

1 MEMORANDUM OF UNDERSTANDING BETWEEN THE U.S. DEPARTMENT  
2 OF ENERGY AND THE BUCKMAN DIRECT DIVERSION BOARD  
3 REGARDING WATER QUALITY MONITORING  
4  
5

6 **A. PURPOSE**  
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8 To establish roles and responsibilities with regard to coordination of monitoring activities by Los  
9 Alamos National Laboratory ('LANL') and the Department of Energy ('DOE') in Los Alamos Canyon,  
10 Pueblo Canyon, and the Rio Grande in relation to operation of the Buckman Direct Diversion  
11 Project ('BDD Project').  
12

13 **B. PARTIES**  
14

15 The parties to this Memorandum are the Buckman Direct Diversion Board ('BDD Board') and the  
16 U.S. Department of Energy ('DOE').  
17

18 **C. AUTHORITIES**  
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- 20 1. Both parties represent that they have the authority to enter into this Memorandum and are able  
21 to meet the respective commitments herein to the extent permitted by law.  
22
- 23 2. Department of Energy. The U.S. Department of Energy is authorized to enter into this  
24 Memorandum pursuant to the Atomic Energy Act, as amended (Title 42 U.S.C. 2011, et seq.).  
25
- 26 3. BDD Board. The BDD Board is authorized to enter into this Memorandum pursuant to the  
27 March 7, 2005, Joint Powers Agreement between Santa Fe County and the City of Santa Fe and  
28 associated state, county and municipal laws related thereto.  
29

30 **D. BACKGROUND**  
31

32 1. The BDD Project is designed to divert water from the Rio Grande for use by the City and County  
33 of Santa Fe water utilities in the Santa Fe area and will provide a source for the water supply  
34 systems of Santa Fe County, the City of Santa Fe and Las Campanas, LLP ('BDD Project  
35 partners'). The water to be diverted is comprised of San Juan-Chama Project water (a U.S.  
36 Bureau of Reclamation interbasin water transfer project) and native New Mexico state waters  
37 regulated by the State of New Mexico.

38 2. The planned point of diversion for the BDD Project is located on the east bank of the Rio  
39 Grande in northern New Mexico, near the historic Buckman townsite. The point of diversion is  
40 approximately 15 miles northwest of the City of Santa Fe and is located about three miles  
41 downstream from the confluence of the Rio Grande and Los Alamos Canyon (where Route 502  
42 crosses the Rio Grande at the Otowi Bridge).

43 3. LANL is located on the Pajarito Plateau above the Los Alamos/Pueblo Canyon (LA/P Canyon)  
44 system. The LA/P Canyon system intermittently and infrequently flows to the Rio Grande just  
45 below the Otowi Bridge and upstream of the BDD Project planned point of diversion. The LA/P

1 watershed contains sediments with LANL-origin contamination from historic releases from LANL.  
2 These sediments could transport to the Rio Grande during infrequent intermittent flows. The LA/P  
3 Canyon watershed has been investigated under the Compliance Order on Consent with the New  
4 Mexico Environment Department, and measures (including infrastructure) to reduce the transport  
5 of contaminated sediments have been implemented.

6 4. The New Mexico legislature encouraged the BDD Board and DOE to memorialize their  
7 agreement to certain activities relating to the mitigation and monitoring of LANL origin water quality  
8 contaminants. The New Mexico legislature passed resolutions in 2009 and 2010, and this  
9 Memorandum will address the issues contained in those memorials.

10 5. In 2007, the BDD Board requested a written agreement with LANL and DOE, and this  
11 Memorandum represents a resolution of the surface water issues requested by the BDD Board.  
12 This Memorandum represents an agreement between the parties that water quality management  
13 and monitoring are mutual priorities and the activities described in this Memorandum are consistent  
14 with, and will be carried out subject to, the policies, regulations, and applicable laws that pertain to  
15 the parties.

16 6. This Memorandum describes sampling and reporting activities relating to LANL-origin water  
17 quality contaminants that will be performed in support of the BDD Project and the diversion of  
18 drinking water from the Rio Grande.

