR POSITION ON NMED'S ORIGINAL PROPOSED**
2 **AMENDMENTS TO 20.6.4.10(B) NMAC?**

3 A. LANL supports the proposal to amend and to add a new subsection for clarification and
4 also has some suggestions to tighten and further clarify the new subsection.

5 **Q. ARE YOU RECOMMENDING CHANGES TO NMED'S ORIGINAL PROPOSAL?**

6 A. Yes, LANL recommends the following revisions to proposed 20.6.4.10(B) NMAC
7 (LANL's proposed changes are shown compared to NMED's Original Petition proposal
8 with additions shown in underlining and deletions shown in strikeout):

9 In accordance with 40 CFR 131.10(4), when an existing use of a water, as
10 defined in 20.6.4.7 NMAC, requires a higher level of protection is more
11 stringent than the current designated use and new supporting evidence
12 demonstrates the presence of that use, the designated use shall be amended
13 to ~~be no less stringent than~~ protect the existing use. This action can only be
14 taken after the commission has established formal procedures, through the
15 water quality management plan continuing planning process, to amend a
16 designated use that is found to be less restrictive than an existing use. The
17 process described in this section may not be used where the commission has
18 already made a determination concerning the existing use of classified
19 waters of the state.

20 **Q. PLEASE EXPLAIN THE BASIS FOR THIS PROPOSED CHANGE.**

21 A. The change of a designated use must be based upon available data and information.
22 Additionally, the change must be made by WQCC decision and there must be a process to
23 bring the proposed change to the WQCC. Before an EUA is used for attainability
24 decisions, especially where the WQCC has made a determination of existing uses for the
25 waters in question and those waters are classified waters of the state, as recommended,
26 below, the EUA procedure should undergo a thorough vetting process that includes a
27 review, stakeholder and public input, and final approval by the WQCC. Specifically, it is
28 inappropriate for NMED to use an ill-defined existing use analysis process that has not

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1 been reviewed or approved by the WQCC or the general public, to unilaterally, and without
2 consideration of all available evidence, downgrade and declassify existing classified
3 waters. LANL’s specific concern is that NMED is utilizing this novel approach to push
4 Section 128 waters to a default, unclassified 20.6.4.99 NMAC status, but NMED could use
5 the same approach for other classified waters.

6 The WQCC should adopt a formal process, consistent with the LANL
7 recommendation, that includes planning, investigation and analysis and that is public and
8 transparent, before it revises a classified waters decision. Any such revision should be
9 supported by a reasoned basis and a process that considers all relevant data to ensure that
10 impartial and balanced decisions are reached.

11 **Q. DOES NMED’S AMENDED PETITION PROPOSE REVISIONS TO ITS**
12 **PROPOSED AMENDMENT TO 20.6.4.10(B) NMAC?**

13 A. Yes, NMED’s Amended Petition proposed the following revised language, with the
14 changed language from the Original Petition shown in bold lettering:

15 In accordance with 40 CFR 131.10(i), when an existing use, as defined
16 under 20.6.4.7 NMAC, is **higher quality water** than prescribed by the
17 designated use and supporting evidence demonstrates the presence of that
18 use, the designated use shall be amended accordingly to be no less **stringent**
19 than the existing use.

20 **Q. WHAT IS YOUR OPINION ON THE PROPOSED REVISION TO NMED’S**
21 **PROPOSED AMENDMENT TO SECTION 20.6.4.10(B) NMAC?**

22 A. The NMED Amended Petition does not change LANL’s recommendations. Methods for
23 developing or performing an EUA are not included in either the WQMP/PPP or the WQCC
24 regulations, 20.6.4 NMAC. NMED proposes a new 20.6.4.10(B) NMAC that describes
25 how the WQCC will adopt an existing use based on “supporting evidence [that]

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1 demonstrates the presence of that use,” where the existing use is more protective than a
2 current designated use. While identifying existing uses is an imperative, EPA also advises
3 that it is appropriate to describe the existing uses of a waterbody in terms of both actual
4 use and water quality, because doing so provides the most comprehensive means of
5 describing baseline conditions that must be protected. EPA further advises that “in
6 identifying existing uses, it is important to have a high degree of confidence, because a
7 state or tribe may not remove an existing use when revising designated uses, regardless of
8 whether the existing use remains attainable. This is also important because EPA’s
9 antidegradation provisions require any CWA authorization of a discharge or activity that
10 may result in a discharge to protect the existing use.” *See LANL Exhibit 32* at 7.

11 The proposed new 20.6.4.10(B) NMAC’s description of “supporting evidence”
12 does not comply with EPA guidance, as EPA has advised that it expects states and tribes
13 “to consider the quantity, quality, and reliability of the different types of data to describe
14 the existing use as accurately and completely as possible and to resolve any apparent
15 discrepancies based upon that evaluation.” *Id.* at 5. The apparent lesser standard proposed
16 by NMED for establishing new existing uses may also create significant regulatory
17 uncertainty. An entity could engage, in good faith, in a lengthy and costly UAA process
18 to demonstrate the highest attainable use. However, under new 20.6.4.10(B) NMAC,
19 NMED could subsequently, “discover” some modicum of “supporting evidence” not
20 previously considered (or even previously considered by the WQCC and EPA, but now
21 being reinterpreted unilaterally by NMED), then simply declare it has concluded there is a
22 more protective existing use for a segment. That approach will waste water quality analysis
23 resources and lead to disparate results across the state.

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1 **Q. DO YOU RECOMMEND CHANGES TO NMED'S REVISED PROPOSED**
2 **AMENDMENT TO 20.6.4.10(B) NMAC?**

3 A. Yes, LANL maintains its original recommendations to NMED's revised proposed
4 20.6.4.10(B) NMAC, and recommends the following revisions (LANL's proposed changes
5 here are shown compared to NMED's Amended Petition proposal with additions shown in
6 underlining and deletions shown in strikeout):

7 In accordance with 40 CFR 131.10(i), when an existing use of a water, as
8 defined in 20.6.4.7 NMAC, ~~is higher quality water~~ requires a higher level
9 of protection than prescribed by the current designated use and new
10 supporting evidence demonstrates the presence of that use, the designated
11 use shall be amended to protect ~~be no less stringent than~~ the existing use.
12 This action can only be taken after the commission has established formal
13 procedures, through the water quality management plan continuing
14 planning process, to amend a designated use that is found to be less
15 restrictive than an existing use. The process described in this section may
16 not be used where the commission has already made a determination
17 concerning the existing use of classified waters of the state.

18 **Q. WHAT IS THE BASIS FOR THAT RECOMMENDATION?**

19 A. Before a EUA is used for attainability decisions, especially where the WQCC has made a
20 determination of existing uses for the waters in question and those waters are classified
21 waters of the state, the EUA procedure should undergo a thorough vetting process that
22 includes a review and final approval by the WQCC.

23 Again, LANL recommends that the WQCC adopt a formal process that includes
24 planning, investigation and analysis, before it revises a classified waters decision. Any
25 such revision much be supported by a reasoned basis and a process that considers all
26 relevant data to ensure that impartial and balanced decisions are reached.

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7. NMED PROPOSED AMENDMENTS TO REVIEW OF STANDARDS; NEED FOR ADDITIONAL STUDIES SECTION (20.6.4.10(C) NMAC)

Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED'S ORIGINAL PROPOSED AMENDMENTS TO 20.6.4.10(C) NMAC?

A. NMED proposed to amend language describing how a designated use or numeric criterion can be amended to be less stringent; adding the following provision:

~~It is recognized that, in some cases, numeric criteria [have been adopted that reflect use designation rather than existing conditions of surface waters of the state.] for a particular designated use may not adequately reflect the local conditions and the adaptive nature of particular organisms to utilize a water without harm. In these cases, a water quality criterion may be modified to reflect the natural condition of a specific waterbody. [Narrative criteria are required for many constituents because accurate data on background levels are lacking. More intensive water quality monitoring may identify surface waters of the state where existing quality is considerably better than the established criteria.]~~ When justified by sufficient data and information, a numeric [the] water quality [riteria] criterion [will] may be adopted or modified to a less stringent criterion and still protect the attainable uses of the waterbody. The modification of the criterion does not necessarily change the designated use. The removal or amendment of a designated use to a less stringent use can only be done through a use attainability analysis in accordance with 20.6.4.15 NMAC.

Q. WHAT IS YOUR POSITION ON NMED'S ORIGINAL PROPOSED AMENDMENTS TO 20.6.4.10(C) NMAC?

A. LANL recommends deleting proposed 20.6.4.10(C) NMAC in its entirety. Alternatively, LANL recommends adding more detail surrounding the mechanism for modifying water quality criterion when the criterion may not "adequately reflect the local conditions and the adaptive nature of particular organisms to utilize a water without harm." LANL also recommends deleting the last sentence of the proposed text.

Q. ARE YOU RECOMMENDING CHANGES TO NMED'S ORIGINAL PROPOSAL?

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1 A. Yes, LANL recommends deleting proposed 20.6.4.10(C) NMAC in its entirety.

2 Alternatively, LANL suggests the following changes to NMED’s proposed language:

3 It is recognized that, in some cases, numeric criteria for a particular
4 designated use may not adequately reflect the local conditions and the
5 adaptive nature or lack thereof of particular organisms to utilize a water
6 without harm. In these cases, a water quality criterion may be modified to
7 reflect the ~~natural~~ background condition of a specific waterbody. When
8 justified by sufficient data and information, a numeric water quality
9 criterion will be adopted or modified to ~~a less stringent criterion and still~~
10 protect the attainable uses of the waterbody. The modification of the
11 criterion does not necessarily change the designated use. The removal or
12 amendment of a designated use to a less stringent use can only be done
13 through a use attainability analysis in accordance with 20.6.4.15 NMAC.
14

15 **Q. PLEASE EXPLAIN THE BASIS FOR THIS PROPOSED CHANGE.**

16 A. LANL recommends adding more detail surrounding the mechanism for modifying water
17 quality criterion when the criterion may not “adequately reflect the local conditions and the
18 adaptive nature of particular organisms to utilize a water without harm.” LANL also
19 recommends deleting the last sentence of NMED’s new proposed text because it mixes
20 “uses” and UAAs with a section about “criteria” and natural background, creating
21 confusion and reducing clarity.

22 **Q. DOES NMED’S AMENDED PETITION PROPOSE REVISIONS TO ITS**
23 **PROPOSED AMENDMENT TO 20.6.4.10(C) NMAC?**

24 A. Yes, NMED’S Amended Petition significantly revises its proposed amendment to
25 20.6.4.10(C) NMAC, as shown below.

26 It is recognized that, in some cases, numeric criteria ~~[have been adopted that~~
27 ~~reflect use designation rather than existing conditions of surface waters of~~
28 ~~the state.]~~ for a particular designated use may not adequately reflect the local
29 conditions or the aquatic communities adapted to those localized conditions.
30 In these cases, a water quality criterion may be modified to reflect the
31 natural condition of a specific waterbody. The modification of the criterion
32 does not change the designated use; the modification only changes the
33 criterion for that specific waterbody. ~~[Narrative criteria are required for~~

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1 ~~many constituents because accurate data on background levels are lacking.~~
2 ~~More intensive water quality monitoring may identify surface waters of the~~
3 ~~state where existing quality is considerably better than the established~~
4 ~~criteria.]~~ When justified by sufficient data and information, a numeric [~~the~~]
5 water quality [~~criteria~~]-criteria [~~will~~] may be adopted or modified in
6 accordance with 20.6.4.10(F) and 20.6.4.10(G) NMAC, to protect the
7 attainable uses of the waterbody.

8
9 In addition, the Amended Petition includes a new proposed 20.6.4.10(D) NMAC to address
10 removal or amendment of a designated use to a designated use with less stringent criteria.

11 **Q. WHAT IS YOUR OPINION ON THE PROPOSED REVISION TO NMED’S**
12 **PROPOSED AMENDMENT TO 20.6.4.10(C) NMAC AND PROPOSED ADDITION**
13 **OF 20.6.4.10(D) NMAC?**

14 A. LANL still recommends deleting proposed amended 20.6.4.10(C) NMAC in its entirety.
15 LANL supports the language in new 20.6.4.10(D) NMAC.

16 **Q. DO YOU RECOMMEND CHANGES TO NMED’S REVISED PROPOSED**
17 **AMENDMENT TO 20.6.4.10(C)?**

18 A. Yes, LANL recommends deleting proposed amended 20.6.4.10(C) NMAC in its entirety
19 or, in the alternative, the language that LANL has proposed, above.

20 **Q. WHAT IS THE BASIS FOR THAT RECOMMENDATION?**

21 A. LANL recommends adding more detail surrounding the mechanism for modifying water
22 quality criterion when the criterion may not “adequately reflect the local conditions and the
23 adaptive nature of particular organisms to utilize a water without harm.” NMED’s
24 proposed revisions in the Amended Petition did not address these concerns.

25 NMED did modify the last sentence of the text it proposed in the Original Petition
26 and moved it to a new 20.6.4.10(D) NMAC. NMED’s revisions responded to LANL’s
27 comments and LANL supports the language in new 20.6.4.10(D) NMAC.

Direct Testimony of Robert M. Gallegos
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**8. PROPOSED PROCESS FOR MODIFYING USES FOR WATERS CLASSIFIED
UNDER 20.6.4.128 NMAC**

Q. DOES LANL HAVE A RECOMMENDATION FOR A PROCESS FOR THE WQCC TO CONSIDER THE HIGH QUALITY DATA COLLECTED ON SECTION 128 WATERS SINCE THE LAST TRIENNIAL REVIEW?

A. Yes, in October 2020, NMED issued a discussion draft “Existing Use Analysis Work Plan for Classified Waters Within Los Alamos National Laboratory Identified Under 20.6.4.128 NMAC” (“Draft EUA Work Plan”). This Draft EUA Work Plan attempted to describe how to conduct an investigation into whether there is sufficient information to initiate an analysis of attainable aquatic life use for waters classified under Section 128. Once finalized after stakeholder input, the Draft Work Plan would be **Step 1** of a procedural framework to reclassify Section 128 waters. **Step 2** of that framework would be to investigate whether there is sufficient information to initiate an analysis of attainable aquatic life use for a particular stream segment classified under Section 128. Should that investigation determine that there is sufficient information to initiate an analysis of attainable aquatic life use for waters classified under Section 128, **Step 3** would be to conduct that analysis. **Step 4** would be to prepare and submit a petition to the WQCC to modify the designated aquatic life use for waters classified under Section 128, if warranted by the analysis. If approved by the WQCC, **Step 5** would be to submit the results of the review, any supporting analysis, the methodologies used, any general policies applicable to water quality standards, and the WQCC approved standards revisions to the Regional Administrator for review and approval, within 30 days of the final State action to adopt and certify the revised standard, or if no revisions are made as a result of the review, within 30 days of the completion of the review. *See* 40 CFR 131.20(c). LANL recommends that

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1 the WQCC initiate development of that procedural framework to provide consistency in
2 decision-making and ensure that the required new information and documentation are
3 properly developed to support that decision-making.

4 **IV. CONCLUSION**

5 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

6 **A. Yes.**

Exhibit 4

**STATE OF NEW MEXICO
BEFORE THE WATER QUALITY CONTROL COMMISSION**

IN THE MATTER OF:

**THE PETITION TO AMEND
THE STANDARDS FOR INTERSTATE
AND INTRASTATE SURFACE WATERS,
20.6.4 NMAC**

WQCC No. 20-51(R)

**DIRECT TESTIMONY OF TIMOTHY J. GOERING
ON BEHALF OF TRIAD NATIONAL SECURITY, LLC
AND THE U.S. DEPARTMENT OF ENERGY, NATIONAL NUCLEAR SECURITY
ADMINISTRATION**

May 3, 2021

Direct Testimony of Timothy J. Goering
Case No. WQCC 20-51(R)

I. INTRODUCTION

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Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. Timothy J. Goering. My office is located in Technical Area (TA) 59, Building 96 at Los Alamos National Laboratory.

Q. ON WHOSE BEHALF ARE YOU SUBMITTING DIRECT TESTIMONY?

A. I am submitting this direct testimony on behalf of Triad National Security, LLC, (“Triad”) and the U.S. Department of Energy, National Nuclear Security Administration (“DOE”) (collectively “LANL”).¹

Q. BY WHOM ARE YOU EMPLOYED AND WHAT IS YOUR POSITION?

A. I am currently employed by Triad as an Environmental Professional in the Environmental Protection and Compliance Division at Los Alamos National Laboratory.

Q. PLEASE DESCRIBE YOUR PAST EMPLOYMENT HISTORY.

A. I have worked for more than 35 years in the environmental field, with most of my work experience in hydrology and in environmental characterization and remediation. I began my career in 1983, working for the environmental consulting firm Ecology and Environment Inc. conducting field assessments of hazardous waste sites. While in graduate school at the University of Arizona, I worked for another environmental consulting company on a large-scale water resource evaluation of the Little Colorado River Basin in Arizona. After receiving my MS Degree in Hydrology and Water Resources at the University of Arizona, I worked for Jacobs Engineering as a site hydrologist for the DOE’s Uranium Mill Tailings Remedial Action Program from 1987 to 1992. From 1992 to 2007,

¹ DOE and predecessor and current operators of LANL are referred to in my testimony collectively as “LANL” to avoid unnecessary entity name complications.

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1 I worked at Sandia National Laboratories as a subcontractor providing hydrogeological
2 technical support for characterization and corrective action at Sandia’s Mixed Waste
3 Landfill (“MWL”). I helped design an innovative evapotranspiration cover to protect the
4 buried wastes at the landfill. In 2005, I provided expert testimony at a New Mexico
5 Environment Department (“NMED”) Public Hearing regarding the landfill cover design
6 and corrective action.

7 I have worked at Los Alamos National Laboratory since 2007 on a variety of
8 environmental-related projects, with much of my work related to groundwater and surface
9 water characterization and monitoring. I served as the technical lead for the Interim
10 Facility-Wide Groundwater Monitoring Program from 2007 to 2015. During this time, I
11 was responsible for preparing annual updates to the Interim Facility-Wide Groundwater
12 Monitoring Plan (“IFGMP”), working closely with the NMED to ensure regulatory
13 requirements were met. From 2013 to 2018, I was the technical lead for the Royal
14 Demolition Explosive (“RDX”) Remediation Project, leading a team of scientists to assess
15 high explosives contamination in surface water and groundwater. I also helped develop a
16 Remedy Completion Report to close out the surface corrective measures conducted to
17 remediate high explosives in soil, surface water, and shallow groundwater. From 2018 to
18 2020, I worked for LANL’s Earth Systems Observation Group as a Site operations manager
19 for one of the DOE’s atmospheric observatories, the Atmospheric Radiation Measurement
20 Mobile Facility One. Our team deployed this observatory, comprised of nearly 60
21 atmospheric monitoring instruments and radars, at remote locations in Argentina and
22 Norway. I joined LANL’s Environmental Protection and Compliance group as an
23 Environmental Professional in January 2020.

**Direct Testimony of Timothy J. Goering
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1 **Q. WHAT ARE YOUR RESPONSIBILITIES AS AN ENVIRONMENTAL**
2 **PROFESSIONAL?**

3 A. I support LANL’s Groundwater and Surface Water Quality Programs regulatory activities
4 to comply with the New Mexico Water Quality Control Commission (“WQCC”)
5 Regulations. My responsibilities include providing technical support for development of
6 LANL’s Use Attainability Analysis (“UAA”) for Upper Sandia Canyon, and technical
7 support for our Water Quality Permitting/Compliance Team. In addition, I have been
8 providing technical support to LANL’s discharge permit programs permits issued pursuant
9 to the New Mexico Water Quality Act, NMSA 1978, §§ 74-6-1 through 74-6-17, and the
10 New Mexico Regulations, 20.6.2 NMAC.

11 **Q. PLEASE DESCRIBE YOUR EXPERIENCE WITH DATA ANALYSIS, AND**
12 **REPORTING FOR SURFACE WATER QUALITY AND REGULATORY**
13 **COMPLIANCE AT LANL.**

14 A. I have worked in LANL’s Environmental Protection and Compliance Group (“EPC-CP”)
15 since January 2020. I worked in LANL’s Environmental Programs from 2008 to 2018.
16 During this time, I served as the technical lead for the Laboratory’s Interim Facility-Wide
17 Groundwater Monitoring Program from 2007 to 2015. Monitoring was conducted to meet
18 the requirements of the NMED’s Compliance Order on Consent with the DOE and LANL
19 (“Consent Order”), and included monitoring of surface water, springs and groundwater
20 locations within and outside of Laboratory boundaries. The extent of monitoring
21 conducted under this program varied from year to year, but peaked around 2010, with the
22 sampling of approximately 50 surface water (base flow) locations, 54 springs, 90 alluvial
23 monitoring wells, and approximately 200 wells or well screens completed in deeper

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1 perched groundwater zones or in the regional aquifer. In addition, I was responsible for
2 updating the IFGMP annually to meet Consent Order requirements based on LANL
3 programmatic needs, negotiations with the NMED Hazardous Waste Bureau, and
4 comparison of the data with applicable standards. I also have experience with data analysis
5 and surface reporting for surface water quality from my time as the technical lead for the
6 RDX Remediation Project. Our team conducted extensive analysis of surface water,
7 groundwater, and spring data for the Cañon de Valle, and Upper Pajarito Canyon area,
8 which I discuss later in my testimony.

9 Currently, within EPC-CP, I have been providing technical support to the Surface
10 Water Quality Program with development of LANL’s UAA for Upper Sandia Canyon. I
11 analyzed water temperature and air temperature data for the reach, and also evaluated pH
12 and dissolved oxygen (“DO”) data collected in Sandia Canyon surface water to evaluate
13 Upper Sandia Canyon’s coldwater aquatic life use. The final Sandia Canyon UAA is
14 currently undergoing internal review and is not part of this hearing nor my testimony in
15 this hearing.

16 I have also been analyzing stream flow gage data in perennial, intermittent, and
17 ephemeral stream reaches within LANL boundaries. This analysis includes review of gage
18 data measured at gages within the Laboratory boundaries from 2000 to 2019.

19 **Q. PLEASE DESCRIBE YOUR EXPERIENCE WITH STREAM FLOW GAGE DATA**
20 **GATHERING, DATA ANALYSIS, AND REPORTING AT LANL.**

21 A. The Laboratory maintains 37 stream-flow gaging stations in multiple watersheds within
22 LANL to support environmental monitoring and surveillance activities. The gage data can
23 be used to evaluate persistence of flow, and to inform decisions regarding hydrology and

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1 use attainability. The LANL gage network is maintained and operated by DOE's
2 environmental management contractor, Newport News Nuclear BWXT-Los Alamos
3 ("N3B"). The gage data provide valuable information regarding the flow within the
4 various segments, and can be used to support decisions distinguishing between perennial,
5 intermittent, and ephemeral stream reaches.

6 I was not involved with the earlier characterization work using the Hydrology
7 Protocol ("HP") in NMED's Water Quality Management Plan and Continuing Planning
8 Process ("WQMP/PPP"), Appendix C ([https://www.env.nm.gov/surface-water-](https://www.env.nm.gov/surface-water-quality/hp/)
9 [quality/hp/](https://www.env.nm.gov/surface-water-quality/hp/)). However, the gage data complement the HP work. The HP states that:

10 Historic or recent flow data from gages such as those managed by the
11 USGS, OSE or Los Alamos National Laboratory (LANL) should be used to
12 make hydrogeological determinations. Stream gage data, if available, may
13 clearly indicate ephemeral, intermittent, or perennial flow patterns for the
14 available period of record and will facilitate the scoring of Indicator #1.1,
15 Water in Channel.

16 See NMED's WQMP/PPP, Appendix C at 11. My efforts have focused on review of the
17 gage data to better understand the flow characteristics of the various stream segments.

18 **Q. PLEASE DESCRIBE YOUR RECENT WORK ANALYZING HISTORIC SITE**
19 **DATA, INCLUDING THE FOCUS OF THAT ANALYSIS.**

20 A. LANL has meteorological stations in six Technical Areas ("TA") and one in the
21 community of Los Alamos and has collected data from this network since 1979. I used the
22 air temperature data from the TA-6 and TA-53 meteorological stations during development
23 of the UAA for Upper Sandia Canyon. I have also used precipitation data to evaluate
24 stream hydrograph and alluvial well responses to precipitation events.

25 Under the IFGMP, LANL has collected temperature, pH, and DO data during
26 sampling of springs and surface water locations since 2005. I have been reviewing these

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1 data to evaluate use attainment for particular stream segments being considered for
2 reclassification.

3 **Q. PLEASE SUMMARIZE YOUR EDUCATIONAL EXPERIENCE.**

4 A. I have a BA in Environmental Science from the University of Virginia and an MS in
5 Hydrology and Water Resources from the University of Arizona. My resume is attached
6 to LANL's Notice of Intent to Present Technical Testimony as **LANL Exhibit 11.**

7 **Q. HAVE YOU PREVIOUSLY TESTIFIED IN STATE OR FEDERAL**
8 **REGULATORY PROCEEDINGS ON SURFACE WATER QUALITY-RELATED**
9 **ISSUES?**

10 A. I have not testified in state or federal regulatory proceedings regarding surface-water
11 quality-related issues. However, I testified at a public hearing held by the NMED regarding
12 Sandia National Laboratory's MWL in 2005. I provided expert testimony on issues related
13 to the groundwater monitoring program at the MWL and the proposed cover design for the
14 landfill.

15 **II. PURPOSE OF TESTIMONY**

16 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

17 A. The purpose of my testimony is to provide some of the technical basis supporting LANL's
18 proposed reclassification of surface water segments from 20.6.4.128 NMAC ("Section
19 128") to 20.6.4.126 NMAC ("Section 126") and support for reclassification of some
20 segments from Section 128 to new 20.6.4.140 NMAC ("Section 140"). I am providing
21 testimony regarding gage data and temperature, pH, and DO data for the stream reaches
22 proposed for reclassification. I also testify regarding the NMED Surface Water Quality
23 Bureau's ("SWQB") proposed amendments to the Standards for Interstate and Intrastate

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1 Surface Waters, 20.6.4 NMAC (“Standards”), set forth in NMED’s August 18, 2020
2 Petition (“Original Petition”) and NMED’s March 12, 2021 Notice of Amended Petition
3 (“Amended Petition”).

4 **III. LANL’S EVALUATION OF AND PROPOSED CHANGES TO NMED’S**
5 **PROPOSED AMENDMENTS**

6 **Q. PLEASE IDENTIFY THE AMENDMENTS PROPOSED BY NMED THAT YOU**
7 **ARE ADDRESSING IN THIS TESTIMONY.**

8 A. I will be addressing NMED proposals in its Original Petition and its Amended Petition
9 regarding the processes and data upon which decisions about moving specific stream
10 segments from Section 128 to either Section 126 or new Section 140. These decisions
11 should be based upon sound science and defensible data. To provide context for my
12 comments, I will testify about the types of high quality data collected at LANL relevant to
13 surface water quality and stream characteristics. These data can provide critical
14 information, as recognized by the HP, and are important for the WQCC’s consideration.

15 My testimony relates to the following sections:

- 16 • Rio Grande Basin (20.6.4.126 NMAC): proposed reclassification of certain stream
17 segments from ephemeral and intermittent (under 20.6.4.128 NMAC) to perennial
18 (under 20.6.4.126 NMAC) and the specific identification of such stream segments and
19 related designated uses and criteria;
- 20 • Rio Grande Basin (20.6.4.128 NMAC): proposed reclassification of certain stream
21 segments from ephemeral and intermittent (under 20.6.4.128 NMAC) to a new section
22 (20.6.4.140 NMAC) establishing standards for intermittent stream segments and
23 related designated uses and criteria; and

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1 • Rio Grande Basin (20.6.4.140 NMAC): proposal to establish a new classification for
2 intermittent stream segments and related designated uses and criteria.

3 **Q. HAVE YOU REVIEWED NMED’S STATEMENT OF REASONS FOR THESE**
4 **PROPOSED AMENDMENTS, FILED AS ATTACHMENT 3 TO NMED’S**
5 **ORIGINAL PETITION?**

6 A. Yes, I have.

7 **Q. HAVE YOU REVIEWED LANL’S JANUARY 6, 2021 COMMENTS TO THESE**
8 **PROPOSED AMENDMENTS?**

9 A. Yes, I have.

10 **Q. HAVE YOU ALSO REVIEWED NMED’S REVISIONS TO THESE PROPOSED**
11 **AMENDMENTS SET FORTH IN NMED’S AMENDED PETITION?**

12 A. Yes, I have also reviewed NMED’s Amended Petition.

13 **1. OVERVIEW OF SURFACE WATER QUALITY AND STREAM**
14 **CHARACTERISTICS DATA COLLECTED AT LANL**

15 **Q. PLEASE DESCRIBE THE TYPES OF DATA THAT YOU HAVE ANALYZED**
16 **AND WHY THOSE DATA ARE RELEVANT TO THE TRIENNIAL REVIEW**
17 **PROCESS.**

18 A. I have been reviewing stream flow gage data and spring and surface water data for
19 temperature, pH, and DO collected under the IFGMP. These data complement the HP
20 information and can provide additional support for proper stream classification and use
21 decisions.

22 The HP “was specifically developed to generate documentation of the aquatic life
23 and recreation uses supported by the hydrology of a given stream or river. This information

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1 can then be used to provide technical support for a Use Attainability Analysis (UAA).”
2 *See* NMED’s WQMP/PPP, Appendix C at 3. Certain data and information were provided
3 to NMED and Amigos Bravos under the October 9, 2015 Joint Stipulation between NMED,
4 LANL, and Amigos Bravos, executed pursuant to WQCC 14-05(R) (the most recent
5 Triennial Review) (the “2015 Joint Stipulation”), as Mr. Gallegos has testified. *See* **LANL**
6 **Exhibit 3.**

7 In addition to the HP data discussed in Mr. Gallegos’ testimony, LANL has
8 identified additional data that support use designations for stream segments within LANL.
9 These data include gage flow data, and temperature, pH, and DO data for springs and
10 surface water locations within the reaches considered for reclassification.

11 Data are provided that support the reclassification of the following segments from
12 Section 128 to Section 126:

- 13 • Pajarito Canyon from 0.5 miles below Arroyo de La Delfe upstream to Homestead
14 Spring (including Pajarito Lower Section and Pajarito Upper Section, as discussed
15 below).
- 16 • Arroyo de La Delfe from Pajarito Canyon upstream to Kielling Spring.

17 For my testimony regarding the first segment - Pajarito Canyon from 0.5 miles below
18 Arroyo de La Delfe upstream to Homestead Spring - I have split this segment into the
19 following two reaches which are discussed separately: (1) Pajarito canyon from 0.5 miles
20 below Arroyo de La Delfe to the confluence with Arroyo de La Delfe (“**Pajarito Lower**
21 **Section**”); and (2) Pajarito canyon from Starmers Gulch to Homestead Spring (“**Pajarito**
22 **Upper Section**”).

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1 Data are also provided that support the reclassification of the following segments
2 from Section 128 to Section 140:

- 3 • Twomile Canyon from LANL stream gage E244 upstream to its confluence with upper
4 Twomile Canyon.
- 5 • S-Site Canyon from alluvial groundwater well MSC 16-06293 upstream to Martin
6 Spring.
- 7 • Effluent Canyon from its confluence with Mortandad canyon to its headwaters.

8 **Q. STARTING WITH THE STREAM FLOW GAGE DATA, PLEASE DESCRIBE**
9 **THE DATA, WHAT IT SHOWS, AND WHY IT IS RELEVANT TO THE**
10 **TRIENNIAL REVIEW.**

11 A. The Laboratory currently operates 37 streamflow gaging stations year round. The HP
12 supports the use of gage data, stating:

13 Historic or recent flow data from gages such as those managed by the
14 USGS, OSE or Los Alamos National Laboratory (LANL) should be used to
15 make hydrological determinations. Streamgage data, if available, may
16 clearly indicate ephemeral, intermittent, or perennial flow patterns for the
17 available period of record and will facilitate scoring of this indicator #1.

18 *See* NMED’s WQMP/CPP, Appendix C at 11. I analyzed streamflow gage data from 2003
19 to 2019 for sections being considered for reclassification. I analyzed all stream gage data
20 to estimate the average frequency of flow (or percent days of flow).

21 The New Mexico Water Quality Act (“WQA”) defines three categories of surface
22 water in 20.6.4.7 NMAC:

- 23 (1) “Ephemeral” when used to describe a surface water of the state means the
24 water body contains water briefly only in direct response to precipitation;
25 its bed is always above the water table of the adjacent region.
- 26 (2) “Intermittent” when used to describe a surface water of the state means
27 the water body contains water for extended periods only at certain times

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1 of the year, such as when it receives seasonal flow from springs or melting
2 snow.

3 (3) “Perennial” when used to describe a surface water of the state means the
4 water body typically contains water throughout the year and rarely
5 experiences dry periods.

6 The Hydrology Protocol recommends the use of gage data for evaluating whether
7 surface water shows perennial, intermittent or ephemeral flow characteristics, but does not
8 provide detailed guidance on how to classify the flow based on gage data. However, a
9 water supply paper from the United States Geological Survey (“USGS”), “Streamflow
10 Characteristics related to Channel Geometry of Streams in Western United States,”
11 provides the following general guidance for characterizing streamflow in western streams
12 based on percent of the year that discharge is measured:

- 13 • An *ephemeral stream* – or stream reach is one that only flows in direct response to
14 precipitation, with measurable discharge generally occurs less than 10 percent of the
15 time.
- 16 • An *intermittent stream* – or stream reach has surface discharge generally between 10
17 and 80 percent of the time.
- 18 • A *perennial stream* – or stream reach, has measurable surface discharge more than 80
19 percent of the time.

20 *See LANL Exhibit 44.* I applied this USGS guidance to gage data from LANL’s stream
21 gaging station network to evaluate whether the stream reaches exhibited ephemeral,
22 intermittent, or perennial flow characteristics. In addition, stream flow characteristics were
23 compared with the WQCC definitions for ephemeral, intermittent, and perennial flow in
24 20.6.4 NMAC. This information, along with all of the other high-quality data discussed
25 below and in Mr. Gallegos testimony, and presented in **LANL Exhibit 38** (LA-UR-21-
26 24106; LA-UR-21-24107) and **LANL Exhibit 39** (LA-UR-21-24109), provide a strong
27 technical basis for the reclassification of the three Pajarito Canyon reaches from Section
28 128 to Section 126 waters. The additional data presented in the LANL exhibits include the

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1 HP Level 1 and Level 2 results, the benthic data, general field observations and
2 photographs, and temperature, pH, and DO data from each of these three reaches.

3 I analyzed flow frequencies for LANL gages using data from 2003 to 2019, with
4 my primary focus on gages within the stream segments being considered for
5 reclassification. The locations of the gages are shown on **LANL Exhibit 37** (LA-UR-20-
6 30297). In my analysis, I calculated frequency of flow (in percent days of flow per year)
7 over the period of record to determine whether the data showed ephemeral, intermittent, or
8 perennial flow characteristics based on the criteria provided by Hedman, E.R. and W.R.
9 Osterkamp (1982). *See LANL Exhibit 44*. The results of my analyses of gage flow data
10 are presented in the Summary of Gage Flow Statistics tables in **LANL Exhibit 38** (LA-
11 UR-21-24106; LA-UR-21-24107), **LANL Exhibit 39** (LA-UR-21-24109), and **LANL**
12 **Exhibit 42** (LA-UR-21-24110), and discussed in my testimony below.

13 **Q. TURNING TO THE OTHER DATA, PLEASE DESCRIBE THAT DATA, WHAT**
14 **IT SHOWS, AND WHY IT IS RELEVANT TO THE TRIENNIAL REVIEW.**

15 A. I reviewed temperature, pH, and DO data collected for surface water and springs within
16 sections being considered for reclassification to Section 126 or to new Section 140. I
17 compared these data against the coldwater aquatic life use (“ALU”) criteria for segments
18 considered for reclassification from Section 128 to Section 126 waters, and against
19 marginal warmwater ALU criteria for segments being considered for reclassification from
20 Section 128 to Section 140 waters.

21 **LANL Exhibit 43** (LA-UR-21-24140) presents Proposed Segment Summary
22 Sheets for the reaches considered for reclassification. These sheets list DO, pH, and
23 temperature data for samples collected from the reaches and adjacent springs. These data

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1 are presented as average parameter values, followed by the range of values in parentheses.
2 The data are included in the segment summary sheets to facilitate comparison with the use-
3 specific numeric criteria set forth in 20.6.4.900 NMAC for coldwater and marginal
4 warmwater attainable uses. These use-specific numeric criteria are as follows:

5 **(1) Coldwater:** dissolved oxygen 6.0 mg/L or more, 6T3 temperature 20°C
6 (68°F), maximum temperature 24°C (75°F) and pH within the range of
7 6.6 to 8.8. Where a single segment-specific temperature criterion is
8 indicated in 20.6.4.101-899 NMAC, it is the maximum temperature and
9 no 6T3 temperature applies.²

10 **(2) Marginal warmwater:** dissolved oxygen 5 mg/L or more, pH within
11 the range of 6.6 to 9.0 and maximum temperature 32.2°C (90°F). Where
12 a segment-specific temperature criterion is indicated in 20.6.4.101-899
13 NMAC, it is the maximum temperature.

14 Additional discussion and analyses of the temperature, pH, and DO data for the sections
15 proposed for reclassification are included in my testimony below.

16 **2. NMED PROPOSED AMENDMENTS TO RIO GRANDE BASIN (20.6.4.126**
17 **NMAC**

18 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED'S ORIGINAL**
19 **PROPOSED AMENDMENTS TO SECTION 126?**

20 A. The NMED proposed to amend Section 126 to include additional perennial waters within
21 lands managed by DOE within LANL. The NMED identified these additional perennial
22 waters through the work done by NMED, LANL, and Amigos Bravos under the 2015 Joint
23 Stipulation.

24 **Q. WHAT IS YOUR POSITION ON NMED'S ORIGINAL PROPOSED**
25 **AMENDMENTS TO SECTION 126?**

² "6T3 temperature" means the temperature not to be exceeded for six or more consecutive hours in a 24-hour period on more than three consecutive days (20.6.4.7 NMAC).

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1 A. LANL supports the inclusion of additional stream segments as perennial waters. However,
2 LANL recommends that the reaches to be reclassified should be precisely defined, from
3 origin to terminus, to establish clear geographic boundaries and that all reclassifications
4 should be based upon sound science and defensible data. The combination of HP work,
5 the benthic data, the gage flow data, and the field parameter data support the conclusion
6 that those stream segments LANL recommends to be added to Section 126 are perennial
7 and generally meet the coldwater aquatic life criteria for Section 126 water.

8 **Q. ARE YOU RECOMMENDING CHANGES TO NMED'S ORIGINAL PROPOSAL?**

9 A. Yes, LANL proposes to define the perennial stream segments to be added to Section 126
10 from origin to terminus and recommends the following revision:³

11 RIO GRANDE BASIN: Perennial waters within lands managed by the U.S.
12 Department of Energy (DOE) within Los Alamos National Laboratory
13 (LANL), including but not limited to: portions of Cañon de Valle from Los
14 Alamos National Laboratory (LANL) stream gage E256 upstream to
15 Burning Ground Spring, Sandia canyon from Sigma canyon upstream to
16 LANL NPDES outfall 001, Pajarito canyon from 0.5 miles below Arroyo
17 de La Delfe upstream to Homestead Spring, Arroyo de La Delfe from
18 Pajarito canyon to Kieling Spring, ~~into~~ Starmers Gulch and Starmers Spring
19 and Water canyon from Area-A canyon upstream to State Route 501.

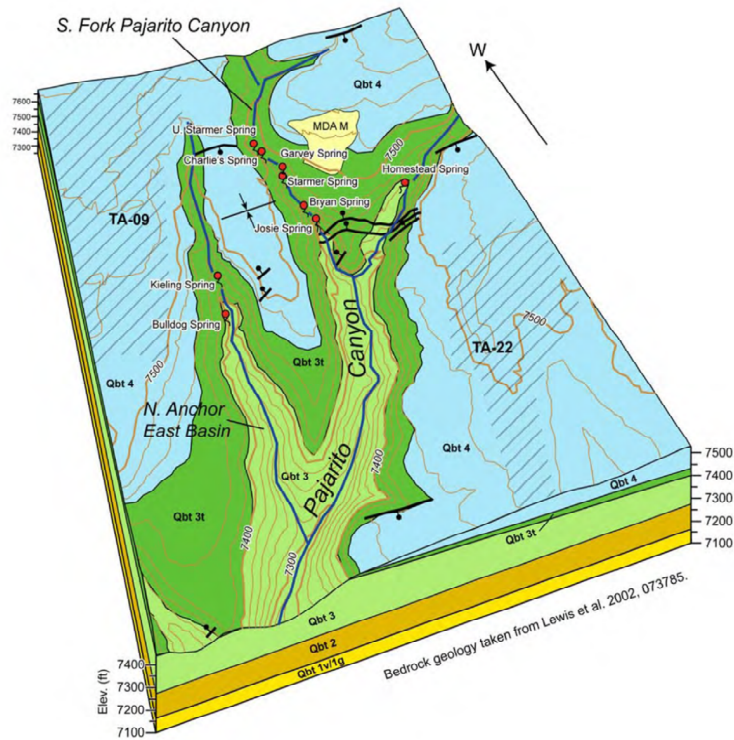
20 **Q. PLEASE EXPLAIN THE BASIS FOR THESE PROPOSED CHANGES.**

21 A. Fundamentally, these changes are more protective of water quality on the Pajarito Plateau,
22 and are appropriate and consistent with the data collected for these sections. Supporting
23 data include HP Level 1 evaluations conducted by LANL and NMED, HP Level 1 and 2
24 evaluations conducted solely by LANL, streamgage flow data, benthic data, general field
25 observations and photographs, and temperature, pH, and DO data from the reaches.

³ Throughout this testimony proposed revisions are shown to an existing NMAC provision with underlined lettering reflecting proposed inserts and ~~strikes~~ reflecting proposed removals.

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1 The reaches proposed for reclassification to Section 126 waters are located in the
2 Upper Pajarito Canyon area, an area characterized by a group of springs that discharge to
3 Upper Pajarito Canyon and its tributaries of Arroyo de La Delfe and Starmers Gulch. These
4 reaches, and the existing Section 128 reach in Starmers Gulch, are shown in the
5 Hydrogeologic Block Diagram in Figure 1 below.

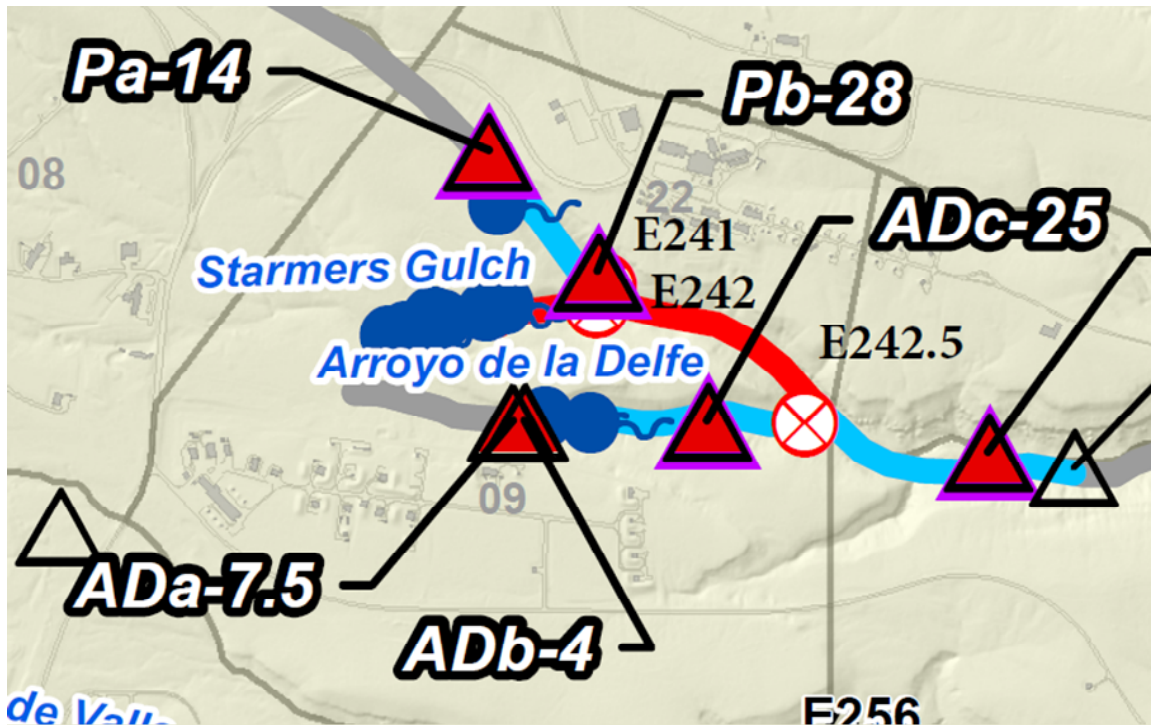


6
7 **Figure 1. Block diagram showing hydrogeologic cross section of Upper Pajarito Canyon,**
8 **showing the spring-fed reaches of Arroyo de La Delfe (N. Anchor Basin), Starmers Gulch (S.**
9 **Fork Pajarito Canyon), and Upper Pajarito Canyon. Most of these reaches are either Section**
10 **126 waters, or are proposed to be reclassified from Section 128 to Section 126 waters.**

11 These reaches are also shown in Figure 2 below, a portion of the map of HP Assessment
12 Sites and Proposed Changes. See LANL Exhibit 37 (LA-UR-20-30297). Figure 2, below,
13 shows the existing Section 126 reach (“Pajarito canyon from Arroyo de La Delfe upstream
14 into Starmers Gulch and Starmers Spring”) in red, and the Section 128 reaches proposed

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1 for reclassification to Section 126 reaches in blue. Note that several reaches have alternate
2 names – *i.e.*, “Arroyo de La Delfe” on Figure 2 is shown as “N. Anchor East Basin” on
3 Figure 1 and “Starmers Gulch” on Figure 2 is shown as “S. Fork Pajarito Canyon” on
4 Figure 1.



5
6 **Figure 2. Portion of the map of HP Assessment Sites and Proposed Changes, see LANL**
7 **Exhibit 37 (LA-UR-20-30297), showing the same reaches as the block diagram above, with**
8 **the existing Section 126 reach shown in red, and reaches proposed for reclassification from**
9 **current Section 128 to Section 126 shown in blue.**

10 The Upper Pajarito Canyon area shown in these figures is characterized by a group of ten
11 springs that discharge to Pajarito Canyon, and to the tributaries of Arroyo de La Delfe and
12 Starmers Gulch. These springs are the source of perennial surface-water flow that extends
13 approximately 2 km down-canyon. See Pajarito Canyon Investigation Report, LANL
14 2008, ERID 104909. Discharge from these springs varies seasonally, reflecting recharge
15 from snowmelt and monsoons. See *id.* The hydrogeologic block diagram, Figure 1, shows
16 the interconnected nature of the spring-fed reaches of Arroyo de La Delfe (N. Anchor

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1 Basin), Starmers Gulch (S. Fork Pajarito Canyon) and Upper Pajarito Canyon to
2 Homestead. Based on the extensive supporting data for these reaches, including the HP
3 Level 1 and 2 assessments, stream gage flow data, benthic data, field observations and
4 photographs, and temperature, pH, and DO data, LANL supports moving the following
5 segments from Section 128 to Section 126:

- 6 • **Pajarito Canyon from 0.5 miles below Arroyo de La Delfe upstream to Homestead**
7 **Spring (including “Pajarito Lower Section” and “Pajarito Upper Section”).**

8 For discussion purposes below, this segment is split into the following two reaches:

- 9 1. *Pajarito canyon from 0.5 miles below Arroyo de La Delfe to the confluence with*
10 *Arroyo de La Delfe (aka “Pajarito Lower Section”).* Supporting data for this
11 reach are presented in **LANL Exhibit 38** (LA-UR-21-24106), and include the
12 following:
13
 - 14 ▪ HP Level 1 Field Sheets and Photographs
 - 15 ▪ HP Level 2 Field Sheet and Photographs
 - 16 ▪ Benthic Macroinvertebrate Summary
 - 17 ▪ Hydrogeologic Block Diagram
- 18 2. *Pajarito canyon from Starmers Gulch to Homestead Spring (aka “Pajarito*
19 *Upper Section”).* Supporting data for this reach are presented in **LANL**
20 **Exhibit 38** (LA-UR-21-24107), and include the following:
21
 - 22 ▪ HP Level 1 Field Sheets and Photographs
 - 23 ▪ HP Level 2 Field Sheet and Photographs
 - 24 ▪ Benthic Macroinvertebrate Summary
 - 25 ▪ Summary of Gage Flow Statistics
 - 26 ▪ Plots of pH, DO and temperature for Homestead Spring and E241
 - 27 ▪ Hydrogeologic Block Diagram

- 28 • **Arroyo de La Delfe from Pajarito Canyon upstream to Kielling Spring.**

29 Supporting data for this reach are presented in **LANL Exhibit 39** (LA-UR-21-24109), and
30 include the following:

- 31 ▪ HP Level 1 Field Sheets and Photographs
- 32 ▪ HP Level 2 Field Sheet and Photographs

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- 1 ▪ Benthic Macroinvertebrate Summary
- 2 ▪ Summary of Gage Flow Statistics
- 3 ▪ Plots of pH, DO and temperature for Kieling and Bulldog Spring and E242.5
- 4 ▪ Hydrogeologic Block Diagram

5 Under Section 128, the ALU designation for these three reaches is a designation of limited
6 aquatic life, with the watercourses classified as ephemeral and intermittent. However,
7 LANL’s analysis of the data presented in **LANL Exhibit 38** (LA-UR-21-24106; LA-UR-
8 21-24107) and **LANL Exhibit 39** (LA-UR-21-24109) support a determination that the
9 coldwater ALU may be attainable. These segments are contiguous with existing Section
10 126 waters in Pajarito Canyon, and moving these waters to Section 126 would provide
11 increased protections for these waters.

12 My testimony below will focus on the gage flow data, and the pH, DO, and
13 temperature data for these reaches. This information, along with the additional high-
14 quality data discussed in Mr. Gallegos testimony (also presented in **LANL Exhibit 38** (LA-
15 UR-21-24106; LA-UR-21-24107) and **LANL Exhibit 39** (LA-UR-21-24109)) provides a
16 strong technical basis for the reclassification of the three Pajarito Canyon reaches from
17 Section 128 to Section 126 waters.

18 My analysis of the gage flow statistics for gages in Upper Pajarito Canyon,
19 Starmers Gulch, and Arroyo de La Delfe is summarized in **LANL Exhibit 38** (LA-UR-21-
20 24106; LA-UR-21-24107) and **LANL Exhibit 39** (LA-UR-21-24109). This analysis was
21 conducted for the full period of available data from 2000 to 2009.

- 22 • **Pajarito Canyon from 0.5 miles below Arroyo de La Delfe upstream to Homestead**
23 **Spring (including “Pajarito Lower Section” and “Pajarito Upper Section”)**
- 24 • Pajarito Lower Section - Pajarito canyon from 0.5 miles below Arroyo de La Delfe
25 to confluence with Arroyo de La Delfe:

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1 The reaches of Starmers Gulch, Arroyo de La Delfe, and the Pajarito Upper Section
2 are fed by 10 springs, shown in the block diagram of Figure 1, above. The discharge from
3 these spring-fed reaches is perennial, and flows down the Pajarito Lower Section for
4 approximately 0.5 miles beyond the confluence of Arroyo de La Delfe with Pajarito
5 Canyon.

6 There is no gage data for the Pajarito Lower section. However, there are other data,
7 including HP Level 1 and Level 2 evaluations, benthic macroinvertebrate data, and field
8 observations and photographs (**LANL Exhibit 38** (LA-UR-21-24106)) that suggest this
9 segment meets perennial hydrologic criteria, and together provide the basis for LANL's
10 recommendation to reclassify this segment from Section 128 to Section 126. The HP Level
11 1 overall score of 24 at location PC provides good evidence that this segment is perennial.
12 The additional data supporting the perennial classification of this reach are presented in
13 Mr. Gallegos testimony, and include observations of water in the channel,
14 macroinvertebrates, and in the hyporheic zone - the subsurface interface beneath and
15 adjacent to the where surface water and shallow groundwater mix.