19 7. The Agreement Principles outlined in this Memorandum will be utilized by the public and the  
20 BDD Board to inform the operation of the BDD Project, and will provide information that will guide  
21 the future water quality policies and priorities of the parties.

## 22 **E. AGREEMENT PRINCIPLES**

### 23 **1. LA/P Canyon Early Notification Gaging System**

24 Purpose: The purpose of the early notification system is to provide real time streamflow data to the  
25 BDD Project at the following locations:

- 26 • Station E060 in Pueblo Canyon above the Los Alamos Canyon confluence,
- 27 • Station E050 in Los Alamos Canyon above the Pueblo Canyon confluence, and
- 28 • Station E110 in lower Los Alamos Canyon above its confluence with the Rio Grande.

29 Real-time stream flow data from these stations will enable the BDD Project to make decisions  
30 regarding facility operations, including temporarily ceasing diversion of water from the Rio Grande.

31 Description: The components of the early notification system include three stations each equipped  
32 with gaging (flow measurement) capabilities, real-time conveyance of stream-flow data, and  
33 automated stormwater samplers. Station E110 will also be equipped with camera capabilities or  
34 some other means of confirming real-time flow events, as permitted by the Pueblo of San Ildefonso.  
35 The early notification system also includes DOE transmittal to the BDD Project any rain gage data  
36 that DOE and/or LANL have available for DOE property in the Los Alamos Canyon watershed, as

1 soon as practical. The BDD Project will provide DOE a list of recipients to receive this notification  
2 electronically.

3 System Design/Performance Standards: Flow measurements at the gaging stations shall be  
4 measured within a trapezoidal supercritical-flow flume design as reported in "Techniques of Water-  
5 resources Investigations of the United States Geological Survey, Chapter A14, Use of Flumes in  
6 Measuring Discharge" (F.A. Kilpatrick and V.R. Snyder, 1983). This flume is designed to  
7 accurately measure stream flows between approximately 1 and 350 cubic feet per second (cfs).  
8 The system shall be capable of a low flow trigger stage of 5 cfs (and will be capable of being  
9 programmed later to a different trigger level, as agreed to by BDD and DOE in the Biannual Review  
10 Process described below). The amount of time from when a station triggers to when the notification  
11 is available to the BDD Project will be as quickly as is practical (see Appendix A for specifications).

12 Telemetry Performance Standard: See Appendix A.

13 Maintenance, Inspection, Repair and Replacement: DOE shall maintain the early notification  
14 system as necessary to support the purpose and performance standards described above. The  
15 gaging stations shall be inspected once per month and after each flow event throughout the year.  
16 Maintenance activities will be performed in accordance with LANL standard operating procedures  
17 listed in Appendix A, and includes: ensuring data logger is powered up and operational, manual  
18 data retrieval is functioning, load testing of battery and replacement of battery if needed, removing  
19 snow from solar panel in winter months if needed, removing debris from stream channel if needed,  
20 performing discharge measurement direct or indirect or ice measurement if required, checking  
21 datum and reference point levels when required. In the event that any station is not functioning,  
22 DOE shall immediately notify the BDD Project and repair the station so the time period of  
23 inoperability shall be as short as possible. The inspections and repair schedule will be contingent  
24 on safe working conditions. If the period of inoperability has exceeded or is expected to exceed 72  
25 hours for flow measurement equipment, or exceeded or will exceed 48 hours for telemetry  
26 equipment, DOE will communicate as quickly as practical via e-mail a written description of the  
27 station's inoperability to the BDD Project, including a description of the activities and the schedule  
28 necessary to restore operability based on best estimate of availability of equipment and personnel.  
29 DOE is responsible for all equipment necessary to measure and transmit the flow information, and  
30 the BDD Board is responsible for all equipment necessary to receive the flow information.

## 31 **2. LA/P Canyon Storm Water Quality Sampling System**

32 Purpose: To provide water-quality contaminant sampling data from flow events at the stations  
33 described above in order to characterize contaminants in LA/P Canyon flows.