- 16 • Pajarito Upper Section - Pajarito canyon from Starmers Gulch to Homestead
17 Spring:

18 The Pajarito Upper Section, the reach of Pajarito Canyon from Starmers Gulch to
19 Homestead Spring, also has perennial characteristics and is proposed for reclassification
20 from Section 128 to Section 126. Homestead Spring discharges into this reach, and
21 supports a perennial reach for approximately 1 mi (1.6 km) (*See Pajarito Canyon*
22 *Investigation Report, LANL 2008, ERID 104909*). Flow in this reach is consistent with

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1 the WQA definition of perennial water, defined in 20.6.4 NMAC, with this section
2 typically containing water throughout the year and rarely experiencing dry periods.

3 Gage data from E241 (Pajarito above Starmers) measured discharge 76.8% of the
4 time from 2000 to 2009 (See **LANL Exhibit 38** (LA-UR-21-24107)), slightly less than the
5 perennial USGS “rule of thumb” of 80 to 100% discussed earlier. However, the
6 recommendation for reclassification of this reach from Section 128 to Section 126 is also
7 based on the other high-quality data discussed in Mr. Gallegos’ testimony and presented in
8 **LANL Exhibit 38** (LA-UR-21-24107). These data include a very strong HP Level 1 score
9 of 28 at location PB, adjacent to the E241 gage, strongly indicative of perennial flow, as
10 well as HP Level 2 evaluation data, field observations and photographs, benthic
11 macroinvertebrate data, and observations in the hyporheic zone presented in **LANL**
12 **Exhibit 38** (LA-UR-21-24107).

13 Temperature, pH and DO data from samples collected from Homestead Spring and
14 at gage E241 (Pajarito above Starmers) were reviewed for comparison with the numeric
15 criteria set forth in 20.6.4.900 NMAC for the coldwater ALU: 6T3 of 20° C, maximum
16 temperature of 24° C; pH 6.6 to 8.8; and DO ≥ 6.0 mg/L. These parameters are plotted on
17 Pages 12-14 of **LANL Exhibit 38** (LA-UR-21-24107), and summary statistics for these
18 parameters are shown on the Proposed Segment Summary Sheets in **LANL Exhibit 43**
19 (LA-UR-21-24140).

20 All samples met the temperature criteria. Most (71.4%) of the samples collected
21 from Homestead Spring had pH values below the coldwater ALU criterion of 6.6, with a
22 median pH of 6.41. However, further down the reach at gage E241 (Pajarito above
23 Starmers), the majority of samples met the 6.6 coldwater pH criterion, with a mean pH of

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1 7.06 for all samples collected at gage E241. DO concentrations in samples from
2 Homestead Spring averaged 6.7 mg/L, with some DO readings below the 6.0 mg/L
3 standard. At gage E241, only one DO measurement was collected, at 8.58 mg/L.

4 In summary, water samples collected from the Pajarito Upper Section from
5 Starmers Gulch to Homestead Spring generally meet coldwater ALU criteria for
6 temperature and DO. Although the data show some deviations from the coldwater ALU
7 pH criteria in samples from Homestead Spring, other data and information support a
8 decision that the coldwater ALU is the highest attainable use.

9 • **Arroyo de La Delfe from Pajarito Canyon upstream to Kieling Spring:**

10 The reach of Arroyo de La Delfe from Pajarito Canyon upstream to Kieling Spring
11 is fed by two springs (Kieling and Bulldog springs) and considerable high quality data
12 suggest this reach should be reclassified from Section 128 to Section 126. These data
13 include the data presented in Mr. Gallegos' testimony and shown in **LANL Exhibit 39**
14 (LA-UR-21-24109), as well as gage data from E242.5 (Arroyo de La Delfe above Pajarito)
15 and the temperature, pH, and DO data discussed below. Supportive data presented by Mr.
16 Gallegos and shown in **LANL Exhibit 39** (LA-UR-21-24109) include a robust HP Level
17 1 score of 25 at HP Level 1 Location ADc (shown on the map as red triangle "ADc-25" in
18 **LANL Exhibit 37** (LA-UR-20-30297)), additional HP Level 2 evaluation data, field
19 observations and photographs, benthic macroinvertebrate data, and strong evidence in the
20 hyporheic zone adjacent to and beneath the stream where surface water and groundwater
21 mix.

22 Gage data from E242.5 from 2000 to 2009 showed measurable discharge 81.8% of
23 the time during the period between 2000 and 2009 (*See LANL Exhibit 39* (LA-UR-21-

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1 24109) at 11), when the gage was operational, characteristic of perennial flow. *See LANL*
2 **Exhibit 44**. Flow in this reach is consistent with the WCA definition of perennial water,
3 as defined in 20.6.4 NMAC. This section typically contains water throughout the year, and
4 rarely experiences dry periods (although there have been dry periods during some years).

5 Temperature, pH, and DO data from samples collected from Bulldog Spring,
6 Kieling Spring, and E242.5 were plotted and compared against the coldwater ALU criteria
7 (6T3 of 20° C, maximum T of 24° C; pH 6.6 to 8.8; and DO ≥ 6.0 mg/L). These data are
8 summarized on the Proposed Segment Summary Sheets (**LANL Exhibit 43** (LA-UR-21-
9 24140)), and the plots of these parameters are included in **LANL Exhibit 39** (LA-UR-21-
10 24109) at 13-15.

11 All samples from this reach met the temperature criteria. Most samples also met
12 the pH criteria of 6.6 to 8.8 range, but some pH values were below the 6.6 minimum
13 criteria. However, the median pH values for this reach were 6.93 at Kieling Spring, 7.26
14 at Bulldog Spring, and 7.05 at E242.5 (La Delfe above Pajarito) (**LANL Exhibit 39** (LA-
15 UR-21-24109) at 14). Most of the dissolved oxygen data met the DO ≥ 6.0 mg/ L ALU
16 criteria for coldwater. Collectively, sampling data from Bulldog and Kieling Springs and
17 the surface water flow regime documented at the E242.5 gage indicate the water in the
18 Arroyo de La Delfe reach generally meet the coldwater ALU criteria for temperature, pH,
19 and DO.

20 **Q. ARE THERE ANY ADDITIONAL DATA FROM OTHER STUDIES**
21 **SUPPORTING RECLASIFICATION OF THESE STREAM SEGMENTS TO**
22 **SECTION 126?**

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1 A. Yes. Additional data that support reclassification of the Section 126 waters include
2 thermograph data collected from the Pajarito Canyon stream in 1997, and analyses of
3 stream flow data in upper Pajarito Canyon and Starmers Gulch and Arroyo de La Delfe
4 conducted by LANL in 2008. These data are summarized below.

5 Thermograph data were collected in the Pajarito Canyon stream above the
6 confluence of Arroyo de La Delfe and below Starmers Gulch from late 1996 to 1997.
7 These data are shown in **LANL Exhibit 38** (LA-UR-21-24107) at 16, which presents water
8 temperature in the Pajarito Canyon reach for the approximately one-year period. These
9 data reflect the temperature of commingled water from upper Pajarito Canyon (including
10 discharge from Homestead Spring), and water discharging from the springs in Starmers
11 Gulch. The thermograph data confirm that in 1997, temperature in the stream met the
12 numeric criteria set forth in 20.6.4.900 NMAC for the coldwater ALU: 6T3 of 20° C and a
13 maximum temperature of 24° C.

14 In 2007 and 2008, the Laboratory conducted an in-depth analysis of the
15 hydrogeology of Pajarito Canyon, and published their results in the Pajarito Canyon
16 Investigation Report. See Pajarito Canyon Investigation Report, LANL 2008, ERID
17 104909. Appendices K and L include additional details regarding the stream flow
18 characteristics and the springs discharging into upper Pajarito Canyon and Starmer Gulch
19 and Arroyo de La Delfe.

20 A hydrograph showing stream flow in upper Pajarito Canyon from January 2006 to
21 June 2008 is presented on Page 12 of **LANL Exhibit 39** (LA-UR-21-24109). The
22 hydrograph shows flow responses to precipitation at E240 (Pajarito below SR-501), E241
23 (Pajarito above Starmers), E242 (Starmers above Pajarito), and E242.5 (La Delfe above

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1 Pajarito). During this 2.5 year study period, the responses observed at E241 and E242.5
2 demonstrated both intermittent and perennial characteristics, with intermittent flow
3 observed during years with limited precipitation (in 2006), and perennial flow observed
4 during years with more robust precipitation (in 2007).

5 These observations are consistent with our analyses of the gage flow data,
6 summarized on Page 11 of **LANL Exhibit 39** (LA-UR-21-24109). Our review of 10 years
7 of data for E241 (Pajarito above Starmers) and E242.5 (Arroyo de La Delfe above Pajarito)
8 showed measureable discharge approximately 80% of the time, reflecting both intermittent
9 and perennial flow characteristics for these reaches.

10 However, there are considerable other data discussed in Mr. Gallegos' testimony
11 that complement the gage data and provide a strong basis for reclassification of the
12 following reaches to Section 126 waters:

- 13 • Pajarito Canyon from 0.5 miles below Arroyo de La Delfe to confluence with
14 Arroyo de La Delfe;
- 15 • Pajarito Canyon from Starmers Gulch to Homestead Spring; and
- 16 • Arroyo de La Delfe from Pajarito Canyon to Kieling Spring.

17 These additional data supporting reclassification to Section 126 include the HP Level 1 and
18 2 evaluations, field observations and photographs, macroinvertebrate data and observations
19 in the hyporheic zone are presented in **LANL Exhibit 38** (LA-UR-21-24106; LA-UR-21-
20 24107) and **LANL Exhibit 39** (LA-UR-21-24109), and summarized in **LANL Exhibit 43**
21 (LA-UR-21-24140).

22 Lastly, it must be emphasized that the surface water flow in these segments best fits
23 the WQA definition of “perennial water” in 20.6.4 NMAC, with flow in these reaches

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1 typically containing water throughout the year. By comparison, if these reaches were
2 “intermittent” as defined in 20.6.4 NMAC, they would contain water for extended periods
3 only at certain times of the year, such as when they receive seasonal flow from springs or
4 melting snow. However, during most years, perennial flow, rather than intermittent flow,
5 is observed in upper Pajarito Canyon from 0.5 miles below the Arroyo de La Delfe
6 confluence to Homestead Spring, and in Arroyo de La Delfe from Pajarito Canyon to
7 Kieling Spring. For these reasons, LANL proposes these reaches for reclassification to
8 Section 126.

9 **Q. DOES NMED’S AMENDED PETITION PROPOSE REVISIONS TO ITS**
10 **PROPOSED AMENDMENT TO SECTION 126?**

11 A. Yes, NMED’s Amended Petition withdrew all proposed revisions to Section 126.

12 **Q. WHAT IS YOUR OPINION OF NMED’S WITHDRAWAL OF THE PROPOSED**
13 **AMENDMENT TO SECTION 126?**

14 A. LANL continues to support the inclusion of additional stream segments as perennial waters
15 and recommends that the segments added to Section 126 be precisely defined, from origin
16 to terminus, to establish clear geographic boundaries. Under the 2015 Joint Stipulation,
17 the parties all agreed that certain segments are most consistent with perennial hydrologic
18 criteria. These agreed upon segments should be reclassified from Section 128 to Section
19 126.

20 **Q. DO YOU RECOMMEND CHANGES TO NMED’S REVISED PROPOSED**
21 **AMENDMENT TO SECTION 126?**

22 A. For the reasons I have discussed in my testimony, yes, LANL recommends that the WQCC
23 approve the reclassification of three geographically defined stream segments to Section

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1 126, consistent with the agreement of the parties under the 2015 Joint Stipulation.
2 Specifically, LANL proposes to define the perennial stream segments to be added to
3 Section 126 from origin to terminus and recommends the following revision:

4 RIO GRANDE BASIN: Perennial waters within lands managed by the U.S.
5 Department of Energy (DOE) within Los Alamos National Laboratory
6 (LANL), including but not limited to: portions of Cañon de Valle from Los
7 Alamos National Laboratory (LANL) stream gage E256 upstream to
8 Burning Ground Spring, Sandia canyon from Sigma canyon upstream to
9 LANL NPDES outfall 001, Pajarito canyon from 0.5 miles below Arroyo
10 de La Delfe upstream to Homestead Spring, Arroyo de La Delfe from
11 Pajarito canyon to Kieling Spring, into Starmers Gulch and Starmers Spring
12 and Water canyon from Area-A canyon upstream to State Route 501.

13 **3. NMED PROPOSED AMENDMENTS TO RIO GRANDE BASIN (20.6.4.128**
14 **NMAC)**

15 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED'S ORIGINAL**
16 **PROPOSED AMENDMENTS TO SECTION 128?**

17 A. Section 128 includes all surface waters within lands managed by DOE within LANL that
18 are not included in Section 126. NMED's Original Petition proposed amendments to
19 Section 128 that would eliminate the intermittent classification. NMED's Original Petition
20 also proposed to identify those portions of stream segments remaining in Section 128.

21 **Q. WHAT IS YOUR POSITION ON NMED'S ORIGINAL PROPOSED**
22 **AMENDMENTS TO SECTION 128?**

23 A. LANL supports that Section 128 waters should generally remain as ephemeral/intermittent
24 because the WQCC has already determined that the uses specified in Section 128 are
25 appropriate for these waters and EPA has approved this technical determination and
26 classification.

27 **Q. ARE YOU RECOMMENDING CHANGES TO NMED'S ORIGINAL PROPOSAL?**

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1 A. Yes, Section 128 waters should remain as ephemeral/intermittent. Additionally, the
2 WQCC should identify the specific geographic reaches of current Section 128 waters that
3 are proposed to be added to Section 126 and the other identified reaches proposed to be
4 identified as intermittent and moved to proposed new Section 140. If the WQCC takes that
5 approach, LANL proposes that waters remaining in Section 128 should be defined as those
6 not specifically identified in Section 126 or Section 140.

7 **Q. PLEASE EXPLAIN THE BASIS FOR THIS PROPOSED CHANGE.**

8 A. The 2015 Joint Stipulation provided the framework for the collection of hydrologic data to
9 evaluate the appropriate level of water quality protections to be afforded to Section 128
10 waters. As data are collected and evaluated, they may support reclassification to Section
11 126 or Section 140 waters, depending on the hydrologic characteristics and other relevant
12 data, and the associated need for increased protections for certain waters.

13 **Q. DOES NMED’S AMENDED PETITION PROPOSE REVISIONS TO ITS**
14 **PROPOSED AMENDMENT TO SECTION 128?**

15 A. Yes, NMED’S Amended Petition proposes to retain the ephemeral and intermittent
16 classifications for Section 128 water, to include the provision that Section 128 waters are
17 any waters “not specifically identified in 20.6.4.126 or 20.6.4.140 NMAC,” and also retains
18 the original listing of Pajarito Plateau canyons in current Section 128. The only changes
19 that NMED proposes to Section 128 in the Amended Petition are to replace the word
20 “watercourses” with “waters” and add the reference to new Section 140.

21 **Q. WHAT IS YOUR OPINION ON THE PROPOSED REVISION TO NMED’S**
22 **PROPOSED AMENDMENT TO SECTION 128?**

23 A. LANL supports NMED’s proposed revision to Section 128 in NMED’s Amended Petition.

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1 **Q. DO YOU RECOMMEND CHANGES TO NMED’S REVISED PROPOSED**
2 **AMENDMENT TO SECTION 128?**

3 A. LANL prefers its recommended revisions to this section, as stated above, but would support
4 the wording for Section 128 in NMED’s Amended Petition.

5 **Q. WHAT IS THE BASIS FOR THAT POSITION?**

6 A. By adding specific stream segments to Section 126 waters or the new Section 140 waters,
7 based on sound science and data, what remains classified as Section 128 waters has already
8 been determined by the WQCC to be ephemeral and intermittent and that determination
9 has been approved by EPA, along with the appropriate designated uses. There is no new
10 information that would suggest further changes to these waters are appropriate.

11 **4. NMED PROPOSED AMENDMENTS TO RIO GRANDE BASIN (20.6.4.140**
12 **NMAC)**

13 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED’S ORIGINAL**
14 **PROPOSED AMENDMENTS TO CREATE A NEW SECTION 20.6.4.140?**

15 A. NMED’s Original Petition proposed to establish new Section 140 to include the non-
16 perennial/intermittent waters or portions of waters that were previously identified in
17 Section 128. Originally-proposed Section 140 specified warmwater aquatic life and
18 primary contact designated uses.

19 **Q. WHAT IS YOUR POSITION ON NMED’S ORIGINAL PROPOSED**
20 **AMENDMENTS TO CREATE A NEW SECTION 20.6.4.140?**

21 A. LANL supports NMED’s original proposal to establish a new Section 140, with some
22 changes to the designated uses and included waters.

23 **Q. ARE YOU RECOMMENDING CHANGES TO NMED’S ORIGINAL PROPOSAL?**

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1 A. Yes, LANL proposes to precisely define, from origin to terminus, the stream segments that
2 would be added to the new Section 140 waters to establish clear geographic boundaries.
3 Additionally, LANL proposes to clarify that Section 140 waters are intermittent, not “non-
4 perennial” in order to conform to the WQA’s definitions. The data support the marginal
5 warmwater ALU rather than warmwater as NMED proposed, and there is no new
6 information to support recreational use other than the current use of secondary contact.

7 LANL proposes the following language:

8 RIO GRANDE BASIN: Intermittent portions of Effluent canyon from
9 Mortandad canyon confluence upstream to its headwaters, S-Site canyon
10 from alluvial groundwater well MSC 16-06293 upstream to Martin Spring,
11 and Two Mile Twomile canyon from its confluence with Pajarito canyon to
12 LANL stream gage E244 upstream to its confluence with upper Two Mile
13 Twomile canyon. (Surface waters within lands scheduled for transfer from
14 DOE to tribal, state or local authorities are specifically excluded.)

15
16 A. Designated uses: livestock watering, wildlife habitat, marginal
17 warmwater aquatic life, secondary contact.

18
19 B. Criteria: the use-specific numeric criteria set forth in 20.6.4.900 NMAC
20 are applicable to the designated uses.

21
22 **Q. PLEASE EXPLAIN THE BASIS FOR THIS PROPOSED CHANGE.**

23 A. Extensive study and technical work suggests that some intermittent waters presently
24 classified under section 20.6.4.128 NMAC have current uses that are different from their
25 previously determined existing use, based on application of the HP and other technical
26 work, including benthic data collection, conducted by the NMED and LANL. This work,
27 in part, was done under the 2015 Joint Stipulation.

28 In addition, there have been two major fires in the Los Alamos area since the late
29 1990s, when the first use studies were conducted of surface water classification at Los
30 Alamos. The Cerro Grande Fire occurred in May 2000, and the Las Conchas Fire in June

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1 2011. These fires and multiple storm water mitigation projects have affected the hydrology
2 and surface water flows in some of the reaches at LANL.

3 I have reviewed the temperature, pH, and DO data collected by LANL since 2005
4 for the relevant reaches, which I summarize in my testimony, below. The technical data
5 support that the marginal warmwater aquatic life use is more appropriate for the specific
6 segments proposed for reclassification to Section 140 waters than the limited aquatic life
7 use provided under Section 128. There is no new data supporting any change to the other
8 associated existing uses under Section 128, in particular the secondary contact recreational
9 use. Therefore, it would be appropriate to move these certain segments from Section 128
10 to new Section 140 to make clear that a different ALU applies to these certain segments,
11 while retaining all other existing uses. Moving these waters from Section 128 to new
12 Section 140 results in increased protections for these waters, and in such cases NMED's
13 position is that a UAA is not required.

14 **Q. WHAT SPECIFIC TECHNICAL DATA SUPPORT THE CREATION OF THE**
15 **NEW SECTION 140 AND THE SPECIFIC SEGMENTS PROPOSED TO BE**
16 **MOVED?**

17 A. LANL collected benthic data in the Effluent, S-Site and Twomile Canyon reaches which
18 can be used to support placement in new Section 140, as Mr. Gallegos addresses in his
19 testimony. In the testimony that follows, I summarize the available gage, temperature, pH,
20 and DO data for the relevant stream segments.

21 • **S-Site Canyon from MSC 16-06293 to Martin Spring:**

22 The reach in S-Site Canyon from the alluvial well MSC 16-06293 to Martin Spring is
23 proposed for reclassification from Section 128 to Section 140, with marginal warmwater

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1 ALU standards. Martin Spring has been sampled since 2005, and considerable
2 temperature, pH, and DO data are available for Martin Spring. These data are summarized
3 in the Proposed Segment Summary Sheets (**LANL Exhibit 43** (LA-UR-21-24140)), and
4 plots of these parameters are presented in **LANL Exhibit 41** (LA-UR-21-24119) to
5 facilitate comparison with the use-specific numeric criteria set forth in 20.6.4.900 NMAC
6 for the marginal warmwater use. The numeric criteria for the marginal warmwater ALU
7 for DO is 5 mg/L or more, for pH, the range is 6.6 to 9.0, and the maximum temperature is
8 32.2°C.

9 All temperature values in Martin Spring samples are well below the maximum
10 temperature of 32.2°C. See **LANL Exhibit 41** (LA-UR-21-24119) at 13. The pH data for
11 Martin Spring are shown on Page 14 of in **LANL Exhibit 41** (LA-UR-21-24119). Most
12 pH values were within the pH range of 6.6 to 9.0, with only 7.3% of the samples below
13 6.6. The median pH of Martin Spring samples is 6.95 SU. Page 14 in **LANL Exhibit 41**
14 (LA-UR-21-24119) shows DO concentrations in samples from Martin Spring. All samples
15 showed dissolved oxygen concentrations above the 5.0 mg/L minimum standard for the
16 marginal warmwater ALU.

17 In summary, water samples collected in S-Site Canyon from Martin Spring meet
18 the marginal warmwater ALU standards proposed for Section 140 for temperature, pH and
19 DO.

- 20 • **Twomile Canyon from its confluence with Pajarito canyon to Upper Twomile**
21 **Canyon:**

22 The reach in Twomile Canyon from its confluence with Pajarito Canyon to Upper Twomile
23 Canyon is also proposed for reclassification from Section 128 water to Section 140 water.

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1 Gaging station E244 (Twomile Canyon above Pajarito Canyon) is located near the
2 confluence of Twomile Canyon with Pajarito Canyon, and has been monitored from 2002
3 to the present. Flow records for this gage show intermittent flow characteristics, with
4 measurable discharge at the gage 34.0% of the time for data from 2003 to 2009 (**LANL**
5 **Exhibit 42** (LA-UR-21-24110)), indicating this portion of the reach has intermittent
6 characteristics. The general rule of thumb for intermittent flow characteristics is 10% to
7 80%. *See* **LANL Exhibit 44**.

8 Page 12 in **LANL Exhibit 42** (LA-UR-21-24110) presents hydrographs for E244
9 for 2014 to 2019, showing the intermittent flow characteristics of this reach. During years
10 with significant precipitation, flow is observed for extended periods at certain times of the
11 year. For example, in 2017 and 2019, strong spring runoff events from melting snow
12 resulted in significant flow for a number of weeks before dissipating. However, when
13 precipitation is limited, there is little or no flow is observed at E244.

14 In any case, although flow is highly variable in this section of the reach, the
15 hydrographs for E244 are consistent with the WQCC definition of intermittent surface
16 water presented in 20.6.4 NMAC. The data confirm that this reach contains water for
17 extended periods only at certain times of the year, such as when it received seasonal flow
18 from melting snow in 2017 and 2019.

19 There are no surface water data available for Twomile Canyon. However, TW-
20 1.72 Spring feeds into Twomile Canyon near the confluence with Upper Twomile Canyon.
21 TW-1.72 Spring was sampled during the period from 2005 to 2009, and data are available
22 for temperature, pH, and DO. Page 12 in **LANL Exhibit 42** (LA-UR-21-24113) shows
23 temperature values measured in samples from TW-1.72 Spring. All temperature values

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1 were well below the maximum temperature standard of 32.2 °C for marginal warmwater
2 ALU. Page 13 in **LANL Exhibit 42** (LA-UR-21-24113) shows the pH data for samples
3 from TW-1.72 Spring. The median pH measured in this spring was 6.89. No pH readings
4 were below the 6.6 minimum pH standard for marginal warmwater ALU. Page 14 in
5 **LANL Exhibit 42** (LA-UR-21-24113) shows the DO concentrations in samples from TW-
6 1.72 Spring; two of the five measurements for DO were below the 5.0 mg/L DO standard
7 for marginal warmwater ALU.

8 In summary, gage data from E244 near the bottom of the Twomile Canyon reach
9 shows intermittent flow for this part of the reach. Samples from TW-1.72 Spring near the
10 head of the reach met the marginal warmwater ALU standards for temperature and pH, but
11 not for DO. There are no temperature, pH, and DO data for the lower end of the reach near
12 E244.

13 **Q. DOES NMED’S AMENDED PETITION PROPOSE REVISIONS TO ITS**
14 **PROPOSED AMENDMENT TO NEW SECTION 140?**

15 A. Yes, NMED’s Amended Petition identifies the stream segments that would be reclassified
16 as Section 140 waters more precisely than it had in the Original Petition, generally adopting
17 the geographic boundaries proposed by LANL. The exception is LANL’s recommendation
18 that the reach in Twomile Canyon end at gage E244 instead of the confluence at Pajarito
19 Canyon. In the Amended Petition, NMED also revised its proposed designated uses to the
20 following: livestock watering, wildlife habitat, marginal warmwater aquatic life and
21 secondary contact.

22 **Q. WHAT IS YOUR OPINION ON THE PROPOSED REVISION TO NMED’S**
23 **PROPOSED AMENDMENT TO NEW SECTION 140?**

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1 A. LANL is in agreement with NMED's Amended Petition proposed amendments to Section
2 140 with the exception of the terminus description in Twomile Canyon. LANL
3 recommends that the reach should extend to gage E244.

4 **Q. DO YOU RECOMMEND CHANGES TO NMED'S REVISED PROPOSED**
5 **AMENDMENT TO NEW SECTION 140?**

6 A. Based upon the flow data and the WQA definition for intermittent surface water, LANL
7 recommends that Section 140 define the terminus of Twomile at gage E244.

8 **Q. WHAT IS THE BASIS FOR THAT RECOMMENDATION?**

9 A. HP Level 1 and HP Level 2 information do not justify extension beyond gage E244. HP
10 Level 2 assessments were properly completed in the Twomile Canyon segment in question
11 because the score of 10.5 falls in the gray zone between ephemeral and intermittent. HP
12 Level 2 indicators showed no water in the channel and bivalves, amphibians and benthic
13 organisms were absent. Water was insufficient for collection for benthic organisms. E244
14 gage data show seasonal periods of flow in 2017 and 2019, but generally show low periods
15 of intermittent flow with limited seasonality. These data do not support marginal
16 warmwater ALU.

17 **IV. CONCLUSION**

18 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

19 A. Yes.

Exhibit 5

**STATE OF NEW MEXICO
BEFORE THE WATER QUALITY CONTROL COMMISSION**

IN THE MATTER OF:

**THE PETITION TO AMEND
THE STANDARDS FOR INTERSTATE
AND INTRASTATE SURFACE WATERS,
20.6.4 NMAC**

WQCC No. 20-51(R)

**DIRECT TESTIMONY OF BRYAN DAIL
ON BEHALF OF TRIAD NATIONAL SECURITY, LLC
AND THE U.S. DEPARTMENT OF ENERGY, NATIONAL NUCLEAR SECURITY
ADMINISTRATION**

May 3, 2021

Direct Testimony of David Bryan Dail
Case No. WQCC 20-51(R)

I. INTRODUCTION

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Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Bryan Dail. My business address 1200 Trinity Drive, Suite 150, Los Alamos, New Mexico 87544.

Q. ON WHOSE BEHALF ARE YOU SUBMITTING DIRECT TESTIMONY?

A. I am submitting this direct testimony on behalf of Triad National Security, LLC, (“Triad”) and the U.S. Department of Energy, National Nuclear Security Administration (“DOE”) (collectively “LANL”).

Q. BY WHOM ARE YOU EMPLOYED AND WHAT IS YOUR POSITION?

A. I am currently employed by Newport News Nuclear BWXT-Los Alamos (“N3B”), the remediation contractor for the Department of Energy Office of Environmental Management at the Los Alamos National Laboratory, as an Environmental Scientist.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL AND PROFESSIONAL EXPERIENCE.

A. I received a Bachelor of Science degree in Biology (Chemistry minor) from the University of New Mexico in 1991 and earned a Ph.D. in Microbiology, with an emphasis on the biogeochemical cycling of nutrients and pollutants, from the University of Georgia in 1997. Post-Ph.D., I completed a Postdoctoral appointment at the Pennsylvania State University studying nitrogen cycling at the Harvard Forest Long Term Ecological Research Site, Petersham, Massachusetts (1998-2000). My resume is attached to LANL’s Notice of Intent to Present Technical Testimony (“Notice of Intent”) as **LANL Exhibit 12**. Prior to being employed by N3B, I was an environmental scientist for five years with the New Mexico Environment Department (“NMED”) Surface Water Quality Bureau (“SWQB”) in Santa

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1 Fe, NM. There, I was responsible for writing Use Attainability Analyses (“UAAs”),
2 training and observing implementation of the department’s Hydrology Protocol, providing
3 review of outside party petitions to the Water Quality Control Commission (“WQCC”),
4 and presenting department proposals before the WQCC in support of changing water
5 quality standards in 20.6.4 NMAC; the surface water quality standards. For the twelve
6 years prior to that, from 2000 to 2012, I was employed as an Assistant Professor, then
7 Assistant Research Professor in the Plant, Soil, and Environmental Sciences department at
8 the University of Maine. There, I taught in the Water and Soil Sciences major and
9 performed environmental research in the boreal-transition forests and waters of New
10 England.

11 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?**

12 A. Yes, I previously testified for the 2013 Triennial Review (WQCC 14-05(R)). As witness
13 for the SWQB, I provided technical testimony in support of two UAAs, one for the
14 Mimbres River and tributaries in southern New Mexico and one for the Animas River in
15 northern New Mexico, tributary of the San Juan River and thence to the Colorado River
16 System. I also provided technical review and testimony on behalf of the SWQB in support
17 of Freeport-McMoRan’s site specific copper criteria proposal for the Chino mines area,
18 Grant County, NM. All three of these proposals were approved by the WQCC. During
19 the 2013 Triennial Review, I also provided rebuttal testimony for NMED opposing an
20 outside party’s proposed changes to New Mexico’s hardness-based aluminum standards.
21 This outside proposal was withdrawn in the latter stages of the 2013 Triennial Review.
22 Subsequent to the 2013 Triennial Review, I provided technical testimony for an additional
23 two UAAs, for Dog Canyon Creek in the Tularosa basin near Alamogordo and Tecolote

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1 creek in the Pecos River System. Both of these UAAs were approved by the WQCC on
2 January 16, 2018.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

3
4
5 A. The purpose of my testimony is to explain the technical bases for LANL’s position on the
6 NMED’s proposed amendments to the Standards for Interstate and Intrastate Surface
7 Waters, 20.6.4 NMAC (“Standards”) set forth in NMED’s August 18, 2020 Petition
8 (“Original Petition”) and NMED’s March 12, 2021 Notice of Amended Petition
9 (“Amended Petition”). I also explain the technical bases for certain related modifications
10 proposed by LANL in its Comments on the Public Comment Draft of NMED’s Proposed
11 Amendments, filed January 6, 2021 (“LANL Comments”) and its Notice of Intent, which
12 is being filed concurrently with this technical testimony.

**III. LANL’S EVALUATION OF AND PROPOSED CHANGES TO NMED’S
PROPOSED AMENDMENTS**

**Q. PLEASE IDENTIFY THE AMENDMENTS THAT YOU ARE ADDRESSING IN
THIS TESTIMONY.**

17 A. My testimony addresses the following amendments proposed by NMED:
18 • Amendments to the General Criteria Section (20.6.4.13 NMAC) to amend general
19 criteria for toxic pollutants;
20 • Changes to Use Attainability Analysis Section (20.6.4.15 NMAC); and
21 • Related proposed changes to the Definitions Section (20.6.4.7 NMAC).

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1 **Q. HAVE YOU REVIEWED NMED’S STATEMENT OF REASONS FOR THESE**
2 **PROPOSED AMENDMENTS, FILED AS ATTACHMENT 3, TO NMED’S**
3 **ORIGINAL PETITION?**

4 A. Yes.

5 **Q. HAVE YOU REVIEWED LANL’S JANUARY 6, 2021 COMMENTS TO THESE**
6 **PROPOSED AMENDMENTS?**

7 A. Yes, I have.

8 **Q. HAVE YOU REVIEWED NMED’S REVISIONS TO ITS PROPOSED**
9 **AMENDMENTS SET FORTH IN NMED’S AMENDED PETITION?**

10 A. Yes.

11 **Q. HAVE YOU ALSO REVIEWED LANL’S NOTICE OF INTENT?**

12 A. Yes.

13 **1. PROPOSED AMENDMENTS TO THE GENERAL CRITERIA SECTION**
14 **(20.6.4.13 NMAC) AND RELATED PROPOSED AMENDMENTS TO THE**
15 **DEFINITIONS SECTION (20.6.4.7 NMAC)**

16 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED’S PROPOSED**
17 **AMENDMENTS TO THE GENERAL CRITERIA SECTION.**

18 A. The state’s general criteria are described in 20.6.4.13 NMAC. General criteria apply to all
19 waters of the state at all times, unless otherwise noted in segment specific descriptions.
20 Excepting sections on temperature and turbidity, they differ from numeric criteria in that
21 many are qualitative, such as organoleptic (poor taste, smell, or feel), human-made oils and
22 greases, *etc.* This section further states “Surface waters of the state shall be free of any
23 water contaminant in such quantity and of such duration as may with reasonable probability
24 injure human health, animal or plant life or property, or unreasonably interfere with the

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1 public welfare or the use of property.” Thus, the state contemplates that despite the absence
2 of specific numerical criteria associated with contaminants referenced in this section,
3 subsections A through F, there may exist numerical criteria to better address pollutants that
4 could be adopted into the numerical criteria section or as is done for temperature and
5 turbidity in this section. The definitions section (20.6.4.7 NMAC) further elaborates
6 general criteria for which the state has proposed new language. This includes the proposed
7 definition for “contaminants of emerging concern” (“CECs”), and also references new
8 Toxic Pollutants from a list in the 20.6.2 NMAC, New Mexico’s groundwater regulations.

a. CONTAMINANTS OF EMERGING CONCERN

9
10 **Q. PLEASE EXPLAIN YOUR UNDERSTANDING OF CONTAMINANTS OF**
11 **EMERGING CONCERN?**

12 A. In NMED’s own proposed language in 20.6.4.7(C)(7) NMAC, CECs “refer to water
13 contaminants including, but not limited to, pharmaceuticals and personal care products that
14 may cause significant ecological or human health effects at low concentrations. CECs are
15 generally chemical compounds that, although suspected to potentially have impacts, may
16 not have regulatory standards, and the concentrations to which negative impacts are
17 observed have not been fully studied.” The EPA describes CECs consistent with NMED’s
18 proposed definition, stating: “Chemicals of emerging concern (also called “contaminants
19 of emerging concern” or “CECs”) can include nanoparticles, pharmaceuticals, personal
20 care products, estrogen-like compounds, flame retardants, detergents, and some industrial
21 chemicals with potential significant impact on human health and aquatic life.” *See LANL*
22 **Exhibit 49.**

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1 **Q. HAS EPA PROVIDED NUMERIC CRITERIA FOR CONTAMINANTS OF**
2 **EMERGING CONCERN?**

3 A. To my knowledge, EPA produced a white paper (**LANL Exhibit 50**) addressing the need
4 for updating the 1985 guidance document (**LANL Exhibit 51**) on deriving numeric criteria,
5 convened a science advisory board (“SAB”) to address the need, and produced some
6 recommended updates to the 1985 document. However, I do not believe that document
7 has been updated. Therefore, no new criteria have been promulgated in the form of the
8 guidance for the protection of aquatic life, or 304(a) guidance. In theory, the 1985
9 document could be used to derive numeric criteria for CECs, taking into account the
10 recommendations of the SAB.

11 **Q. WHAT IS YOUR POSITION ON NMED’S PROPOSAL TO ADD**
12 **“CONTAMINANTS OF EMERGING CONCERN” TO THE GENERAL**
13 **CRITERIA FOR TOXIC POLLUTANTS SET FORTH IN THE 2020 PETITION?**

14 A. The proposed inclusion of this language in both 20.6.4.7 NMAC and in the General Criteria
15 (20.6.4.13 NMAC) is problematic for several reasons. First, the general criteria state
16 “Surface waters of the state shall be free of any water contaminant in such quantity and of
17 such duration as may with reasonable probability injure human health, animal or plant life
18 or property, or unreasonably interfere with the public welfare or the use of property.” Since
19 these parameters, in both concentration and duration of exposure, are not known for many
20 CECs, there is no way for the regulated community nor the state to know what levels we
21 and they are monitoring to, and when levels exceed those detrimental to aquatic life and
22 human health. Second, of the possibly hundreds of pharmaceuticals, detergents, and other
23 possible endocrine disruptors (and breakdown products thereof) that fall under the CEC

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1 definition, there is no indication what entity (state or regulated community, or both) will
2 need to perform monitoring, and for which among these contaminants. Through the state's
3 401 certification process for some discharge permits, NMED has indicated that permittees
4 will measure a limited number (18) of CECs known as per- and polyfluoroalkyl substances
5 ("PFAS"), a subset of which there is some toxicological information. It is unclear why the
6 state conditions permits with additional PFAS constituents for which there is no
7 toxicological information, other than perhaps they are detectable by current methods. In
8 addition, of the NMED's recent 401 certifications of NPDES permits, only a few have this
9 requirement and no real rationale for inclusion or exclusion, particularly when 401
10 certifications to sources with known potential (*i.e.*, Waste Water Treatment Plants) are not
11 included.

12 **Q. PLEASE ELABORATE ON THE POTENTIAL CONSEQUENCES OF NMED'S**
13 **PROPOSAL.**

14 A. The listing of hundreds of possible contaminants by way of both (1) the broad group of
15 CECs and (2) other Toxic Pollutants by the NMED's invocation of the groundwater rules
16 at 20.6.2 NMAC is problematic. The former lack aquatic life criteria, and the latter have
17 some criteria, but they are not listed in 20.6.2 NMAC. The lack of numerical criteria leads
18 to regulatory uncertainty and also bypasses the normal processes for the WQCC's adoption
19 of numeric criteria.

20 **Q. ARE YOU RECOMMENDING CHANGES TO NMED'S PROPOSAL TO ADD**
21 **CONTAMINANTS OF EMERGING CONCERN TO THE GENERAL CRITERIA**
22 **FOR TOXIC POLLUTANTS SET FORTH IN THE ORIGINAL PETITION?**

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1 A. Keeping the state’s waters free from these pollutants in concentrations and durations that
2 might impact aquatic life and human health is a laudable goal. However, the EPA has
3 guidance on many of the toxic pollutants in 20.6.2 NMAC and other guidance that can be
4 used to develop numeric criteria for CECs. The accepted process for adding these criteria
5 is to adopt EPA’s most recent 304(a) guidance and for the WQCC to state the numeric
6 criteria and applicability (designated uses) in 20.6.4.900 NMAC. LANL recommends that
7 the WQCC modify the language specific to toxic pollutants listed in 20.6.2 NMAC and the
8 general criteria at 20.6.4.13(F)(1) NMAC, as discussed below. With respect to the CEC
9 language, LANL proposes that the WQCC strike the proposed definition at 20.6.4.7(C)(7)
10 NMAC and not include reference to CEC in 20.6.4.13(F)(1) NMAC. In light of NMED’s
11 proposal for new pollutants in 20.6.4.13(F)(1) NMAC, and in accordance with the concerns
12 noted in LANL’s previous response to proposed changes to 20.6.4 NMAC (Comment 3),
13 I propose that the WQCC revise the definition of “Toxic pollutant” at 20.6.4.7(T)(2)
14 NMAC, to be consistent with 40 CFR 131.3(d) and the WQCC’s approach to regulating
15 toxic pollutants in the groundwater regulations, in the following manner:¹

16 “Toxic pollutant” means those pollutants or combination of pollutants;
17 ~~including disease causing agents, that after discharge and upon exposure,~~
18 ~~ingestion, inhalation or assimilation into any organism, either directly from~~
19 ~~the environment or indirectly by ingestion through food chains, will cause~~
20 ~~death, shortened life spans, disease, adverse behavioral changes,~~
21 ~~reproductive or physiological impairments or physical deformation in such~~
22 ~~organisms or their offspring~~ listed by the EPA Administrator under section
23 307(a) of the federal Clean Water Act, 33 U.S.C. § 1313(a) or in the list
24 below.

25 I also propose that the WQCC modify the toxic pollutant general criteria section at
26 20.6.4.13(F) NMAC, for greater clarity, in the following manner:

¹ Throughout this testimony proposed revisions are shown to an existing NMAC provision with underlined lettering reflecting proposed inserts and strike outs reflecting proposed removals.

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1 (1) Except as provided in 20.6.4.16 NMAC, surface waters of the state
2 shall be free of toxic pollutants, ~~including but not limited to contaminants~~
3 ~~of emerging concern and those toxic pollutants listed in 20.6.2 NMAC~~, from
4 other than natural causes in amounts, concentrations, ~~or~~ duration, or
5 combinations that affect the propagation of fish or that are toxic to humans,
6 livestock or other animals, fish or other aquatic organisms, wildlife using
7 aquatic environments for habitation or aquatic organisms for food, or that
8 will or can reasonably be expected to bioaccumulate in tissues of fish,
9 shellfish and other aquatic organisms to levels that will impair the health of
10 aquatic organisms or wildlife or result in unacceptable tastes, odors or
11 health risks to human consumers of aquatic organisms.

12 (5) Within 90 days of the issuance of a final NPDES permit or 401
13 certification containing a numeric criterion selected or calculated pursuant
14 to ~~Paragraph (2), Paragraph (3) or Paragraph (4)~~ of Subsection F of this
15 section, the department shall petition the commission to adopt such criterion
16 into these standards.

17 **Q. PLEASE EXPLAIN THE BASIS FOR THIS PROPOSED CHANGE.**

18 A. NMED has at its disposal the adoption of existing 304(a) or other defensible guidance for
19 many toxic pollutants listed in the groundwater rules. In fact, in adoption of the list only,
20 there is some cross over between the current 20.6.4 NMAC and the groundwater rules, and
21 the surface water rules currently have criteria they adopted via 304(a) guidance. Regarding
22 methods for developing criteria for those CECs that lack current 304(a) guidance, there are
23 processes in place to develop these as well, *see LANL Exhibit 50*. Without clearly stated
24 criteria, it would be impossible to determine compliance with the narrative water quality
25 standards (“WQS”) for CECs or evaluate reasonable potential in the context of an NPDES
26 permit.

27 **Q. DOES NMED’S AMENDED PETITION PROPOSE ANY REVISIONS TO ITS**
28 **PROPOSAL TO ADD CONTAMINANTS OF EMERGING CONCERN TO THE**
29 **GENERAL CRITERIA FOR TOXIC POLLUTANTS?**

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1 A. Yes. Added language to this section is “not limited to” pharmaceuticals and personal care
2 products.

3 **Q. WHAT IS YOUR OPINION ON THE PROPOSED REVISION?**

4 A. For reasons already stated, LANL opposes inclusion of pollutants and contaminants not
5 tied to the adoption of existing 304(a) criteria, or other scientifically defensible guidance,
6 and also noted the EPA processes for development of numeric criteria for pollutants lacking
7 existing guidance. The NMED revisions provide examples of CECs, but do not change
8 LANL’s opposition. NMED states that the changes in 20.6.4.7(C) NMAC constitute
9 “Amended language in the definition of ‘contaminants of emerging concern’ to reflect that
10 contaminates of emerging concern include, but are not limited to, particular types of
11 chemicals.” Therefore, it appears NMED seeks to broaden even further without regulatory
12 oversight, this group of unnamed chemicals, and thus further muddies the waters and
13 creates additional regulatory uncertainty.

14 **Q. DO YOU RECOMMEND CHANGES TO NMED’S REVISED PROPOSAL?**

15 A. Yes. As previously stated, LANL recommends the language on CECs be stricken and
16 language on Toxic Pollutants be modified. Language referencing EPA’s toxic pollutants
17 list should be added and at a time when the WQCC can adopt specific numeric criteria for
18 the toxic pollutants, the WQCC can list them in part 900 of 20.6.4 NMAC.

19 **Q. WHAT IS THE BASIS FOR THAT RECOMMENDATION?**

20 A. Listing pollutants absent associated criteria creates regulatory uncertainty and could lead
21 to inconsistent results.

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1 **Q. DOES NMED PROPOSE ANY REVISIONS TO ITS PROPOSAL TO ADD**
2 **“THOSE TOXIC POLLUTANTS DEFINED IN 20.6.2 NMAC” TO THE GENERAL**
3 **CRITERIA FOR TOXIC POLLUTANTS IN ITS AMENDED PETITION?**

4 A. No.

5 **Q. WHAT IS YOUR OPINION ON THE PROPOSED REVISION?**

6 A. Please see my comments above on the original proposal.

7 **Q. DO YOU RECOMMEND CHANGES TO NMED’S REVISED PROPOSAL?**

8 A. Only those already noted.

9 **Q. ARE YOU RECOMMENDING CHANGES TO NMED’S PROPOSED**
10 **DEFINITION OF “CONTAMINANTS OF EMERGING CONCERN” SET FORTH**
11 **IN THE ORIGINAL PETITION?**

12 A. LANL recommends the WQCC use EPA-accepted means of deriving defensible criteria,
13 as this information becomes available through acceptable toxicology studies and new
14 304(a) guidance. Until such time, defining CECs with no underpinning target levels other
15 than state waters “shall be free of” them leads to regulatory uncertainty. We recommend
16 deleting the definition of CECs (20.6.4.7 NMAC) and subsequent reference under the
17 General Criteria (20.6.4.13 NMAC) until numeric criteria can be adopted through the usual
18 rule making process before the WQCC.

19 **Q. PLEASE EXPLAIN THE BASIS FOR THIS PROPOSED CHANGE.**

20 A. By adopting 304(a) guidance or independently deriving criteria using accepted EPA
21 methods, the WQCC will be consistent with precedent and Clean Water Act methods for
22 adding numeric criteria to the surface water quality standards. Until such time, adding
23 definitions and general (non-numeric) criteria, especially for hundreds of chemicals for

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1 which toxic levels are not well known, adds uncertainty for both the regulated and
2 regulator. NMED should reference the process in 20.2.4.13(F)(2)-(5) NMAC. This section
3 requires NMED “Within 90 days of the issuance of an NPDES permit containing a numeric
4 criterion selected or calculated pursuant to [20.2.4.13(F)(2)-(4) NMAC],” and then
5 petition the WQCC to adopt such criterion into these standards.

6 **Q. DOES NMED’S AMENDED PETITION PROPOSE REVISIONS TO ITS**
7 **PROPOSED DEFINITION OF “CONTAMINANTS OF EMERGING CONCERN”?**

8 A. NMED amended this section for the reasons stated: “20.6.4.7(C) NMAC – Amended
9 language in the definition of ‘contaminants of emerging concern’ to reflect that
10 contaminates of emerging concern include, but are not limited to, particular types of
11 chemicals.”

12 **Q. WHAT IS YOUR OPINION ON THE PROPOSED REVISION TO NMED’S**
13 **PROPOSED DEFINITION?**

14 A. I have no additional comment on this other than those previously stated.

15 **Q. PLEASE SUMMARIZE LANL’S PROPOSAL TO MODIFY THE DEFINITION**
16 **OF “TOXIC POLLUTANTS.”**

17 A. LANL proposed the following changes: revise the definition of “Toxic pollutant” at
18 20.6.4.7(T)(2) NMAC, as follows:

19 Toxic pollutant” means those pollutants or combination of pollutants,
20 ~~including disease causing agents, that after discharge and upon exposure,~~
21 ~~ingestion, inhalation or assimilation into any organism, either directly from~~
22 ~~the environment or indirectly by ingestion through food chains, will cause~~
23 ~~death, shortened life spans, disease, adverse behavioral changes,~~
24 ~~reproductive or physiological impairments or physical deformation in such~~
25 ~~organisms or their offspring listed by the EPA Administrator under section~~
26 307(a) of the federal Clean Water Act, 33 U.S.C. § 1313(a) or in the list
27 below.

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1 **Q. WHAT IS THE BASIS FOR THAT PROPOSAL?**

2 A. LANL proposes that the WQCC revise the definition of “Toxic pollutant” at 20.6.4.7(T)(2)
3 NMAC, to be consistent with 40 CFR 131.3(d). This definition states: “Toxic pollutants
4 are those pollutants listed by the Administrator under section 307(a) of the Act.” Section
5 307(a) and historical modifications can be found here: [https://www.epa.gov/eg/toxic-and-](https://www.epa.gov/eg/toxic-and-priority-pollutants-under-clean-water-act#toxic)
6 [priority-pollutants-under-clean-water-act#toxic](https://www.epa.gov/eg/toxic-and-priority-pollutants-under-clean-water-act#toxic). The proposal also allows the WQCC to
7 add specific pollutants to the list if they meet the required criteria.

8 **Q. ARE YOU RECOMMENDING ANY ADDITIONAL CHANGES TO LANL’S**
9 **PROPOSED DEFINITION IN THIS PROCEEDING?**

10 A. No.

11 **2. PROPOSED AMENDMENTS TO UAA SECTION (20.6.4.15 NMAC) AND**
12 **RELATED CHANGES TO DEFINITION SECTION (20.6.4.7 NMAC)**

13 **Q. PLEASE SUMMARIZE PROPOSED CHANGES TO THE UAA SECTION THAT**
14 **YOU WILL ADDRESS.**

15 A. LANL agrees with most of NMED’s proposed changes to 20.6.4.15 NMAC. They further
16 clarify when and how a designated use (that is not an existing use) may be changed through
17 the process of a UAA. However, in LANL’s comment letter on NMED’s Original Petition,
18 on language uses, LANL noted that the “proposed additions to 20.6.4.15(A)(1) NMAC and
19 20.6.4.15(D)(2) NMAC of ‘that is not an existing use’ and ‘that are not existing uses’ are
20 redundant with 20.6.4.15(B) NMAC, which more clearly and accurately states that “a
21 designated use cannot be removed if it is an existing use unless a use requiring more
22 stringent criteria is designated.” LANL also commented on third party development of

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1 UAAs, and finally several changes to introduce clarity and consistency with existing
2 language (*see* WQCC 20-51(R), Dkt. Entry 5, Comment 14).

3 **a. PROPOSED LANGUAGE CHANGES TO “PROVIDE CLARITY ON**
4 **APPLICATION”**

5 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED’S PROPOSED**
6 **LANGUAGE CHANGES TO “PROVIDE CLARITY ON APPLICATION OF**
7 **EACH SUBSECTION.”**

8 A. NMED proposes several changes to the section describing when and how a UAA may be
9 used and to what end. These clarifications are welcome in part, and through its comment
10 on the NMED public comment draft, LANL provided language edits that would improve
11 on clarity.

12 **Q. WHAT IS YOUR POSITION ON NMED’S PROPOSED LANGUAGE CHANGES?**

13 A. NMED should reconsider the outcomes of subtle language that may impact meaning and
14 address, as soon as reasonably feasible, situations where new data suggest a WQS change
15 might be necessary. Regarding changes to 20.6.4.15(E) NMAC, new clarifying language
16 for situations where outside parties intend to develop a UAA, these are all welcome
17 proposals to the section.

18 **Q. ARE YOU RECOMMENDING CHANGES TO NMED’S PROPOSED**
19 **LANGUAGE?**

20 A. With the exception of adding a sentence to 20.6.4.15(E)(1) NMAC that provides response
21 deadlines by NMED on UAA work plans, discussed below, we do not propose significant
22 language changes to 20.6.4.15(E) NMAC. LANL does ask, for the sake of regulatory
23 certainty, that the WQCC edit this section to include succinct review periods for NMED

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1 turn-around times based on receipt of draft work plans from outside parties. This would
2 be consistent with other EPA and NMED processes, such as permit applications and
3 review.

4 Further, NMED added the term “Current use” which we take to mean “Existing
5 use”. We recommend deleting “current use” and using “existing use” as it already has
6 meaning in the rule. Last, we recommend the WQCC consider modifying the new
7 proposed heading (“The mechanism to remove a designated use.”) for 20.6.4.15(B) NMAC
8 to “Conducting a use attainability analysis.”

9 **Q. PLEASE EXPLAIN THE BASIS FOR THIS PROPOSED CHANGE.**

10 A. The changes proposed above would provide clarity, reduce redundancy, and in the case of
11 timely review of outside party UAAs, increase regulatory certainty.

12 **Q. DOES NMED’S AMENDED PETITION PROPOSE REVISIONS TO ITS**
13 **PROPOSED LANGUAGE FOR CLARITY ON APPLICATION OF EACH**
14 **SUBSECTION?**

15 A. Yes.

16 **Q. WHAT IS YOUR OPINION ON THE PROPOSED REVISIONS?**

17 A. The clarifying language NMED makes in section 20.6.4.15 NMAC is generally supported
18 by LANL. A good deal of clarifying language was added to the Use Attainability Analysis
19 process as conducted by both NMED and entities other than NMED.

20 **Q. DO YOU RECOMMEND ADDITIONAL CHANGES TO NMED’S REVISED**
21 **PROPOSED LANGUAGE FOR CLARITY ON APPLICATION OF EACH**
22 **SUBSECTION?**

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1 A. In LANL's responses to the Original Petition, LANL encouraged more certainty through
2 predictable review of outside party developed work plans. This section has new additions
3 in the Amended Petition, including the development of a timeline by outside petitioners at
4 20.6.4.15(E)(3)(h) NMAC:

5 [the petitioner shall identify] the expected timelines outlining the
6 administrative actions to be taken for a rulemaking petition, pending the
7 outcome of the use attainability analysis.

8 While this timeline is a requirement of the petitioner after a work plan has been approved,
9 it recognizes that a predictable timeline is of utility to NMED, while ignoring the need for
10 predictable review of the work plan requested in LANL's response to the initial petition.
11 LANL asks again to include this element which will benefit and streamline the process.

12 **Q. WHAT IS THE BASIS FOR THAT RECOMMENDATION?**

13 A. Regulatory certainty should be desired by both NMED and outside party petitioners.

14 **b. PROPOSED CHANGES TO SUBSECTION 20.6.4.15(A) REGARDING**
15 **AUTHORITY TO REMOVE A DESIGNATED USE**

16 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED'S PROPOSED**
17 **AMENDMENTS TO 20.6.4.15(A) NMAC.**

18 A. NMED proposes clarifying language on who has authority to remove a designated use (that
19 is not an existing use) and the process for doing so.

20 **Q. WHAT IS LANL'S POSITION ON NMED'S PROPOSAL?**

21 A. This clarifying language is welcome.

22 **Q. DOES NMED'S AMENDED PETITION PROPOSE REVISIONS TO ITS**
23 **PROPOSED AMENDMENTS TO 20.6.4.15(A) NMAC?**

24 A. There is a substantive change in the 20.6.4.15(A) NMAC; the additional language by
25 NMED that a UAA is not necessary when an amendment is proposed that leads to more

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1 restrictive uses and associated criteria than currently exist for a water body. This is
2 consistent with EPA federal regulations at 40 CFR 131.10(k)(2), which state that a UAA
3 is not required if designating a use with criteria at least as stringent as currently applicable
4 or a use with more stringent criteria:

5 40 CFR 131(k) - A State is not required to conduct a use attainability
6 analysis whenever: . . . (2) The State designates a sub-category of a use
7 specified in section 101(a)(2) of the Act that requires criteria at least as
8 stringent as previously applicable;

9 LANL agrees that a UAA, as defined by EPA at 40 CFR 131.3(g), is not required to modify
10 the designated uses of waters reclassified into new or updated segments, where the revised
11 use is known to be an existing use as determined through a process using several lines of
12 evidence.

13 This process is currently undefined in 20.6.4 NMAC. At 20.6.4.10(B) NMAC,
14 NMED proposes new language “In accordance with 40 CFR 131.10(i), when an existing
15 use, as defined under 20.6.4.7 NMAC, is higher quality water than prescribed by the
16 designated use and supporting evidence demonstrates the presence of that use, the
17 designated use shall be amended accordingly to be no less stringent than the existing use.”
18 Thus, even promoting greater protections requires supporting evidence. While a UAA may
19 not be necessary to assign a more protective use, the supporting evidence should be a result
20 of a comprehensive analysis of all existing data that meets certain quality standards NMED
21 uses to make other assessments. In LANL’s comments to the NMED proposal, there was
22 concern that, “an entity could engage, in good faith, in a lengthy and costly UAA process
23 to demonstrate the highest attainable use. However, under new Section 10.B, NMED could
24 subsequently, ‘discover’ some modicum of ‘supporting evidence’ not previously
25 considered (or even previously considered by the WQCC and EPA, but now being

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1 reinterpreted unilaterally by NMED), then simply declare it has concluded there is a more
2 protective existing use for a segment.”

3 **Q. WHAT IS YOUR OPINION ON NMED’S PROPOSED REVISION TO ITS**
4 **PROPOSED AMENDMENTS TO 20.6.4.15(A) NMAC?**

5 A. While the language is consistent with the EPA regulations on when a UAA is necessary
6 (or not), a similar process to determine highest attainable use, perhaps the further
7 development and codification of NMED’s Existing Use Analysis now in draft form, would
8 be a positive outcome when it is suspected that a water body’s attainability of water quality
9 standards exceeds its designated uses.

10 **Q. ARE YOU RECOMMENDING CHANGES TO NMED’S PROPOSED NEW**
11 **20.6.4.15(A) NMAC?**

12 A. Yes.

13 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF LANL’S PROPOSED**
14 **AMENDMENTS TO 20.6.4.15(A) NMAC.**

15 A. LANL proposed the following edits to this section:

16 ~~A use attainability analysis is a scientific study conducted for the purpose~~
17 ~~of assessing the factors affecting the attainment of a use. Whenever a use~~
18 ~~attainability analysis is conducted, it shall be subject to the requirements~~
19 ~~and limitations set forth in 40 CFR Part 131, Water Quality Standards;~~
20 ~~specifically, Subsections 131.3(g), 131.10(g), 131.10(h) and 131.10(j) shall~~
21 ~~be applicable. In accordance with 40 CFR 131.10(i), and 20.6.4.10 NMAC,~~
22 ~~the amendment of a designated use to a different use that requires, based on~~
23 ~~a more stringent existing use water quality criteria, does not require a use~~
24 ~~attainability analysis. A use attainability analysis must be conducted when~~
25 ~~designating uses that do not include uses specified in Section 101(a)(2) of~~
26 ~~the federal Clean Water Act or when designating sub-categories of these~~
27 ~~uses require less restrictive criteria than previously applicable. When~~
28 ~~removing designated uses that are not Section 101(a)(2) uses, a use~~
29 ~~attainability analysis is not required.~~

30 **Q. WHAT IS YOUR POSITION ON LANL’S PROPOSED AMENDMENTS?**

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1 A. While the LANL language does not entirely alleviate the problems of when and how a
2 UAA must be used, it is a great improvement. I note that LANL is also proposing to
3 relocate the language defining “use attainability analysis” to the definition section, 20.6.4.7
4 NMAC.

5 **Q. WHAT IS YOUR RECOMMENDATION TO THE COMMISSION?**

6 A. The WQCC’s mandate is to consider evidence in support of water quality standards.
7 Requiring less when water quality protections appear enhanced, but perhaps not
8 appropriate, is why the WQCC decided to not approve NMED’s proposal for 10 water
9 bodies to move from secondary contact (less restrictive) to primary contact (more so) in
10 the 2013 Triennial Review (WQCC 14-05(R)). I recommend that even though EPA
11 guidance states that the UAA is necessary only when removing a 101(a)(2) designated use,
12 that an evidence-based approach be followed when ascribing new designated uses, and the
13 WQCC encourage NMED to further develop its draft Existing Use Analysis to meet this
14 need.

15 **Q. PLEASE EXPLAIN THE BASIS FOR THIS RECOMMENDATION?**

16 A. The yardstick of properly and defensibly assigning designated uses of a water body should
17 be somewhat independent of the stringency of the associated criteria. There should not be
18 bias in either direction, rather, the designated uses should be evidence-based and
19 supportable by the available scientific data.

20 **c. PROPOSED NEW SUBSECTION 20.6.4.15(C) NMAC TO DESCRIBE THE**
21 **PROCESS FOR DETERMINING THE HIGHEST ATTAINABLE USE**

22 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED’S PROPOSED**
23 **NEW SUBSECTION 20.6.4.15(C) NMAC?**

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1 A. NMED’s proposed new language is as follows:

2 **Determining the highest attainable use.** If the use attainability analysis
3 determines that the designated use is not attainable based on one of the
4 factors in 40 CFR 131.10(g), the use attainability analysis shall then
5 determine the highest attainable use for the protection and propagation of
6 fish, shellfish and wildlife and recreation in and on the water based on
7 methods described in Subsection B of this section.
8

9 **Q. WHAT IS YOUR POSITION ON NMED’S PROPOSED PROCESS FOR**
10 **DETERMINING THE HIGHEST ATTAINABLE USE?**

11 A. This is consistent with the way in which NMED has used the UAA when the designated
12 uses are not being attained based on data NMED or other entities have collected.

13 **Q. DO YOU AGREE THAT NMED’S PROPOSED PROCESS IS CONSISTENT**
14 **WITH FEDERAL REGULATIONS?**

15 A. Yes.

16 **Q. ARE YOU RECOMMENDING CHANGES TO NMED’S PROPOSED NEW**
17 **SUBSECTION 20.6.4.15(C) NMAC?**

18 A. Yes. For clarity, we propose adding a reference to the federal regulatory definition in 40
19 CFR 131.3(m) for “highest attainable use.” This change is reflected in the proposed
20 language below:

21 **Determining the highest attainable use.** If the use attainability analysis
22 determines that the designated use is not attainable based on one of the
23 factors in 40 CFR 131.10(g), the use attainability analysis shall then
24 determine the highest attainable use, as defined in 40 CFR 131.3(m), for the
25 protection and propagation of fish, shellfish and wildlife and recreation in
26 and on the water based on methods described in Subsection B of this
27 section.

28 **Q. WHAT IS YOUR OPINION ON NMED’S PROPOSED REVISION?**

29 A. Designated uses may fall within the 101(a)(2) uses (such as aquatic life criteria) or outside
30 (secondary contact). The burden of evidence in both these scenarios might be different,

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1 but the burden must be consistent whichever direction the dial moves (more or less
2 restrictive).

3 **Q. DO YOU RECOMMEND ADDITIONAL CHANGES?**

4 A No.

5 **Q. DOES LANL RECOMMEND CHANGES TO NMED'S PROPOSED NEW**
6 **20.6.4.15(D) NMAC?**

7 A. The processes for removing a designated use is fairly clear. However, establishing the
8 highest attainable use is more challenging. For instance, NMED is proposing in this
9 Triennial Review that existing and dated data the WQCC used to create 20.6.4.126 NMAC
10 ("Section 126") and 20.6.4.128 NMAC ("Section 128"), now indicate very different uses
11 (particularly for Section 128). This is the same data, and it is being used in the heretofore
12 unknown process called the "Existing Use Analysis" or EUA. The EUA is not referenced
13 in the State's Water Quality Management Plan/Continuing Planning Process
14 ("WQMP/CPP"). LANL recommends that the State observe the mechanisms available to
15 them in their WQMP/CPP document, or follow the 2015 Joint Stipulation, until such time
16 as they have codified, through the WQCC, new processes considered and affirmed by the
17 WQCC.

18 **Q. PLEASE EXPLAIN THE BASIS FOR THIS PROPOSED CHANGE.**

19 A. Consistency would be a positive element in the determination of existing and thus
20 designated use changes.

21 **Q. DOES NMED'S AMENDED PETITION PROPOSE REVISIONS TO ITS**
22 **PROPOSED NEW SUBSECTION 20.6.4.15(D) NMAC?**

23 A. No.

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1 **Q. DO YOU RECOMMEND ANY ADDITIONAL CHANGES NOT SET FORTH IN**
2 **LANL's COMMENTS?**

3 A. No, not at this time.

4 **d. PROPOSED CHANGES TO SUBSECTION 20.6.4.15(E) NMAC REGARDING**
5 **THE PROCESSES FOR AN UAA CONDUCTED BY AN ENTITY OTHER THAN**
6 **NMED**

7 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED'S PROPOSED**
8 **CHANGES TO 20.6.4.15(E) NMAC REGARDING THE PROCESSES FOR AN**
9 **UAA CONDUCTED BY AN ENTITY OTHER THAN NMED.**

10 A. As previously explained, timelines that address both petitioner and NMED review of work
11 plans and UAAs would be a positive addition to the rule.

12 **Q. WHAT IS YOUR POSITION ON NMED'S PROPOSED CHANGES?**

13 A. NMED's proposals seem geared to holding outside petitioner to a more rigorous standard
14 (*i.e.*, need for a work plan and timelines). More predictability in review of work plans and
15 proposals by NMED should be proposed as new language in 20.6.4 NMAC.

16 **Q. DO YOU AGREE THAT THE PROPOSED LANGUAGE PROVIDES**
17 **"CONSISTENCY WITH THE WATER QUALITY MANAGEMENT**
18 **PLAN/CONTINUING PLANNING PROCESS?"**

19 A. For reasons noted in my testimony above, I think a more predictable process for outside
20 UAAs is possible.

21 **Q. DO YOU AGREE THAT THE PROPOSED LANGUAGE IMPROVES CLARITY**
22 **OF THE PROCESS FOR A UAA CONDUCTED BY AN ENTITY OTHER THAN**
23 **NMED?**

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1 A. On balance, yes. However, the aforementioned changes holding both outside and NMED
2 to scheduling timelines for work plans, work plan review, and the petition would be an
3 improvement.

4 **Q. ARE YOU RECOMMENDING CHANGES TO NMED'S PROPOSED**
5 **AMENDMENTS TO 20.6.4.15(E) NMAC?**

6 A. Yes. Certainty regarding timelines that apply to both NMED and petitioner would be
7 improvements upon the UAA process. LANL recommends that the WQCC adopt
8 requirements for NMED review such that they are held to a similar timeline they propose
9 to require of outside petitioners in 20.6.4.15(E) NMAC. Specifically, LANL recommends
10 the following addition to NMED's proposed 20.6.4.15(E)(1):

11 The proponent shall provide such notice along with a work plan supporting
12 the development of a use attainability analysis to the department and region
13 6 EPA for review and comment. The department will review and approve
14 work plans, or provide written basis for non-approval, within thirty days of
15 submittal or, in the case of a previously non-approved work plan, re-
16 submittal by a proponent.

17 **Q. PLEASE EXPLAIN THE BASIS FOR THIS PROPOSED CHANGE.**

18 A. Regulatory certainty and fairness.

19 **Q. DOES NMED'S AMENDED PETITION PROPOSE ADDITIONAL REVISIONS**
20 **TO ITS PROPOSED AMENDMENTS TO 20.6.4.15(E) NMAC?**

21 A. No.

22 **Q. DO YOU RECOMMEND CHANGES TO NMED'S REVISED PROPOSAL?**

23 A. Promote a timeline for review of outside party UAA work plans in keeping with proposed
24 requirements of a timeline for outside party UAAs.

25 **Q. WHAT IS THE BASIS FOR THAT RECOMMENDATION?**

26 A. Regulatory certainty and fairness.

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1 **Q. IS YOUR RECOMMENDATION CONSISTENT WITH THE PROPOSED**
2 **AMENDMENTS TO SUBSECTION 20.16.4.15(E) NMAC PROPOSED IN LANL'S**
3 **PETITION?**

4 A. Yes.

5 **Q. DO YOU RECOMMEND ANY ADDITIONAL CHANGES TO 20.6.4.15(E) NMAC?**

6 A. Not at this time.

7 **IV. CONCLUSION**

8 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

9 A. Yes.

Exhibit 6

**STATE OF NEW MEXICO
BEFORE THE WATER QUALITY CONTROL COMMISSION**

IN THE MATTER OF:

**THE PETITION TO AMEND
THE STANDARDS FOR INTERSTATE
AND INTRASTATE SURFACE WATERS,
20.6.4 NMAC**

WQCC No. 20-51(R)

**DIRECT TESTIMONY OF BARRY FULTON
BENCHMARK ENVIRONMENTAL, LLC,
ON BEHALF OF TRIAD NATIONAL SECURITY, LLC
AND THE U.S. DEPARTMENT OF ENERGY, NATIONAL NUCLEAR SECURITY
ADMINISTRATION**

May 3, 2021

Direct Testimony of Barry Fulton
Case No. WQCC 20-51(R)

I. INTRODUCTION

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Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Barry Fulton. I am a Principal Scientist and Owner of Benchmark Environmental LLC (“Benchmark”). My business address is 266 Morgan Drive, McCall, Idaho 83638.

Q. ON WHOSE BEHALF ARE YOU SUBMITTING DIRECT TESTIMONY?

A. I am submitting this direct testimony on behalf of Triad National Security, LLC, (“Triad”) and the U.S. Department of Energy, National Nuclear Security Administration (“DOE”) (collectively “LANL”).¹

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL AND PROFESSIONAL EXPERIENCE.

A. I hold a Bachelor of Arts degree in Environmental Science and Ecology from Brevard College. I also hold a Master of Science in Environmental Toxicology from Baylor University. I have over 16 years of experience in surface water quality and regulations, environmental toxicology, hydrology, and ecological risk assessment. I formed Benchmark in 2017. My current projects include development of site-specific water quality criteria, use-attainability analyses, aquatic biological assessments, and hydrological assessments. Prior to forming Benchmark, I was an environmental consultant at Arcadis, U.S from 2009-2017. From 2006-2009, I was a research scientist at Baylor University’s Center for Reservoir and Aquatic Systems Research Center. From 2004-2005, I was a Biology and Environmental Science laboratory instructor at Brevard College. My resume

¹ DOE and predecessor and current operators of LANL are referred to in my testimony collectively as “LANL” to avoid unnecessary entity name complications.

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1 is attached to LANL’s Notice of Intent to Present Technical Testimony (“Notice of Intent”)
2 as **LANL Exhibit 13**.

3 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE WATER QUALITY**
4 **CONTROL COMMISSION ON SURFACE WATER QUALITY-RELATED**
5 **ISSUES?**

6 A. Yes, I testified before the New Mexico Water Quality Control Commission (“WQCC”)
7 during the 2013 Triennial Review (WQCC 14-05(R)) regarding site-specific water quality
8 criteria and protection of designated uses. I have also presented and participated in
9 rulemaking proceedings in other jurisdictions.

II. PURPOSE OF TESTIMONY

11 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

12 A. The purpose of my testimony is to explain the technical bases for LANL’s position on the
13 New Mexico Environment Department’s (“NMED”) Surface Water Quality Bureau’s
14 (“SWQB”) proposed amendments to, and statement of reasons for, proposed amendments
15 to the Standards for Interstate and Intrastate Surface Waters, 20.6.4 NMAC (“Standards”),
16 set forth in NMED’s August 18, 2020 Petition (“Original Petition”) and NMED’s March
17 12, 2021 Notice of Amended Petition (“Amended Petition”). I also explain the technical
18 bases for certain related modifications proposed by LANL in its Comments on the Public
19 Comment Draft of NMED’s Proposed Amendments, filed January 6, 2021 (“LANL
20 Comments”) and its Notice of Intent, which is being filed concurrently with this technical
21 testimony.

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III. LANL'S EVALUATION OF AND PROPOSED CHANGES TO PROPOSED AMENDMENTS TO STANDARDS

Q. PLEASE IDENTIFY THE PROPOSED AMENDMENTS THAT YOU ARE ADDRESSING IN THIS TESTIMONY.

A. My testimony addresses the following amendments to 20.6.4 NMAC proposed by NMED and related changes proposed by LANL:

- NMED's proposed amendment to 20.6.4.7 NMAC to modify definitions of "Marginal Coldwater" and "Limited Aquatic Life";
- NMED's proposed amendments to 20.6.4.10 NMAC, Review of Standards; Need for Additional Studies Section, to: (a) add a new subsection to clarify the required process for amending a designated use where the existing use requires a higher level of protection than the current designated use in accordance with 40 CFR 131.10(i); (b) amend language describing how a designated use or numeric criterion can be amended to be less stringent; and (c) add language to modify a water quality criterion to reflect the natural condition of a specific waterbody;
- LANL's proposed amendment to 20.6.4.11(G) NMAC;
- NMED's revised proposed amendment to 20.6.4.15(A) NMAC, Use Attainability Analysis ("UAA") Section, to add language to clarify that amendments to designated uses with more stringent criteria do not require a UAA with reference back to 20.6.4.10 NMAC;
- NMED's proposed amendment to 20.6.4.900(J)(1) NMAC to change the Human Health Organism Only ("HH-OO") criteria for dissolved arsenic proposed in its Original Petition and the proposed revision to that proposal in its Amended Petition.

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1 **Q. HAVE YOU REVIEWED NMED’S STATEMENT OF REASONS FOR THESE**
2 **PROPOSED AMENDMENTS, FILED AS ATTACHMENT 3, TO NMED’S**
3 **ORIGINAL PETITION?**

4 A. Yes.

5 **Q. HAVE YOU REVIEWED LANL’S JANUARY 6, 2021 COMMENTS TO THESE**
6 **PROPOSED AMENDMENTS?**

7 A. Yes.

8 **Q. HAVE YOU REVIEWED NMED’S REVISIONS TO ITS PROPOSED**
9 **AMENDMENTS SET FORTH IN NMED’S AMENDED PETITION?**

10 A. Yes.

11 **Q. HAVE YOU ALSO REVIEWED THE MODIFICATIONS PROPOSED IN LANL’S**
12 **NOTICE OF INTENT?**

13 A. Yes.

14 **1. PROPOSED AMENDMENTS TO DEFINITIONS 20.6.4.7 NMAC**

15 **a. PROPOSED AMENDMENT TO 20.6.4.7(M)(1) NMAC, “MARGINAL**
16 **COLDWATER”**

17 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED’S PROPOSED**
18 **AMENDMENT TO MODIFY THE DEFINITION OF “MARGINAL**
19 **COLDWATER” AT 20.6.4.7(M)(1) NMAC.**

20 A. NMED is proposing to amend the definition of “Marginal Coldwater” in reference to
21 aquatic life as water in which: “natural [~~intermittent or low flows, or other natural habitat~~]
22 conditions severely limit maintenance of a coldwater aquatic life population during at least
23 some portion of the year or historical data indicate that the temperature [~~is~~] of the surface

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1 water of the state may exceed that which could continually support aquatic life adapted to
2 coldwater [~~25°C (77°F)~~].”²

3 NMED’s proposed definition of marginal coldwater would no longer include a
4 temperature value, despite there being a 20.6.4.900 NMAC, *Criteria Applicable to*
5 *Existing, Designated or Attainable Uses Unless Otherwise Specified in 20.6.4.97 Through*
6 *20.6.4.899* (Section 900.H), water quality criteria (“WQC”) for marginal coldwater
7 (*i.e.*, 6T3 of 25°C and max temperature of 29°C). NMED’s proposed marginal coldwater
8 definition also adds a qualitative temporal variation allowance (“. . . population during at
9 least some portion of the year . . .”), whereas other uses lack such a temporal definition.

10 **Q. WHAT IS YOUR POSITION ON NMED’S PROPOSED AMENDMENT TO**
11 **MODIFY THE DEFINITION OF “MARGINAL COLDWATER”?**

12 A. My positions on the proposed amendments are as follows:

- 13 i. The definition of “marginal coldwater” excludes the “intermittent/low flow”
14 hydrologic regime, whereas “high-quality coldwater” (20.6.4.7(H)(3) NMAC) and
15 “marginal warmwater” (20.6.4.7(M)(2) NMAC) retain the “perennial” and
16 “intermittent/low flow” regimes, respectively, in their definitions. Hydrologic
17 regimes should be included in all aquatic life use (“ALU”) definitions.
- 18 ii. For consistency, I recommend retaining the temperature value in the definition of
19 marginal coldwater similar to other definitions. For example, the marginal
20 warmwater definition retains a temperature value, *i.e.*, “routinely exceeds 32.2°C”,
21 which is consistent with the proposed change in the maximum temperature criterion.

² Throughout this testimony proposed revisions are shown to an existing NMAC provision with underlined lettering reflecting proposed inserts and strike outs reflecting proposed removals.

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1 The proposed definition of marginal coldwater (20.6.4.7(M)(1) NMAC) should retain
2 the temperature value in the definition similar to other ALU definitions.

3 iii. The timeframe in the proposed marginal coldwater warmwater definition is vague,
4 and it is not clear how NMED intends to apply the WQS to temperature data in those
5 circumstances, which reduces regulatory certainty. We recommend that the WQCC
6 clarify the language in the proposed definition, particularly the phrase, “at least some
7 portion of the year” in 20.6.4.7(M)(1) NMAC. We also recommend that definitions
8 for all ALUs with a temporal variation allowance (*e.g.*, those with a 4T3 or 6T3
9 temperature criterion) include such language (with clarifications).

10 **Q. ARE YOU RECOMMENDING CHANGES TO NMED’S PROPOSED**
11 **AMENDMENT?**

12 A. Yes.

13 **Q. PLEASE EXPLAIN THE BASIS FOR THIS PROPOSED CHANGE.**

14 A. See below.

15 i. The proposed definition of “marginal coldwater” at 20.6.4.7(M)(1) NMAC should
16 retain the intermittent/low flow regimes. Hydrologic regimes are included for a
17 majority of ALU definitions; they should be included in all ALU definitions.

18 ii. There remains a 20.6.4.900 NMAC, *Criteria Applicable to Existing, Designated or*
19 *Attainable Uses Unless Otherwise Specified in 20.6.4.97 Through 20.6.4.899*
20 (Section 900(H)), WQC for marginal coldwater (*i.e.*, 6T3 of 25°C and max
21 temperature of 29°C). For consistency, we recommend retaining the temperature
22 value in the definition similar to other definitions (*e.g.*, marginal warmwater).

23 iii. Added clarification would allow for greater regulatory certainty.

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1 **Q. DOES NMED’S AMENDED PETITION PROPOSE REVISIONS TO ITS**
2 **PROPOSED AMENDMENT TO THE DEFINITION OF “MARGINAL**
3 **COLDWATER”?**

4 A. No.

5 **b. PROPOSED AMENDMENT TO 20.6.4.7(L)(2) NMAC,**
6 **“LIMITED AQUATIC LIFE”**

7 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED’S PROPOSED**
8 **AMENDMENT TO THE DEFINITION OF “LIMITED AQUATIC LIFE” AT**
9 **20.6.4.7(L)(2) NMAC.**

10 A. NMED’s original proposed change would define “limited aquatic life” with regards to
11 designated uses as:

12 the surface water is capable of supporting only a limited community of
13 aquatic life. This subcategory includes surface waters that support aquatic
14 species selectively adapted to take advantage of naturally occurring rapid
15 environmental changes [~~ephemeral or intermittent water~~], high turbidity,
16 fluctuating temperature, low dissolved oxygen content or unique chemical
17 characteristics.

18
19 **Q. WHAT IS YOUR POSITION ON NMED’S PROPOSED AMENDMENT TO THE**
20 **DEFINITION OF “LIMITED AQUATIC LIFE”?**

21 A. The proposed definition of “limited aquatic life” excludes “ephemeral/intermittent”
22 hydrologic regimes. The WQCC should retain hydrologic regimes in the definition of
23 limited aquatic life to provide clarity that limited aquatic life may exist in waterbodies of
24 differing hydrology. The proposed definition of limited aquatic life would no longer
25 include a hydrologic regime and instead describes aquatic species as “selectively adapted
26 to take advantage of naturally occurring rapid environmental changes, high turbidity,
27 fluctuating temperature, low dissolved oxygen content or unique chemical characteristics.”
28 These physical and chemical parameters are relevant, but the presence and persistence of

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1 water is also a determinant for the presence and/or type of aquatic species that may inhabit
2 a certain water body.

3 **Q. DOES NMED’S AMENDED PETITION PROPOSE REVISIONS TO ITS**
4 **PROPOSED AMENDMENT TO MODIFY THE DEFINITION OF “LIMITED**
5 **AQUATIC LIFE”?**

6 A. Yes, NMED’s proposed revisions in its Amended Petition are as follows:

7 “**Limited aquatic life**” as a designated use, means the surface water is
8 capable of supporting only a limited community of aquatic life. This
9 category includes surface waters that support aquatic species selectively
10 adapted to take advantage of naturally rapid environmental changes,
11 [~~ephemeral or intermittent water~~] low-flow, high turbidity, fluctuating
12 temperature, low dissolved oxygen content or unique chemical
13 characteristics.

14
15 **Q. WHAT IS YOUR OPINION ON THE PROPOSED REVISION TO NMED’S**
16 **PROPOSED REVISION?**

17 A. I agree with the addition of “low-flow” because it is a physical characteristic that may limit
18 the type of aquatic life inhabiting a given waterbody (see above).

19 **Q. ARE YOU RECOMMENDING CHANGES TO NMED’S PROPOSED**
20 **AMENDMENT?**

21 A. Yes, to remain inclusive of the definition’s meaning, hydrologic regime should be retained
22 to better clarify that a limited aquatic life designated use can apply to surface waters of
23 differing hydrology depending on site-specific characteristics, which is part of the stated
24 basis for NMED’s proposed change. At this time, for 20.6.4.7(L)(2) NMAC, we
25 recommend:

26 “**Limited aquatic life**” as a designated use, means the surface water is
27 capable of supporting only a limited community of aquatic life. This
28 subcategory includes ephemeral, intermittent, or perennial surface waters
29 that support aquatic species selectively adapted to take advantage of

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1 naturally occurring rapid environmental changes, ~~ephemeral or intermittent~~
2 ~~water,~~ low-flow, high turbidity, fluctuating temperature, low dissolved
3 oxygen content or unique chemical characteristics.

4 **Q. PLEASE EXPLAIN THE BASIS FOR THIS PROPOSED CHANGE.**

5 A. Adding “low-flow” to the definition provides clarity that aquatic species may also be
6 selectively adapted to take advantage of different hydrologic regimes. NMED’s proposal
7 to remove “intermittent and ephemeral” is intended to make it clear that any hydrological
8 regime might be part of the limited aquatic life aquatic life use. However, although the
9 revision is well intentioned, the removal of hydrological regimes may result in greater
10 confusion.

11 For this reason, LANL’s comments suggested retaining “intermittent and
12 ephemeral” and adding “perennial” to clarify that a limited aquatic life use can apply to
13 surface waters of differing hydrology depending on site-specific characteristics. For
14 example, perennial surface waters derived from geothermal thermal sources often exhibit
15 unique temperature regimes and/or pH conditions capable of supporting only a limited
16 aquatic life community. Additionally, a limited aquatic life community may exist in
17 perennial waterbodies that lack a permanent surficial connection to downstream waters,
18 thereby precluding the migration and population of fish to upstream perennial segments.
19 Inclusion of “low-flow” as proposed in the definition would be relevant to such
20 waterbodies.

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1 **2. NMED’S PROPOSED AMENDMENTS TO REVIEW OF STANDARDS; NEED**
2 **FOR ADDITIONAL STUDIES SECTION (20.6.4.10 NMAC)**

3 **a. PROPOSED AMENDMENT TO DESCRIBE HOW A DESIGNATED USE OR**
4 **NUMERIC CRITERION CAN BE AMENDED TO BE LESS STRINGENT**

5 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED’S PROPOSED**
6 **AMENDMENT TO DESCRIBE HOW A DESIGNATED USE OR NUMERIC**
7 **CRITERION CAN BE AMENDED TO BE LESS STRINGENT.**

8 A. NMED uses the term “stringent” liberally in proposed 20.6.4.10 NMAC and 20.6.4.15
9 NMAC regarding designated uses and UAA. Currently, the use of “stringent” in NMAC
10 is limited to the context of numeric criteria, which I believe provides greater regulatory
11 clarity and is more consistent with EPA guidance.

12 **Q. WHAT IS YOUR POSITION ON NMED’S PROPOSED AMENDMENT TO**
13 **DESCRIBE HOW A DESIGNATED USE OR NUMERIC CRITERION CAN BE**
14 **AMENDED TO BE LESS STRINGENT?**

15 A. For greater clarity, I suggest limiting the usage of the term “stringent” to refer to the
16 magnitude of numeric criteria, rather than sub-categories of designated uses.

17 **Q. ARE YOU RECOMMENDING CHANGES TO NMED’S PROPOSED**
18 **AMENDMENT?**

19 A. Yes.

20 **Q. PLEASE EXPLAIN THE BASIS FOR THIS PROPOSED CHANGE.**

21 A. Most of the aquatic life uses lack consistent numeric criteria, and actual aquatic
22 assemblages are not more or less “stringent” relative to one another. For example, certain
23 aquatic species and communities will naturally select to higher temperature regimes; this
24 does not make those communities “less stringent,” though “less stringent” temperature
25 criteria (*i.e.*, temperature criteria that allow for more heat) may apply based on the

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1 designated use. Therefore, I suggest the WQCC revise terminology in 20.6.4.10 and
2 20.6.4.15 NMAC for clarity. For example, in the context of designated uses and numeric
3 criteria, we recommend that the term “stringent” be used only when referring to numeric
4 criteria specifically.

5 **Q. DOES NMED’S AMENDED PETITION PROPOSE REVISIONS TO ITS**
6 **PROPOSED AMENDMENT TO DESCRIBE HOW A DESIGNATED USE OR**
7 **NUMERIC CRITERION CAN BE AMENDED TO BE LESS STRINGENT?**

8 A. Yes.

9 **Q. WHAT IS YOUR OPINION ON THE PROPOSED REVISION IN NMED’S**
10 **AMENDED PETITION?**

11 A. The proposed revisions include instances where “stringency” is applied to designated uses,
12 rather than the numeric criteria. For example:

13 i. 20.6.4.10(B) NMAC – “In accordance with 40 CFR 131.10(i), when an existing use,
14 as defined under 20.6.4.7 NMAC, is higher quality water than prescribed by the
15 designated use and supporting evidence demonstrates the presence of that use, the
16 designated use shall be amended accordingly to be no less stringent than the existing
17 use.”

18 ii. 20.6.4.15(A) NMAC – “In accordance with 40 CFR 131.10(i), and 20.6.4.10 NMAC,
19 the amendment of a designated use, based on a more stringent existing use, does not
20 require a use attainability analysis.”

21 iii. 20.6.4.15(D)(2)(C) NMAC – “The use attainability analysis determined that the
22 existing uses of the water being investigated are not more stringent than those in
23 20.6.4.97 NMAC”.

Direct Testimony of Barry Fulton
Case No. WQCC 20-51(R)

1 **Q. DO YOU RECOMMEND ADDITIONAL CHANGES TO NMED’S REVISED**
2 **CHANGE?**

3 A. Yes.

4 **Q. PLEASE SUMMARIZE AND EXPLAIN THE BASIS FOR THAT**
5 **RECOMMENDATION.**

6 A. The following changes are recommended to provide clarity that “stringency” refers
7 specifically to numeric criteria and not sub-categories of designated uses:

8 i. 20.6.4.10(B) NMAC: “In accordance with 40 CFR 131.10(i), when an existing use
9 of a water, as defined under 20.6.4.7 NMAC, ~~is higher water quality~~ requires a higher
10 level of protection than ~~prescribed by the current~~ designated use and new supporting
11 evidence demonstrates the presence of that use, the designated use shall be amended
12 accordingly to protect ~~be no less stringent than~~ the existing use.”

13 ii. 20.6.4.15(A) NMAC: “In accordance with 40 CFR 131.10(i), and 20.6.4.10 NMAC,
14 the amendment of a designated use to a different use requires, ~~based on a~~ more
15 stringent ~~existing use~~ water quality criteria, does not require a use attainability
16 analysis.”

17 iii. 20.6.4.15(D)(2)(c) NMAC – “The use attainability analysis determined that the
18 existing uses of the water being investigated ~~are not~~ do not require numeric criteria
19 more stringent than those in 20.6.4.97 NMAC”.

20 **b. PROPOSED AMENDMENT TO ADD LANGUAGE TO MODIFY WATER**
21 **QUALITY CRITERION TO REFLECT THE NATURAL CONDITION OF A**
22 **SPECIFIC WATERBODY**

23 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED’S PROPOSED**
24 **AMENDMENT TO ADD LANGUAGE TO MODIFY A WATER QUALITY**

Direct Testimony of Barry Fulton
Case No. WQCC 20-51(R)

1 **CRITERION TO REFLECT THE NATURAL CONDITION OF A SPECIFIC**
2 **WATERBODY.**

3 A. NMED proposed that 20.6.4.10(F) NMAC state: “Domestic water supply, primary or
4 secondary contact, or human health-organism only criteria shall not be modified based on
5 natural background.”

6 **Q. WHAT IS YOUR POSITION ON NMED’S PROPOSED AMENDMENT TO ADD**
7 **LANGUAGE TO MODIFY A WATER QUALITY CRITERION TO REFLECT**
8 **THE NATURAL CONDITION OF A SPECIFIC WATERBODY?**

9 A. The amendment is not appropriate, as there are instances where setting criteria to natural
10 background concentrations would still protect these uses.

11 **Q. ARE YOU RECOMMENDING CHANGES TO NMED’S PROPOSED**
12 **AMENDMENT?**

13 A. I recommend that the WQCC should either strike this language or revise as follows (see
14 underlined text addition): “Domestic water supply, primary or secondary contact, or human
15 health-organism only criteria shall not be modified based on natural background unless
16 such uses would be protected at natural background concentrations.” The rationale for the
17 suggested change is to recognize that there may be instances where setting criteria to
18 natural background concentrations would still protect primary or secondary contact, or
19 human health-organism only uses. For example, a waterbody may be fishless due to low-
20 flow or other natural conditions or may support only a limited population of fish. In such
21 cases, modifying human health criteria based on background conditions and attainable
22 levels of exposure could still be protective of such uses.

Direct Testimony of Barry Fulton
Case No. WQCC 20-51(R)

1 **Q. DOES NMED’S AMENDED PETITION MODIFY A WATER QUALITY**
2 **CRITERION TO REFLECT THE NATURAL CONDITION OF A SPECIFIC**
3 **WATERBODY?**

4 A. No.

5 **3. AMENDMENTS TO CRITERIA FOR DISSOLVED ARSENIC**

6 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED’S PROPOSAL IN**
7 **THE 2020 PETITION TO AMEND HH-OO CRITERIA FOR ARSENIC?**

8 A. NMED proposed updating the HH-OO criteria for arsenic to be consistent with EPA’s
9 current recommended HH-OO arsenic criterion, which were established in 1992.

10 **Q. WHAT IS YOUR POSITION ON NMED’S PROPOSAL?**

11 A. I disagree with NMED’s proposal because several factors in calculation of the 1992 arsenic
12 criteria are soon to be updated or are not directly relevant to New Mexico.

13 First, the current HH criteria for arsenic were last updated in 1992, using a cancer
14 slope factor (1.75 per mg/kg-d), which predated the most recent IRIS value (1.5 per mg/kg-
15 d) which was last revised in 1995. Thus, the cancer risk slope value in NMED’s proposed
16 HH-OO criterion does not reflect even the current IRIS value. Further, EPA is currently
17 working on an updated IRIS toxicological assessment of inorganic arsenic (focused on both
18 cancer and non-cancer effects). EPA is the process of revising a draft preliminary
19 assessment document based on public comments received in 2019. EPA’s arsenic HH-OO
20 criteria are expected to be updated to incorporate changes in EPA’s IRIS evaluation for
21 inorganic arsenic when that becomes available.

22 Second, the bioconcentration factor (“BCF”) used to calculate NMED’s proposed
23 HH-OO arsenic criterion was derived based on a consumption scenario that is likely not

Direct Testimony of Barry Fulton
Case No. WQCC 20-51(R)

1 relevant for New Mexico. The BCF of 44 used to calculate the proposed arsenic HH-OO
2 criterion was developed in 1980 and is a geometric mean BCF from two species: the eastern
3 oyster and a bluegill. The single marine species considered was a marine oyster with a
4 BCF of 350. Thus, the BCF of 44 used to calculate NMED's proposed HH-OO arsenic
5 criteria has limited relevance for protection of human health from consumption of New
6 Mexico's freshwater organisms.

7 Third, the proposed HH-OO criterion is based on human health exposure to
8 inorganic arsenic only, because the scientific information indicates inorganic arsenic is the
9 more toxic form. Therefore, if NMED carried the proposed amendments forward, they
10 would need to specify how to assess compliance with an inorganic arsenic standard based
11 on analytical methods or default assumptions on the proportion of total arsenic that is
12 present as inorganic arsenic.

13 We recommend waiting until this process for updating EPA's inorganic arsenic HH
14 AWQC has played out, rather than making an interim update to the NM HH-OO criteria
15 for arsenic. This would also allow other influential parameters used in the calculation of
16 the WQC that are not specific to arsenic, including body weight and fish consumption rates,
17 to be updated consistent with EPA revisions to these parameters in 2014.

18 **Q. DID NMED REVISE ITS PROPOSAL TO AMEND HH-OO CRITERIA FOR**
19 **ARSENIC IN ITS AMENDED PETITION?**

20 A. Yes.

21 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED'S PROPOSED**
22 **REVISION?**

23 A. NMED withdrew its proposal to modify the arsenic HH-OO criterion.

Direct Testimony of Barry Fulton
Case No. WQCC 20-51(R)

1 **Q. WHAT IS YOUR OPINION ON NMED'S PROPOSED REVISION?**

2 A. I agree with NMED's decision to withdraw its proposal to modify the arsenic HH-OO
3 criterion.

4 **IV. APPLICABILITY OF WATER QUALITY STANDARDS SECTION (20.6.4.11**
5 **NMAC)**

6 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF THE APPLICABILITY**
7 **OF HUMAN HEALTH-ORGANISM ONLY CRITERIA IN TRIBUTARIES TO**
8 **WATERS WITH A DESIGNATED, EXISTING OR ATTAINABLE AQUATIC**
9 **LIFE USE.**

10 A. 20.6.4.11(G) NMAC states that HH-OO criteria for persistent organic pollutants, as
11 identified in 20.6.4.900(J) NMAC, apply to all tributaries of waters with designated,
12 existing or attainable aquatic life use.

13 **Q. WHAT IS YOUR POSITION ON 20.6.4.11(G) NMAC?**

14 A. Tributaries of waters with a designated, existing or attainable aquatic life use might be
15 fishless, or support limited fish or shellfish, due to natural low flow conditions or physical
16 habitat and would therefore, not support a fish consumption use. 20.6.4.11(G) NMAC
17 should be amended as follows:

18 Human health-organism only criteria in Subsection J of 20.6.4.900 NMAC
19 apply to those waters with a designated, existing or attainable ~~aquatic life~~
20 fish consumption use. If a tributary does not have an attainable fish
21 consumption use, then HH-OO criteria do not apply to the tributary. If the
22 fish consumption designated use is not attained in the first downstream
23 segment with an attainable fish consumption designated use, then the
24 tributary should be assigned a load allocation as required by 40 CFR Part
25 130. ~~When limited aquatic life is a designated use, the human health-~~
26 organism only criteria apply only if adopted on a segment specific basis.
27 The human health-organism only criteria for persistent toxic pollutants, as
28 identified in Subsection J of 20.6.4.900 NMAC, also apply to all tributaries
29 of waters with a designated, existing or attainable aquatic life use."

**Direct Testimony of Barry Fulton
Case No. WQCC 20-51(R)**

1

V. CONCLUSION

2 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

3 **A. Yes.**

Exhibit 7

**STATE OF NEW MEXICO
BEFORE THE WATER QUALITY CONTROL COMMISSION**

IN THE MATTER OF:

**THE PETITION TO AMEND
THE STANDARDS FOR INTERSTATE
AND INTRASTATE SURFACE WATERS,
20.6.4 NMAC**

WQCC No. 20-51(R)

**DIRECT TESTIMONY OF JOHN TOLL,
WINDWARD ENVIRONMENTAL, LLC, ON BEHALF OF TRIAD NATIONAL
SECURITY, LLC AND THE U.S. DEPARTMENT OF ENERGY, NATIONAL
NUCLEAR SECURITY ADMINISTRATION**

May 3, 2021

**Direct Testimony of John Toll
Case No. WQCC 20-51(R)**

I. INTRODUCTION

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Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is John Toll. I am the managing partner at Windward Environmental LLC (“Windward”). My business address is 200 First Avenue West, Suite 500, Seattle, Washington 98119.

Q. ON WHOSE BEHALF ARE YOU SUBMITTING DIRECT TESTIMONY?

A. I am submitting this direct testimony on behalf of Triad National Security, LLC (“Triad”), and the U.S. Department of Energy, National Nuclear Security Administration (“DOE”) (collectively “LANL”).¹

Q. WHAT IS WINDWARD ENVIRONMENTAL LLC?

A. Windward is an environmental consulting firm composed of approximately 35 professionals in environmental science, engineering, and associated disciplines, working primarily on issues pertaining to water pollution and its impacts on people and ecosystems. For over 20 years, we have provided clients with high-quality technical and strategic advice from both scientific and regulatory perspectives. We strive for objectivity and excellence so that our work is given serious consideration by all parties, even in contested situations, and makes room for insightful, practical solutions to specific technical and regulatory problems.

Q. ARE YOU PROVIDING ANY EXHIBITS WITH YOUR DIRECT TESTIMONY?

A. Yes. A copy of my current resume is attached to LANL’s Notice of Intent to Present Technical Testimony (“Notice of Intent”) as **LANL Exhibit 14**. A copy of the US

¹ DOE and predecessor and current operators of LANL are referred to in my testimony collectively as “LANL” to avoid unnecessary entity name complications.

Direct Testimony of John Toll
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1 Environmental Protection Agency (“EPA”) Office of Water’s web page on how to get
2 methods approved for measuring pollutants for National Pollutant Discharge Elimination
3 System (“NPDES”) permit applications and reporting requirements is provided as **LANL**
4 **Exhibit 52**. A copy of the August 19, 2014, Federal Register Notice on the use of
5 sufficiently sensitive test methods for permit applications and reporting is provided as
6 **LANL Exhibit 53**.

7 **Q. PLEASE SUMMARIZE YOUR EDUCATIONAL AND PROFESSIONAL**
8 **EXPERIENCE.**

9 A. I earned a Bachelor of Science degree in Chemical Engineering from the University of
10 Iowa in 1983 and a Ph.D. in Engineering & Public Policy from Carnegie Mellon University
11 in 1989. From 1989 to 1993, I was an assistant professor of Environmental and Resource
12 Engineering at the State University of New York, College of Environmental Science and
13 Forestry. From 1993 to 1996, I was a senior consultant with EBASCO Environmental,
14 which during my tenure was sold to Enserch Environmental and then to Foster Wheeler,
15 Inc., becoming Foster Wheeler Environmental. From 1996 to 2004, I was a senior
16 consultant with Parametrix, Inc. For a portion of my time at Parametrix, I served as
17 Toxicology & Chemistry Division Manager. From 2004 to 2006, I worked independently
18 under the name Toll Environmental LLC. I have been with Windward since 2006. I
19 became a partner in the firm in 2007 and managing partner in 2020.

20 **Q. HAVE YOU PREVIOUSLY TESTIFIED ON ISSUES RELATED TO SURFACE**
21 **WATER QUALITY?**

22 A. Yes. I have testified as an expert in federal district court proceedings on surface water
23 quality issues.

Direct Testimony of John Toll
Case No. WQCC 20-51(R)

II. PURPOSE OF TESTIMONY

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Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to explain and provide technical support for LANL’s position on the New Mexico Environment Department’s (NMED”) Surface Water Quality Bureau’s (“SWQB”) proposed amendments to, and statement of reasons for, proposed amendments to the Standards for Interstate and Intrastate Surface Waters, 20.6.4 NMAC (“Standards”) set forth in NMED’s August 18, 2020, Petition (“Original Petition”) and NMED’s March 12, 2021, Notice of Amended Petition (“Amended Petition”). I also explain the technical bases for certain related modifications proposed by LANL in its Comments on the Public Comment Draft of NMED’s Proposed Amendments, filed January 6, 2021 (“LANL Comments”), and Notice of Intent, which is being filed concurrently with this technical testimony.

III. LANL’S EVALUATION OF, AND PROPOSED CHANGES TO, PROPOSED AMENDMENTS TO STANDARDS

Q. PLEASE IDENTIFY THE PROPOSED AMENDMENTS THAT YOU ARE ADDRESSING IN THIS TESTIMONY.

A. My testimony first responds to NMED’s proposed amendments to 20.6.4.12 NMAC. I then address and explain LANL’s additional changes to 20.6.4.12 NMAC and 20.6.4.14 NMAC to require the use of 40 Code of Federal Regulations (CFR) Part 136 Approved Methods for compliance determinations and 401 certifications. As part of that recommendation and for added clarity and consistency with the CFR, I also propose to define the term “sufficiently sensitive” in 20.6.4.7 NMAC.

**Direct Testimony of John Toll
Case No. WQCC 20-51(R)**

1 **Q. HAVE YOU REVIEWED NMED’S STATEMENT OF REASONS FOR ITS**
2 **PROPOSED AMENDMENTS, FILED AS ATTACHMENT 3 TO NMED’S**
3 **ORIGINAL PETITION?**

4 A. Yes.

5 **Q. HAVE YOU REVIEWED LANL’S JANUARY 6, 2021 COMMENTS?**

6 A. Yes.

7 **Q. HAVE YOU REVIEWED NMED’S REVISIONS TO ITS PROPOSED**
8 **AMENDMENTS SET FORTH IN NMED’S AMENDED PETITION?**

9 A. Yes.

10 **Q. HAVE YOU ALSO REVIEWED THE MODIFICATIONS PROPOSED IN LANL’S**
11 **NOTICE OF INTENT?**

12 A. Yes.

13 **1. NMED’S PROPOSED AMENDMENTS TO 20.6.4.12 NMAC**

14 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED’S PROPOSED**
15 **CHANGES TO 20.6.4.12 NMAC PERTAINING TO COMPLIANCE WITH**
16 **WATER QUALITY STANDARDS.**

17 A. NMED proposed language is to clarify the intent of 20.6.4.12(G) NMAC, Compliance
18 Schedules.

19 **Q. WHAT IS YOUR POSITION ON THIS PROPOSAL?**

20 A. I do not object to the proposed change to 20.6.4.12(G) NMAC.

21 **2. LANL’S ADDITIONAL PROPOSED AMENDMENTS**

22 **Q. ARE YOU RECOMMENDING ANY ADDITIONAL CHANGES?**

Direct Testimony of John Toll
Case No. WQCC 20-51(R)

1 A. Yes. I am recommending additional changes to 20.6.4.12(E) NMAC to require the use of
2 40 CFR Part 136 approved methods. I am also proposing related changes to 20.6.4.14(A)
3 NMAC. Finally, for added clarity and to move definitions out of substantive provisions, I
4 am also recommending to define the term “sufficiently sensitive” in 20.6.4.7 NMAC.

5 **a. PROPOSED AMENDMENTS TO 20.6.4.12(E) NMAC**

6 **Q. PLEASE SUMMARIZE AND EXPLAIN THE BASIS FOR YOUR**
7 **RECOMMENDED CHANGE TO 20.6.4.12(E)?**

8 A. LANL is proposing the following changes to 20.6.4.12(E):²

9 The commission may establish a numeric water quality criterion at a
10 concentration that is below the ~~minimum quantification level~~ lowest
11 minimum level (ML) of the analytical methods approved by EPA under 40
12 CFR part 136 for the measured pollutant or pollutant parameter. In such
13 cases, the water quality standard is enforceable at the ~~minimum~~
14 quantification level ML of the sufficiently sensitive method approved by
15 EPA under 40 CFR part 136.

16 The proposed changes also increase clarity by giving meaning to the undefined term
17 “minimum quantification level” and explicitly incorporating the definition of “sufficiently
18 sensitive” discussed below. In addition, adding this requirement to 20.6.4.12(E) NMAC
19 will eliminate ambiguity about compliance monitoring obligations by explicitly
20 incorporating two requirements specified by 40 CFR 122.44(i):

- 21 • LANL’s proposed modifications to 20.6.4.12(E) clarify that, consistent with federal
22 law, 40 CFR Part 136 approved methods are required for NPDES compliance
23 determinations and 401 certifications.

² Throughout this testimony proposed revisions are shown to an existing NMAC provision with underlined lettering reflecting proposed inserts and strike outs reflecting proposed removals.

Direct Testimony of John Toll
Case No. WQCC 20-51(R)

- 1 • LANL’s proposed modifications to 20.6.4.12(E) clarify that, in cases in which the
2 WQCC establishes a numeric water quality criterion at a concentration that is below
3 the ML of the EPA-approved analytical methods, the water quality standard is
4 enforceable not at the numeric water quality criterion, but at the lowest ML of the 40
5 CFR Part 136 approved methods.

6 Section 304(h) of the Clean Water Act (“CWA”), 33 USC § 1314(h), requires EPA
7 to promulgate the analytical methods that regulated entities must use when analyzing the
8 chemical properties of environmental samples for reporting under the NPDES permit
9 program. EPA’s regulations implementing Sections 401 and 304(h) of the CWA
10 provide in 40 CFR 122.44 that each NPDES permit includes requirements to monitor
11 compliance with effluent limitations “[a]ccording to *test procedures approved under*
12 *Part 136* for the analyses of pollutants having approved methods under that part, and
13 according to a test procedure specified in the permit for pollutants with no approved
14 methods.” 40 CFR 122.44(i)(1)(iv) (emphasis added). 40 CFR 122.44(i)(1)(iv) further
15 requires that to assure compliance with effluent limitations, the permit must include
16 requirements to monitor “[a]ccording to sufficiently sensitive test procedures (*i.e.*,
17 methods) *approved under 40 CFR part 136* for the analysis of pollutants or pollutant
18 parameters.” 40 CFR 122.44(i)(1)(iv) (emphasis added). Significantly, 40 CFR 136.1(a)
19 requires that Part 136 approved methods, “be used to perform the measurements indicated
20 whenever the waste constituent specified is required to be measured for: (3) *Certifications*
21 *issued by States pursuant to section 401 of the Clean Water Act (CWA), as amended.*”
22 40 CFR 136.1(a) (emphasis added).

23 **Q. PLEASE DESCRIBE THE METHODS APPROVED UNDER 40 CFR PART 136?**

Direct Testimony of John Toll
Case No. WQCC 20-51(R)

1 A. EPA’s Office of Water considers new methods and modifications to existing methods from
2 two major sources (**LANL Exhibit 52**). One is the Alternate Test Procedure (“ATP”)
3 program. Under this program, method developers submit an application for a proposed
4 new method or modification to an approved Part 136 method – an “alternative method” –
5 directly to the Office of Water’s Office of Science and Technology (“OST”) for evaluation
6 for nationwide use. There are established, formal protocols for the ATP program that lay
7 out specific requirements for submitting methods/modifications for consideration.

8 The second major source for new or revised methods is voluntary consensus
9 standards bodies (“VCSBs”), such as American Society for Testing and Materials
10 (“ASTM”), International and Standard Methods, or another government agency, such as
11 the United States Geological Survey. VCSBs may submit methods and modifications to
12 OST under the provisions of the National Technology Transfer and Advancement Act
13 (“NTTAA”). The NTTAA requires EPA to adopt methods approved by VCSBs, unless
14 doing so would be inconsistent with applicable laws or is otherwise impractical. When
15 VCSBs or other government agencies submit adopted methods for consideration, they must
16 include the method in its final form, documentation that it has been approved/published by
17 that VCSB or agency, the validation study plan, and the validation study report, including
18 data and analysis that supported the method’s development and adoption. The VCSB or
19 agency must comply with its own internal method testing criteria (*e.g.*, ASTM D2777).

20 EPA periodically combines new methods and modifications to existing methods into
21 a single package – a proposed “Methods Update Rule” (“MUR”). Once EPA promulgates
22 final rules, it codifies the approved methods at 40 CFR Part 136. These approved methods
23 must be used for determining compliance with pollutant discharge limitations.

Direct Testimony of John Toll
Case No. WQCC 20-51(R)

1 **Q. WHY IS IT APPROPRIATE TO REQUIRE USE OF THESE APPROVED**
2 **METHODS FOR COMPLIANCE DETERMINATIONS?**

3 A. A rigorous, inclusive process is used to approve methods for use in compliance
4 determinations. Methods that do not survive that rigorous process are not appropriate for
5 that use.

6 For example, in 2010, EPA issued a draft rule that, had it been finalized, would
7 have approved under 40 CFR Part 136 the use of method 1668C for chlorinated biphenyl
8 congener analysis (EPA-820-R-10-005). That draft rule was not finalized (*See 77 Fed.*
9 *Reg. 29,758, 29,763*), and the use of method 1668C was not approved under 40 CFR Part
10 136, because the method did not withstand the scrutiny of EPA’s approval process. Noted
11 shortcomings included a need for new detection and quantitation procedures as
12 recommended by the Federal Advisory Committee on Detection and Quantitation
13 Approaches and Uses in the Clean Water Act Programs, and technical issues identified by
14 laboratories and data users. These issues are still unresolved, and EPA has, over the
15 subsequent decade, developed an alternative polychlorinated biphenyl (“PCB”) congener
16 method specifically to overcome the problems with 1668C as a method for compliance
17 monitoring. That alternative method is currently being evaluated in a multi-laboratory
18 validation study, which is a step in EPA’s 40 CFR Part 136 approval process.

19 EPA periodically updates the list of approved methods to reflect advances in
20 technology, refine quality assurance and quality control requirements, and provide more
21 choices of approved compliance monitoring methods. Once EPA promulgates final MURs,
22 it codifies the approved methods at 40 CFR Part 136. The most recent Final MUR was

Direct Testimony of John Toll
Case No. WQCC 20-51(R)

1 published August 28, 2017; a proposed MUR was published October 22, 2019, but has not
2 been finalized.

3 **Q. WHY IS IT APPROPRIATE TO REQUIRE USE OF THESE APPROVED**
4 **METHODS FOR 401 CERTIFICATIONS?**

5 A. Section 304(h) of the CWA requires EPA to “. . . promulgate guidelines establishing test
6 procedures for the analysis of pollutants that shall include the factors which must be
7 provided in any certification pursuant to [section 401 of the Clean Water Act]” The
8 40 CFR Part 136 approved methods are the methods approved for 401 certifications;
9 methods that are not 40 CFR Part 136 approved are not appropriate for that use.

10 **Q. ARE THE AMENDMENTS TO 20.6.4.12(E) NMAC PROPOSED IN LANL’S**
11 **NOTICE OF INTENT CONSISTENT WITH YOUR RECOMMENDATION?**

12 A. Yes.

13 **Q. PLEASE EXPLAIN WHY THIS ADDITIONAL REVISION WILL HELP**
14 **IMPROVE CLARITY?**

15 A. The additional revision provides clarity about how the Commission’s numeric criteria
16 should be applied in situations wherein the criterion is less than the ML of the required
17 method. It conforms the Commission’s approach to the 40 CFR 122.44(i) definition of
18 “sufficiently sensitive.”

19 **b. PROPOSED AMENDMENTS TO 20.6.4.14 NMAC**

20 **Q. ARE YOU RECOMMENDING CHANGES TO 20.6.4.14 NMAC RELATED TO**
21 **THE PROPOSAL YOU DESCRIBED ABOVE?**

22 A. Yes.

Direct Testimony of John Toll
Case No. WQCC 20-51(R)

1 **Q. PLEASE SUMMARIZE AND EXPLAIN THE BASIS FOR YOUR**
2 **RECOMMENDED CHANGE TO 20.6.4.14 NMAC.**

3 A. I recommend amending 20.6.4.14(A) NMAC as follows:

4 40 CFR Part 136 approved methods shall be used to determine compliance
5 with these standards and in Section 401 certifications under the federal
6 Clean Water Act. In all other cases, sampling and analytical techniques shall
7 conform with methods described in the following references unless
8 otherwise specified by the commission pursuant to a petition to amend these
9 standards:

10 Earlier in my testimony I explained the basis for my recommended change
11 to 20.6.4.14 NMAC: to ensure consistency with the federal CWA. A rigorous,
12 inclusive process is used to approve the 40 CFR Part 136 methods for use in
13 compliance determinations and 401 certifications. Methods that do not survive that
14 rigorous process are not appropriate for these uses.

15 **Q. IS THIS PROPOSAL CONSISTENT WITH THE AMENDMENTS TO 20.6.4.14(A)**
16 **NMAC PROPOSED IN LANL’S NOTICE OF INTENT?**

17 A. Yes.

18 **c. PROPOSED AMENDMENTS TO 20.6.4.7 NMAC**

19 **Q. PLEASE SUMMARIZE YOUR RECOMMENDED CHANGE TO THE**
20 **DEFINITION SECTION (20.6.4.7 NMAC)?**

21 A. LANL is proposing to add a definition for “sufficiently sensitive” to 20.6.4.7 NMAC to
22 clarify the meaning of the undefined term “sufficiently sensitive” in LANL’s recommended
23 changes to 20.6.4.12(E) and 20.6.4.14(A) NMAC discussed above:

24 “Sufficiently sensitive” means any method approved under 40 CFR part
25 136 for the analysis of pollutants or pollutant parameters for which (1) the
26 method minimum level (ML) is at or below the level of the effluent limit
27 established in the permit; or (2) the method has the lowest ML of the

Exhibit 8

**STATE OF NEW MEXICO
BEFORE THE WATER QUALITY CONTROL COMMISSION**

IN THE MATTER OF:

**THE PETITION TO AMEND
THE STANDARDS FOR INTERSTATE
AND INTRASTATE SURFACE WATERS,
20.6.4 NMAC**

WQCC No. 20-51(R)

**DIRECT TESTIMONY OF DAVID DEFOREST, WINDWARD ENVIRONMENTAL,
LLC, ON BEHALF OF TRIAD NATIONAL SECURITY, LLC AND THE U.S.
DEPARTMENT OF ENERGY, NATIONAL NUCLEAR SECURITY
ADMINISTRATION**

May 3, 2021

Direct Testimony of David DeForest
Case No. WQCC 20-51(R)

I. INTRODUCTION

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Q. PLEASE STATE YOUR NAME, POSITION, AND BUSINESS ADDRESS.

A. My name is David DeForest. I am a Partner and Environmental Toxicologist at Windward Environmental LLC (“Windward”), which is an environmental consulting firm. My business address is 200 West Mercer Street, Suite 401, Seattle, Washington 98119.

Q. ON WHOSE BEHALF ARE YOU SUBMITTING DIRECT TESTIMONY?

A. I am submitting this direct testimony on behalf of Triad National Security, LLC, (“Triad”) and the U.S. Department of Energy, National Nuclear Security Administration (“DOE”) (collectively “LANL”).¹

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL AND PROFESSIONAL EXPERIENCE.

A. I have a Bachelor of Science in Environmental Science from Western Washington University. I am an environmental toxicologist with over 25 years of experience in aquatic toxicology, hazard assessment, ecological risk assessment, and water quality criteria. At Windward, I primarily provide consultation on the fate and effects of metals and other elements in the aquatic environment, including ecological risk assessments and development of updated aquatic life water quality criteria. Prior to my employment with Windward, I was employed by Parametrix, Inc. for 15 years as an Environmental Toxicologist. In that capacity, I conducted ecological risk assessments and aquatic toxicology evaluations, with an emphasis on metals. I am also a member of the Society of Environmental Toxicology and Chemistry and have over 35 water quality-related peer-reviewed publications, including 30 publications related to the aquatic toxicology of

¹ DOE and predecessor and current operators of LANL are referred to in my testimony collectively as “LANL” to avoid unnecessary entity name complications.

Direct Testimony of David DeForest
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1 metals, which is the subject of my testimony in this proceeding. My resume is attached to
2 LANL's Notice of Intent to Present Technical Testimony as **LANL Exhibit 15**.

II. PURPOSE OF TESTIMONY

3
4 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

5 A. The purpose of my testimony is to provide the technical bases for LANL's position on the
6 New Mexico Environment Department's ("NMED") Surface Water Quality Bureau's
7 ("SWQB") proposed amendments to, and statement of reasons for, proposed amendments
8 to the Standards for Interstate and Intrastate Surface Waters, 20.6.4 NMAC ("Standards")
9 set forth in NMED's August 18, 2020 Petition ("Original Petition"), and NMED's March
10 12, 2021 Notice of Amended Petition ("Amended Petition"). I also explain the technical
11 bases for certain related modifications proposed by LANL in its Notice of Intent to Present
12 Technical Testimony ("LANL's Notice of Intent"), which is being filed concurrently with
13 this technical testimony.

14 **III. LANL'S EVALUATION OF, AND PROPOSED CHANGES TO, PROPOSED**
15 **AMENDMENTS TO THE STANDARDS**

16 **Q. PLEASE IDENTIFY THE PROPOSED AMENDMENTS THAT YOU ARE**
17 **ADDRESSING IN THIS TESTIMONY.**

18 A. My testimony addresses the NMED's proposed amendments to 20.6.4.900(I) and (J)
19 NMAC pertaining to aquatic life criteria for dissolved aluminum.

20 **Q. HAVE YOU REVIEWED NMED'S PROPOSED CHANGES AND THE**
21 **STATEMENT OF REASONS FOR THESE PROPOSED AMENDMENTS, FILED**
22 **AS ATTACHMENTS 2 AND 3, TO NMED'S 2020 PETITION?**

23 A. Yes.

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1 **Q. HAVE YOU REVIEWED THE UNITED STATES ENVIRONMENTAL**
2 **PROTECTION AGENCY (“EPA”) REGION 6’S DECEMBER 22, 2020**
3 **COMMENTS ON NMED’S PROPOSED TRIENNIAL REVISIONS TO THE**
4 **STANDARDS?**

5 A. Yes.

6 **Q. HAVE YOU REVIEWED LANL’S JANUARY 6, 2021 COMMENTS RELATED TO**
7 **THESE PROPOSED AMENDMENTS?**

8 A. Yes.

9 **Q. HAVE YOU REVIEWED NMED’S REVISIONS TO ITS PROPOSED**
10 **AMENDMENTS SET FORTH IN NMED’S AMENDED PETITION?**

11 A. Yes.

12 **Q. HAVE YOU ALSO REVIEWED THE MODIFICATIONS PROPOSED IN LANL’S**
13 **NOTICE OF INTENT?**

14 A. Yes.

15 **1. NMED PROPOSALS RELATED TO AQUATIC LIFE CRITERIA FOR**
16 **DISSOLVED ALUMINUM**

17 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF NMED’S PROPOSED**
18 **AMENDMENTS RELATED TO AQUATIC LIFE CRITERIA FOR DISSOLVED**
19 **ALUMINUM.**

20 A. NMED is proposing changes to the pH range to which the acute and chronic aquatic life
21 hardness based criteria would be applied. Specifically, NMED proposed changes to the
22 Standards to apply the hardness-based total recoverable Al criteria in Paragraphs (1) and
23 (2) of Subsection I of 20.6.4.900 NMAC when a pH is between 6.5 to 9.0 and apply the

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1 EPA (1988) acute and chronic aquatic life criteria of 750 and 87 µg/L for dissolved Al
2 when the concurrent pH is outside that range provided in 20.6.4.900(I) NMAC.

3 **Q. WHAT IS YOUR POSITION ON THE PH RANGE PROPOSED BY NMED TO**
4 **WHICH THE ACUTE AND CHRONIC AQUATIC LIFE HARDNESS-BASED**
5 **CRITERIA FOR ALUMINUM WOULD APPLY?**

6 A. The current hardness-based aluminum (“Al”) criteria are based on changes proposed by
7 LANL and Chevron Mining, Inc. (“CMI”) during the 2009 Triennial Review. As explained
8 in testimonies at the 2009 Triennial Review, between the time when the EPA released the
9 ambient water quality criteria that were nationally recognized at the time (“1988 AWQC”)
10 and the 2009 Triennial Review, Al toxicity studies were published in the scientific
11 literature that suggested the 1988 AWQC needed to be updated. These toxicity studies
12 demonstrated that Al toxicity to aquatic life is hardness dependent. CMI and LANL
13 proposed hardness-based aquatic life criteria for Al according to SEPA guidance, which
14 were adopted by the Water Quality Control Commission (“WQCC”) as part of 20.6.4.900
15 NMAC and approved by EPA for waters with a pH between 6.5 and 9.0. The WQCC made
16 an appropriate decision at the time because adequate and acceptable studies existed that
17 would have allowed EPA to update its nationally recommended AWQC. The proposals
18 submitted by LANL and CMI during the 2009 Triennial Review demonstrated the
19 appropriateness of hardness-based criteria derived per EPA guidance and those criteria
20 were adopted by the WQCC and approved by EPA.

21 The next question is, should the hardness-based Al criteria be applied outside the
22 pH range of 6.5 to 9.0? The answer to that question depends on what the alternative would
23 be. There are four:

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- 1 **1. Apply the 1988 total dissolved Al criteria outside the pH range of 6.5 to 9.0.** This
2 is what NMED explicitly calls for in NMED’s Original Petition. However, this
3 proposal is in direct contradiction of the 1988 Nationally Recommended Al AWQC,
4 which explicitly stated that the recommended criteria only applied to a pH range of
5 6.5 to 9.0. It did not purport to recommend Al criteria outside of that pH range. This
6 limitation on the pH range of the 1988 AWQC is repeated in EPA’s Final Aquatic
7 Life Ambient Water Quality Criteria for Aluminum 2018 (EPA-822-R-18-001)²,
8 which states that “(t)he 1988 (Al freshwater) criteria . . . specified that the
9 recommended criteria only applied to a pH range of 6.5 to 9.0.” The stated pH ranges
10 make clear that EPA intended for the 1988 total dissolved criteria to be applied only
11 between the pH range of 6.5 to 9.0.
- 12 **2. Apply the hardness-based criteria outside the pH range of 6.5 to 9.0.** This option
13 was rejected when the hardness-based Al criteria were adopted, and EPA has
14 disapproved the hardness-based equation for total recoverable Al in waters where the
15 pH is less than 6.5 in the receiving stream for federal purposes of the Clean Water
16 Act. *See LANL Exhibit 55.* As noted above, in the years since, additional studies
17 of Al toxicity to aquatic life have been completed, including studies conducted in
18 waters with pH values below 6.5. These studies indicate that Al toxicity depends not
19 just on hardness, but also on pH and dissolved organic carbon concentration
20 (“DOC”). EPA’s current recommended AWQC for Al calculate numerical criteria
21 as a function of these 3 water quality parameters.

² *See LANL Exhibit 54; see also* EPA, Aquatic Life Criteria – Aluminum, <https://www.epa.gov/wqc/aquatic-life-criteria-aluminum>.

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1 3. **Apply EPA’s 2018 Recommended Al AWQC.** EPA’s current recommended Al
2 AWQC were finalized in 2018 and are based on a larger database on Al toxicity to
3 aquatic life, including studies conducted in waters with pH values below 6.5. EPA
4 recommends that the 2018 Al AWQC be applied across the pH range of 5.0 to 10.5.
5 If New Mexico were to adopt EPA’s 2018 recommended national AWQC, it should
6 adopt them across the entire pH range (5.0 to 10.5). At this time, however, it is my
7 understanding that NMED prefers that the WQCC not adopt the 2018 recommended
8 national AWQC.

9 4. **Until the 2018 criteria are adopted, do not extrapolate the hardness-based**
10 **criteria or adopt the 1988 criteria outside the pH = 6.5-9.0 range.** Best available
11 science does not support either extrapolating the criteria outside the 6.5-9.0 range or
12 adopting the 1988 criteria without also considering the effect of pH and DOC on
13 aluminum toxicity.

14 **Q. ARE YOU RECOMMENDING CHANGES TO NMED’S PROPOSED**
15 **AMENDMENT TO “CLARIFY THE PH RANGE TO WHICH THE ACUTE AND**
16 **CHRONIC AQUATIC LIFE HARDNESS-BASED CRITERIA APPLY TO**
17 **ALUMINUM”?**

18 A. Yes. In the short term, the most appropriate solution to the problem of how to set numerical
19 Al criteria for waters with pH outside the 6.5-9.0 range is alternative 4 above. Do not apply
20 Al criteria outside the 6.5-9.0 pH range. So, our recommendation is that the WQCC reject
21 NMED’s proposed amendment to the Al water quality standard.

22 In the longer term, New Mexico should develop the laboratory capability to analyze
23 for DOC and adopt EPA’s national recommended Al AWQC. This is a long-term goal

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1 because New Mexico is faced with an additional problem that has not yet been solved, even
2 with the 2018 recommended Al AWQC, and that is the problem of how to isolate the
3 bioavailable forms of Al in the laboratory. This is a topic of ongoing research (*See*
4 Rodriguez *et al.*, 2019, Environ. Toxicol. Chem., Vol. 38, pp. 1668-1681) that is likely to
5 bear fruit in the coming years.

6 **Q. PLEASE SUMMARIZE AND EXPLAIN THE BASIS FOR THIS PROPOSED**
7 **CHANGE.**

8 A. In summary, the proposed change to NMED's proposed amendment to the Al water quality
9 standards is that the proposal be rejected. The basis for this proposed change is that the
10 science does not support extrapolating aluminum criteria outside the 6.5-9.0 pH range
11 unless one accounts for 3 water quality parameters – hardness, pH, and DOC – in
12 calculating numerical WQC.

13 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF EPA'S DECEMBER 2020**
14 **COMMENTS AND RECOMMENDATIONS PERTAINING TO THIS PROPOSAL.**

15 A. The EPA is recommending that NMED update its Al criteria based on EPA's updated §
16 304(a) aluminum criteria, which were finalized in 2018. *See LANL Exhibit 54.* The
17 updated Al criteria are adjusted as a function of pH, DOC, and hardness, and apply to
18 waters with a pH range of 5.0 to 10.5. The EPA states that it would be appropriate for
19 NMED to retain and continue to apply the acute and chronic Al criteria of 750 and 87 µg/L
20 in waters with a pH less than 5.0.

21 **Q. DO YOU AGREE WITH EPA'S POSITION?**

22 A. Yes.

23 **Q. PLEASE EXPLAIN THE BASIS OF YOUR OPINION.**

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1 A. The EPA’s currently-recommended Al criteria represent the state-of-the-science with
2 regard to Al bioavailability and toxicity to freshwater aquatic organisms. Because the EPA
3 criteria are adjusted for the interactive effects of pH and hardness (along with the influence
4 of DOC), EPA’s 2018 Al criteria provide the best approach for developing protective Al
5 criteria in low pH waters while also accounting for the influence of hardness. At this time,
6 however, it is my understanding that NMED prefers that the WQCC not adopt the 2018
7 recommended national AWQC.

8 **Q. DOES NMED’S AMENDED PETITION PROPOSE REVISIONS TO ITS**
9 **PROPOSED AMENDMENT TO “CLARIFY THE PH RANGE TO WHICH THE**
10 **ACUTE AND CHRONIC AQUATIC LIFE HARDNESS-BASED CRITERIA**
11 **APPLY TO ALUMINUM”?**

12 A. Yes. In its Amended Petition, NMED revised this proposal to apply the hardness-based
13 total recoverable Al criteria in Paragraphs (1) and (2) of Subsection I of 20.6.4.900 NMAC
14 when the concurrent pH is between 6.6 and 9.0 and apply the EPA (1988) acute and chronic
15 aquatic life criteria of 750 and 87 µg/L for dissolved Al when the concurrent pH is “less
16 than 6.6 or greater than 9.0 S.U.”

17 **Q. ARE YOU RECOMMENDING CHANGES TO NMED’S PROPOSED**
18 **AMENDMENT?**

19 A. No. My recommendation is that NMED’s proposed amendment to the Al water quality
20 standards be rejected. The science does not support extrapolating Al criteria outside the
21 6.5-9.0 pH range, unless one accounts for 3 water quality parameters – hardness, pH, and
22 DOC – in calculating numerical WQC. Since the proposed change does not account for
23 hardness and DOC, and is inconsistent with EPA’s 1988 criteria, it should be rejected.

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1 Moreover, NMED has not submitted justification for changing the range of the existing
2 criterial from 6.5 to 6.6. I am aware of no basis for the change and the pH range of 6.6 to
3 9.0 proposed by NMED is also inconsistent with the current WQCC criteria and EPA
4 guidance, which is clearly applicable within a pH range of 6.5 to 9.0. As a result, I
5 recommend that the proposed change be rejected.

6 **IV. CONCLUSION**

7 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

8 A. Yes.

Exhibit 9

Richard D. Meyerhoff, Ph.D.

Senior Water Quality Specialist



Dr. Richard Meyerhoff is a Senior Water Quality Specialist with GEI Consultants, Inc. With over 30 years of experience, he provides regulatory program support to clients with emphasis on water quality standards development and implementation, Total Maximum Daily Load (TMDL) compliance, stormwater permit implementation and surface water and groundwater management. Through much of his career he has worked with stakeholder groups on extended projects to develop the technical/regulatory basis for water quality programs, including serving as (a) Technical Project Manager for Central Valley Salinity Alternatives for Long-term Sustainability (CV-SALTS) to develop the Central Valley Salt and Nitrate Management Plan (SNMP) and establish and implement the Central Valley Salt and Nitrate Control Program regulations (2012-present); (b) Project Manager or Technical Director for stakeholder-led efforts to implement the Middle Santa Ana River (MSAR) Watershed Bacteria TMDL (2007-present) and revise the Lake Elsinore/Canyon Lake (LE/CL) Nutrient TMDLs (2016-present); (c) Technical Director for the stakeholder process to revise freshwater bacteria recreational standards in the Santa Ana Region (2004-2015); and (d) Research Manager for the Arid West Water Quality Research Project, a collaborative initiative to conduct research on western ephemeral/effluent-dependent waters to evaluate issues of significance to both the regulated community and regulators (2001-2007).

EDUCATION

Ph.D., Aquatic Ecology, Oregon State University

M.S., Biology, Baylor University

B.S., Biology, Baylor University

EXPERIENCE IN THE INDUSTRY

32 years

EXPERIENCE WITH GEI

3.5 years

PROJECT EXPERIENCE

Modesto and Turlock Nitrate Management Zones, Valley Water Collaborative, Central Valley, CA. Led a team to develop a Preliminary Management Zone Proposal (PMZP) with Early Action Plans (EAP) to support the establishment of the Modesto and Turlock Nitrate Management Zones (boundaries coincide with the Modesto and Turlock groundwater subbasins). The PMZP was submitted on behalf of multiple dischargers (irrigated lands, dairies, animal feeding and poultry operations, wastewater facilities, wineries, food processors, etc.) in response to new Nitrate Control Program requirements applicable to dischargers in the Central Valley of California. Accompanying the PMZP are EAPs for each of the Management Zones. The EAPs establish a program to provide temporary replacement drinking water to residents relying on groundwater that has unsafe levels of nitrate and include a residential well testing program. Following a period of public review, a Final Management Zone Proposal will be submitted followed by a Management Zone Implementation Plan that establishes the drinking water and nitrate reduction program to meet the goals of the Nitrate Control Program.

Kings Water Alliance Nitrate Management Zone, Kings Water Alliance, Central Valley, CA. Supported the development of a PMZP to establish a Nitrate Management Zone for an area that primarily encompasses the Kings, Tulare Lake and a portion of the Kaweah groundwater subbasins. Primary support to this effort included leading preparation of the EAP, coordination with a Technical Advisory Committee, supporting community and stakeholder outreach meetings and working with dischargers to incorporate their permits into the PMZP.

Chowchilla Nitrate Management Zone, Madera County Farm Bureau, Central Valley, CA. Supported the development of a PMZP to establish a Nitrate Management Zone for the area encompassed by the Chowchilla groundwater subbasin. Primary support to this effort included leading preparation of the EAP, providing input to the Chowchilla Management Zone Steering Committee, supporting community and stakeholder outreach meetings and working with dischargers to incorporate their permits into the PMZP.

Lake Elsinore/Canyon Lake TMDL Revision Project, Lake Elsinore and San Jacinto Watersheds Authority (LESJWA), Southern CA. Worked collaboratively with the LE/CL Task Force and team of scientists to revise the 2004 nutrient TMDLs for LE/CL based on new watershed/lake data. Tasks included development of watershed-based reference conditions, documentation of historical watershed conditions, revised numeric targets for dissolved oxygen and chlorophyll-*a*, nutrient source assessment, linkage analysis, establishment of wasteload and load allocations, and development of a phased implementation program with milestones. The final TMDL Technical Report was submitted to the Santa Ana Water Board in December 2018. Dr. Meyerhoff is currently working with the LE/CL Task Force and Santa Ana Regional Water Quality Control Board (Santa Ana Water Board) to facilitate adoption of the revised TMDLs into the region's Basin Plan.

Middle Santa Ana River Watershed Bacteria TMDL Synoptic Study, Santa Ana Watershed Project Authority (SAWPA), Riverside and San Bernardino Counties, CA. Managed the implementation of a focused comprehensive study to update understanding of dry weather flow conditions, sources of human bacteria and fecal bacterial indicator concentrations and loadings in waters impaired by bacteria and major tributaries that receive inputs of urban runoff from area Municipal Separate Storm Sewer Systems (MS4). The findings from this study will be used to support planned revisions to the existing MSAR Watershed Bacteria TMDL and MS4 Program efforts to mitigate sources of bacteria.

Comprehensive Bacteria Reduction Plan (CBRP) Development and Implementation, Riverside and San Bernardino Counties, CA. Providing technical and programmatic support to the Riverside and San Bernardino County MS4 Programs for implementation of each MS4 Program's CBRP. The CBRPs were completed in 2012 to comply with MS4 permit requirements to provide a plan to achieve compliance with dry weather bacteria TMDL wasteload allocations applicable to the MSAR Watershed. The Santa Ana Water Board recently conducted a compliance audit of the CBRPs and found the MS4 Programs to be in compliance with CBRP implementation provisions.

Stormwater Quality Standards Study, SAWPA, Santa Ana River Watershed, CA. Served as the Technical Director on this project to revise the freshwater bacteria water quality standards applicable to waterbodies in the Santa Ana River watershed. He assisted SAWPA and a Task Force consisting of representatives from SAWPA, the counties of Orange, Riverside and San Bernardino, Environmental Protection Agency (EPA), and the Santa Ana Water Board with an evaluation of the REC-1 beneficial use designation (primary contact recreation) and associated bacteria water quality objectives in the Santa Ana River Watershed. Activities included development of use attainability analyses (UAAs) to support reclassification of recreational uses in waterbodies in the Santa Ana River Watershed. The work of the Task Force resulted in the adoption of a Basin Plan amendment in June 2012 that was approved by the EPA in 2015.

Central Valley Salt and Nitrate Management Plan, Central Valley Salinity Coalition (CVSC), Central Valley Region, CA. Since 2012, Dr. Meyerhoff has served as the Technical Project Manager for CV-SALTS, a stakeholder-led initiative to develop an SNMP and implementing regulations in the Central Valley Regional Water Quality Control Board's (Central Valley Water Board) two regional Basin Plans. Regulations were adopted by the Central Valley Water Board in May 2018 and subsequently approved as required by the State Water Resources Control Board and EPA. Project activities included:

- Preparation of draft Basin Plan amendment language to implement the Salinity Control Program recommended by the SNMP;
- Development of recommendations for salinity and nitrate water quality criteria to protect stock watering;
- Review of salinity criteria for the protection of aquatic life;
- Preparation of working white papers on salinity and nitrate impacts on irrigated agriculture and municipal and domestic water supplies; and
- Development of technical sections of the Central Valley SNMP based on extensive water quality modeling, nitrate and salinity studies conducted by CV-SALTS.

Nitrate Management Zone Pilot Studies, Kings River Water Quality Coalition and the East San Joaquin Water Quality Coalition, Central Valley Region, CA. Worked with stakeholders in the Turlock groundwater subbasin and Kings River East/Alta Irrigation District Area to pilot the development of PMZPs that satisfied anticipated new regulatory requirements to manage nitrate in groundwater in these priority areas of the Central Valley Region. The PMZPs included outreach to permitted dischargers, characterization of groundwater quality and existing nitrate management practices and development of an EAP to provide temporary replacement drinking water to residents relying on groundwater that has unsafe nitrate levels.

Phase I Prioritization and Optimization (P&O) Study Workplan, CVSC, Central Valley Region, CA. Worked with CV-SALTS and the CVSC on the preparation of a Workplan that will guide the 10-year implementation of the P&O Study during Phase I of the Central Valley Salt Control Program. The study's purpose is to develop long-term salt management plans to achieve salt sustainability in the Central Valley Region. The Workplan identifies the key tasks/subtasks (with schedule and cost estimate) to be completed during the Phase I period to develop this long-term program. Implementation of the findings from the P&O Study will occur during subsequent Salt Control Program Phases II and III. The Phase I P&O Study Workplan was approved by the Central Valley Water Board in March 2021 and Phase I work will begin in spring 2021.

Assess Homelessness Impact on Water Quality, Riparian and Aquatic Habitat in the Upper Santa Ana River Watershed, SAWPA, Upper Santa Ana River Watershed, CA. Worked with SAWPA on an assessment of the current nature and extent of stream and waterbody-adjacent homeless encampments in the upper watershed. The purpose of the assessment was to provide the best available information about potential relationships between the presence of homeless encampments and impacts to water quality and riparian and aquatic habitats in the study area. The findings from the assessment were used to develop a water quality monitoring program to assess impacts into the future for potential implementation. Dr. Meyerhoff is currently working with SAWPA on the potential implementation of such a monitoring program.

MSAR Pathogen TMDL Implementation, SAWPA, Riverside and San Bernardino Counties, CA. Supported implementation of the MSAR Watershed Bacteria TMDL through management of the following projects: (a) establishment of the original MSAR TMDL Watershed-wide Compliance Monitoring Program, including preparation of the Monitoring Plan and Quality Assurance Project Plan (QAPP); (b) state grant-funded MSAR Pathogen TMDL Implementation BMP Project, which included the 2008-2009 BMP Pilot Study to evaluate the effectiveness of selected BMPs for control of bacterial indicators in urban runoff; BMP Control Strategy and Prioritization Plan; and Comprehensive Data Analysis Report that used 2007-2008 water quality findings to develop a risk assessment approach to prioritize subwatersheds for additional bacteria source evaluation studies; and (c) preparation of the 2010, 2013, 2016 and 2020 TMDL Triennial Reports, based on monitoring data results and completed studies. Findings from many of the early projects provided the basis for development of the CBRPs for the Riverside and San Bernardino County MS4 Programs.

Stormwater Program MS4 Permit Support, Riverside County Flood Control and Water Conservation District, Riverside County, CA. Provided a range of MS4 permit-related services, including preparation of the 2014 Report of Waste Discharge, transportation project BMP guidance, water quality assessments, Comprehensive Nutrient Reduction Plan (CNRP) for Lake Elsinore and Canyon Lake and CBRP for the MSAR watershed. The CNRP and CBRP established nutrient and bacteria, respectively, watershed-based TMDL implementation programs for each waterbody to meet MS4 Permit TMDL requirements applicable to the County.

Stormwater Program MS4 Permit Support, San Bernardino County Flood Control District, San Bernardino County, CA. Prepared the 2014 Report of Waste Discharge, CBRP for the MSAR watershed and area-wide model for Local Implementation Plans. Managed development of revised Water Quality Management Plan that incorporated low impact development requirements into the County's new development/significant redevelopment program.

Santa Ana River Regional Bacteria Monitoring Program, SAWPA, Santa Ana River Watershed, CA. Worked with a Task Force on the development and implementation of the Santa Ana River Regional Bacteria Monitoring Program. The monitoring program, which included development of a Regional Board-approved Monitoring Plan and QAPP, is being implemented in part to fulfill the monitoring and surveillance requirements

of the 2015-approved Basin Plan amendment: *Recreation Standards for Inland Fresh Surface Waters*. The monitoring program also incorporates the MSAR Watershed Bacteria TMDL monitoring requirements and other monitoring needs in the Santa Ana River watershed for waters identified as impaired for bacteria.

CV-SALTS Strategic Salt Accumulation Land and Transportation Study (SSALTS), San Joaquin Valley Drainage Authority, CA. Worked with a team of engineers and scientists to develop salt management and disposal alternatives for the Central Valley of California. A three-phased effort, this work evaluated the magnitude of the salt problem, technologies and tools to manage salt now and in the future and alternatives for achieving salt sustainability in groundwater in the future. The outcome of this effort was establishment of salt management implementation measures and recommendations for implementation of a salt management program for the Central Valley for inclusion in the Central Valley SNMP.

Boulder Creek Bacteria TMDL Implementation Plan, City of Boulder, CO. Based on the outcome of the development of a long-term implementation strategy, Dr. Meyerhoff assisted the City of Boulder in the development of a Boulder Creek *E. coli* TMDL Implementation Plan to support the City's efforts to comply with wasteload allocations applicable to its MS4. The plan established a prioritized approach to compliance based on the most significant risks to human health. As prioritized, MS4 outfalls would be investigated according to a schedule with milestones to identify and implement solutions to mitigate controllable sources of bacteria.

Colorado Nutrient Cost/Benefit Study, Colorado Water Quality Control Division, CO. Directed the development of a cost-benefit analysis for proposed nutrient control regulations on behalf of the Colorado Water Quality Control Division (Division) and Colorado Water Resources and Power Development Authority. The study included wastewater treatment cost analyses, avoided public water supply treatment costs, and expected recreational and environmental benefits from improved water quality in Colorado watersheds. Findings used to support adoption of nutrient control regulations by the Colorado Water Quality Control Commission.

In-Stream Temperature Habitat Improvements in South Platte River Segment 15, Metro Wastewater Reclamation District (Metro), CO. Worked with a multi-disciplinary team to identify, design and permit habitat improvements for construction in the South Platte River to improve in-river mixing downstream of the Metro effluent discharge at the Robert W. Hite Treatment Facility. The expected outcome would not only be improved mixing, which would facilitate compliance with South Platte River Segment 15 temperature standards, but also improved habitat for native fish. The habitat improvements were subsequently constructed in the river.

South Platte River Segment 15 Temperature Mitigation Alternatives Analysis and Feasibility Study, Metro, CO. Worked with a team of engineers to develop the regulatory basis for a project portfolio that will result in needed reductions in the temperature of effluent at the Metro Robert W. Hite Treatment Facility. Currently, effluent temperatures cause exceedances of instream temperature standards in the winter. Study focused on developing viable projects for phased implementation to reduce effluent temperatures and achieve compliance with stream standards, including projects within the influent system, at the treatment facility, and instream through habitat improvements to improve instream mixing.

Evaluation of Potential Impacts from Aircraft Deicing Fluid Contained in Stormwater Runoff on Downstream Biological Communities, Denver International Airport (DIA), CO. Conducted a bioassessment of invertebrate communities of intermittent streams that receive stormwater runoff from DIA. The evaluation of impacts included potential impact from use of aircraft deicing fluids during snowstorm events. The results were used to provide a technical basis for development of dissolved oxygen site-specific standards.

Development of Site-Specific Dissolved Oxygen Standards to Protect Aquatic Life in Intermittent Waters near DIA, CO. Used a weight of evidence approach to develop ambient-based site-specific dissolved oxygen criteria for several plains intermittent streams in central Colorado. Evidence included biological and water quality data coupled with site-specific conditions and toxicological data. The project was implemented in collaboration with the Division and EPA; a site-specific standards proposal was subsequently adopted unanimously by the Colorado Water Quality Control Commission.

Expert Witness, Technical Testimony and Documents to Support Proposed Water Quality Standards, Los Alamos National Laboratory, NM. Provided testimony on behalf of Los Alamos National Laboratory on

proposed changes to New Mexico's triennial review of water quality standards in the 1998 and 2003 Triennial Review of water quality standards. Testimony was prepared, delivered, and defended during public hearings before the New Mexico Water Quality Control Commission. In addition, technical responses to alternative stakeholder positions and hearing officer's reports were prepared.

Water Quality Program Support, Los Alamos National Laboratory, NM. Assisted the laboratory with implementation of various water quality programs affecting surface water quality, including water quality management, bioassessments, stormwater quality and surface water regulations.

Evaluate Use Attainability Analysis Study on Applicability of State-Designated Uses to Unclassified Waters, Los Alamos, NM. The scope of work, methods, and data from a use attainability study developed by the US Fish and Wildlife Service in 2002 were reviewed to independently evaluate the findings of a study to determine the appropriate designated uses on unclassified surface waters on Los Alamos National Laboratory property in New Mexico.

Enhanced Watershed Management Plan (EWMP) for Ballona Creek, Department of Public Works, Bureau of Sanitation, City of Los Angeles, CA. Worked with the Ballona Creek Watershed Management Group to develop an EWMP to fulfill the MS4 Permit requirements established for the Ballona Creek watershed within the Los Angeles County MS4 Permit area. The EWMP identified and evaluated a regional BMP implementation approach to fulfill stormwater capture requirements for the watershed including an implementation strategy.

401 Certification Application for the Moffat Water Supply Project, Denver Water, Front Range Area, CO. Worked with a team of modelers and water quality specialists to prepare elements of Denver Water's 401 Certification application for its Moffat Water Supply Project. Effort included evaluations of potential impacts from the proposed project on instream temperatures and aquatic community, especially in South Boulder Creek. Worked with the project team and Division to address public comments on the 401 Certification application. The 401 Certification of the 404 Permit for this project was approved in 2016.

Site-Specific Temperature Standards, City of Boulder, CO. Provided technical and regulatory support services for development of alternatives to address the potential exceedance of temperature standards through the State's water quality standards process. Support included: (a) Evaluation of the frequency of exceedances of temperatures standards to determine if eligible for allowable regulatory exceptions associated with unusually warm air temperature or low flow conditions; (b) Analysis of receiving water fish community data to identify potential impacts to the fish community from temperature of City's effluent discharge; (c) Evaluation of regulatory options for development of a site-specific temperature standard to apply during the "shoulder reason" when the summer temperature standards abruptly transition to the winter temperature standards.

McKinley Mine Impoundment Water Quality Assessment, Chevron, McKinley Mine near Gallup, NM. Directed the characterization and assessment of ponds at a decommissioned surface coal mining operation in northwestern New Mexico. Oversaw development of the study design and provided review of a sampling plan and QAPP in compliance with Navajo Nation EPA and USEPA quality assurance criteria. Provided regulatory support, including interpretation of Navajo Nation water quality standards as applicable to the project, and worked closely with a wide range of stakeholders from State, Federal, and Tribal agencies.

Habitat Improvement Alternatives for Aquatic Life in South Platte River Segment 15, Metro Wastewater Reclamation District (Metro), CO. To fulfill regulatory requirements, worked with Metro to develop recommended alternatives for the improvement of habitat in Segment 15 of the South Platte River that could benefit aquatic life, especially fish communities. Project included evaluation of biological communities, collection of habitat data, evaluation of water quality and habitat limiting factors, and hydrologic analyses to develop estimates of future instream flows so that changes in the flow regime that would come with regional development could be factored into the selection of recommended habitat improvement alternatives. A number of the highest habitat improvement alternatives identified by the study were subsequently constructed.

Arid West Water Quality Research Project (AWWQRP), Pima County Wastewater Reclamation, AZ. Provided long-term technical support and direction for water quality research projects implemented under the

EPA-funded AWWQRP in Arizona. The purpose of the AWWQRP was to evaluate the appropriateness of federal water quality standards and criteria on effluent dependent and ephemeral waters in the arid west. Project completed more than ten technical studies addressing a variety of water quality standards issues. Final product was the preparation of the *Arid West Water Quality Research Project User's Guide* that summarized findings of all funded research projects and discussed the results in the context of water quality standards regulatory requirements.

Habitat Characterization of Effluent Dependent Waters, Western U.S, AWWQRP, AZ. Supported this AWWQRP-funded project dedicated to characterizing physical, chemical and biological characteristics of effluent dependent waters in the arid west. Supported preparation of final report documenting technical, regulatory and economic issues identified from development of case studies on ten effluent dependent waters. Analysis included evaluation biological communities, habitat quality and water quality characteristics.

Arsenic Water Quality Standards, City of Boulder, CO. Assisted the City with an evaluation of options for the development of a region- or site-specific arsenic water quality standards to protect beneficial uses in Boulder Creek. The project included developing technical information regarding how arsenic water quality standards are developed to protect human health uses, providing regulatory recommendations for modifying water quality standards, and participating in meetings with regulators to discuss alternatives for modifying standards.

Development of Water Quality Standards, Gila River Indian Community, AZ. Developed final draft surface water quality standards for the Gila River Indian Community Department of Environmental Quality in Arizona. The project included the development of standards for waters protected under the Clean Water Act, preparation of UAAs to justify omission of fishable/swimmable uses on ephemeral waters, and preparation of a technical white paper to present policy issues for further discussion by the Tribe and EPA. In addition, Dr. Meyerhoff taught a one-day workshop to tribal staff to provide guidance regarding how water quality standards are developed and implemented.

Development of Water Quality Standards, Salt River Pima-Maricopa Indian Community, AZ. Developed draft surface water quality standards for consideration by the Salt River Pima-Maricopa Indian Community in south central Arizona. The project included the development of standards for waters protected under the Clean Water Act and preparation of documentation to support technical/policy discussions with community members.

Net Ecological Benefit Analysis, Los Angeles County Sanitation District, CA. For the Lancaster Water Reclamation Facility, prepared a net ecological benefit analysis, which is a form of UAA, for discharges to Amargosa Creek, Piute Ponds and Rosamond Dry Lake. Analysis, which demonstrated that the discharge of effluent has provided important beneficial wetland habitat in an arid region of southern California included evaluations of surface water and groundwater quality data and aquatic and terrestrial species data. The resulting net ecological benefit analysis UAA was used to support adoption of revised use classifications and site-site specific water quality criteria to protect aquatic life.

Site-Specific Copper Water Quality Standard Development, City Flagstaff, Rio de Flag, AZ. Provided support to the City of Flagstaff to develop a site-specific copper standard for Rio de Flag, Arizona, the surface water receiving effluent discharged from the city's wastewater treatment facilities. The approach included evaluation of instream impacts through use of sediment and tissue analyses, and development of a water effect ratio. The project resulted in state adoption of a site-specific copper standard.

Exhibit 10

Robert M. Gallegos

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EDUCATION

- BS 1982 New Mexico State University – Biology
- MS 1984 New Mexico State University – Biology

PROFESSIONAL EXPERIENCE

Environmental Professional – Assigned to Environmental Protection and Compliance – Water Quality Team, Los Alamos National Laboratory, 2011 – Present

- Served as program lead for dredge and fill permitting (CWA Section 404) activities at LANL.
- Assisted program lead in development and execution of NM Water Quality Standards 20.6.4 NMAC at LANL
- Conducted stream temperature study for the perennial reach of Upper Sandia Canyon.
- Prepared Use Attainability Analysis (UAA) work plan for review of Upper Sandia Canyon coldwater aquatic life use. Final UAA pending.
- Developed Category 4B Document (Regulatory Alternative to TMDLs) for Sandia Canyon Assessment Units.
- Assisted in preparation of NM0028355 NPDES – LANL Industrial Outfall Permit application.
- Prepared Discharge Monitoring Reports (DMRs) pursuant to NM0028355 NPDES permit requirements.
- Provide assistance and support to the Laboratory to implement and integrate environmental compliance programs in support of the Laboratory's mission and to strive for zero permit exceedances and reduce effluent discharges to the environment through the Outfall Reduction Program.
- Prepared required application and materials for Registration of SWWS Compost Facility under 20.9.3 NMAC. Prepare annual report to NMED of compost operations.
- Prepare compliance reports for Army Corp of Engineers, NMED, EPA and regulatory agencies as required.
- Conducted Hydrology Protocol assessments across all LANL Watershed to fulfill requirements of Joint Stipulated Agreement between, DOE, NMED and Amigos Bravos.
- Prepared comments to NMED draft documents and reports including: Hydrology Protocol, Integrated Report, WQMP-CPP and Comprehensive Assessment and Listing Methodology.
- Received instruction at the USFWS National Conservation Training Center in Macroinvertebrate Ecology and Identification and Freshwater Biomonitoring using Benthic Macroinvertebrates.

Instruction on Water Permits and Regulations, *Adjunct Faculty – Santa Fe Community College, 2010 – 2012*

Environmental Compliance Specialist, *City of Santa Fe Public Utility Department, 2003-2010*

- Prepared state and federal applications and notices of intent (NOI) for permit coverage determinations under NPDES and New Mexico Environment Department Ground Water Discharges - 20.6.2 NMAC.
- Prepared Storm Water Pollution Prevention Plans and NOIs for coverage under the Multi-Sector General Permit and Municipal Separate Storm Sewers System General Permit (MS4).
- Provided environmental oversight of purge water discharges for 15 outfalls into ephemeral water courses under NPDES NM0030465. Collected discharge samples, initiated, observed and recorded flows and prepared discharge monitoring reports for submission to EPA and NMED.
- Prepared NPDES individual permit application for City's Waste Water Treatment Plant - NM0022292. Responded to notices of violation from EPA on limitation exceedances and monitoring violations.
- Prepared and submitted NOIs for the Buckman Well and Booster gas engines to the NMEDs Air Quality Bureau for permit requirement determination under 20.2.7 NMAC.
- Assisted in the preparation of the Santa Fe's Solid Waste Management Authority's application for a permit modification for sludge disposal. Developed and presented testimony on the application at NMEDs Public Hearing on the permit modification.
- Performed an internal investigation and responded to a Notice of Violation from the NMED's Hazardous Waste Bureau for suspected improper disposal of hazardous waste.
- Participated in developing comments and technical testimony for the Buckman Direct Diversion Board during the 2009 Triennial Review before the WQCC.
- Developed and presented technical testimony to the Water Quality Control Commission in a hearing concerning the proposed uranium criteria.
- Conducted studies and prepared compliance reports for the Canyon Road WTP concerning Cryptosporidium, Disinfection By-Products and Filter Backwash
- Prepared a Vulnerability Assessment and Emergency Response Plan for the Water Utility as required by the *Public Health Security and Bioterrorism Response Act of 2002*.
- Monitor and comment on changes to federal and state environmental mandates.
- Assist City facilities with record keeping and management of hazardous waste.
- Evaluated the practice of fluoride addition and evaluated data against public health recommendations.
- Prepared and received approval from NMED Solid Waste Bureau for the sludge Disposal Management Plan.
- Assisted in developing a sampling plan for the long-term monitoring of LANL legacy contaminants in the Los Alamos/Pueblo Watershed.
- Prepared annual Water Quality Report for the City customers detailing the previous year's drinking water quality and compliance related activities.

Water Resource Specialist, Environmental Scientist, Program Manager, Bureau Chief, NMED's Drinking Water Bureau, 1985 – 2003

Responsible for the administration and implementation of the federal Safe Drinking Water Act (SDWA), and the New Mexico Drinking Water Regulations in the State of New Mexico – 20.7.10 NMAC

- Supervised up to 45 employees located in 6 regional offices throughout the State to ensure provisions of federal and state law were carried out.
- Prepared and administered the federal Public Water Supply Supervision Grant and corresponding work plan; the federal Drinking Water State Revolving Loan Fund Grant and the corresponding Intended Use Plan and work plans totaling \$7,000,000.
- Prepared regulatory rule packages for hearing and adoption before the NM Environmental Improvement Board.
- Provided technical testimony before the NM Environmental Improvement Board and the NM Legislature on safe drinking water issues.
- Assisted in the creation and implementation of the Water Conservation Fee Act. Passage of the Act ensured key provisions of the law were carried out with regards to vulnerability assessments, operating training, sampling and analytical work.
- Participated with the New Mexico Finance Authority in the creation and implementation of the Safe Drinking Water Act Revolving Loan Program.
- Assisted in the creation and received USEPA approval for the Vulnerability and Source Water Protection Programs and Wellhead Protection Program.
- Served as the Drinking Water Program's Laboratory Certification Officer to ensure laboratories were providing accurate testing of drinking water.
- Conducted compliance inspections of ground and surface water systems serving populations ranging from 25 to 60,000 to determine condition of infrastructure and safety of the drinking water supply. Tracked deficiencies and issued corrective action reports.
- Performed source water assessments to determine public water supply system susceptibility to contamination and assisted communities in protecting water sources
- Prepared enforcement letters and quarterly report documents to satisfy federal and state reporting requirements.
- Collected and reviewed water quality information on the occurrence of total coliforms, viruses, volatile chemicals, radionuclides, metals, inorganic chemicals and bacteria in drinking water.

Laboratory Scientist, New Mexico Health Department Scientific Laboratory Division, 1984 -1985

- Conducted biological laboratory tests on human and environmental samples.

ORGANIZATIONS

- Northern New Mexico Citizens Advisory Board – Former Vice Chair
- New Mexico Water and Waste Water Association – Former Member
- NM Municipal League Environmental Quality Association – Former Board Member and Past President
- Association of State Drinking Water Administrators – Former Board Member