34 Description: The components of the event sampling system include three stations each equipped  
35 with automated samplers that will be triggered by the occurrence of runoff at these stations as  
36 described below. DOE will fund all sampling activities for this water quality system.

37 System Design/Performance Standards: The samplers shall be capable of collecting samples from  
38 flows greater than 5 cfs. The analyte list for the samplers is contained in Appendix A of this  
39 Memorandum and is generally consistent with, but contains negotiated changes to, the NMED-  
40 approved Los Alamos and Pueblo Canyons Sediment Transport Monitoring Plan for storm-water

1 monitoring in LA/P Canyon. Consistent with the NMED approved workplan, sampling will be  
2 conducted from June to October of each year at each of the three gages. The parties will review  
3 the available data, the analyte list and the sampling protocols (e.g. trigger stage, sample collection  
4 process, etc.) during the Biannual Review process and can consider changes in accordance with  
5 the Memorandum amendment provision and Biannual Review process described below. DOE will  
6 notify BDD of any changes to the NMED-approved workplan. The collection and processing of  
7 samples will be conducted in accordance with LANL standard operating procedures (SOPs) listed  
8 in Appendix A.. The analytical methods are established by contract with DOE's analytical service  
9 providers and will follow EPA guidelines and methods.

10 Maintenance, Inspection, Repair and Replacement: DOE shall maintain the event sampling  
11 system as necessary to support the purpose and performance standards described above. The  
12 samplers shall be inspected no less than weekly from June to October of each year, and after each  
13 flow event and/or 72 hours between flow events to collect samples. General maintenance will be  
14 performed in accordance with LANL SOPs listed in Appendix A, and will include ensuring sampler  
15 is powered up and operational, load testing of battery and replacement of battery, inspection of  
16 sampler pump tubing, line, and intake to ensure no air leaks, cracks or plugs, and test sample  
17 collection cycle to ensure correct programming, tripping and volumes are correct. In the event that  
18 any station is not functioning, DOE shall immediately notify the BDD project and repair the station  
19 so the time period of inoperability shall be as short as possible. The inspections and repair  
20 schedule will be contingent on safe working conditions. If the period of sampler inoperability has  
21 exceeded or is expect to exceed 48 hours, DOE will communicate as quickly as practical via email  
22 a written description of the station's inoperability to the BDD Project, including a description of the  
23 activities and the schedule necessary to restore operability based on a best estimate of availability  
24 of equipment and personnel.

### 25 **3. Rio Grande at BDD Project location Sampling Program**

26 Purpose: To provide event-based sampling of change in stage in the Rio Grande or when triggered  
27 by notification of flows in Los Alamos Canyon at the E110 Gaging Station.

28 Description: The components of the sampling system include a dedicated sampling station  
29 equipped with an automated sampler that can be triggered on a regular schedule, and that can  
30 also be triggered by notification of Los Alamos Canyon flows at the E110 Gaging Station. DOE will  
31 fund the installation of a sampler as described in Appendix A which will be capable of sampling  
32 E110 gage triggered events, stage actuated events and other sampling schedules. Irrespective of  
33 the procurement process used to acquire and install the sampler (see Appendix A), the BDD Board  
34 shall take title to the sampling system at no cost, and shall thereby own and operate the sampling  
35 system. DOE will fund up to 30 sampling events in the 5 year term of this Memorandum, as  
36 determined by the BDD Board, and for those analytes described in Appendix A.

37 System Design/Performance Standards: The analyte list for this location is contained in Appendix  
38 A of this Memorandum. The parties will review the analyte list and sampling protocol during the  
39 Biannual Review process and will make changes in accordance with the Memorandum amendment  
40 provision and Biannual Review process described below. The parties will exchange information  
41 and seek to keep the Appendix A analyte list generally consistent with, but containing negotiated  
42 changes to, the NMED sampling programs on the Rio Grande, however such changes will require

1 the consent of both parties. The BDD Board will be responsible for the collection of samples in  
2 accordance with standard operating procedures to be developed with DOE and NMED.

3 Maintenance, Inspection, Repair and Replacement: DOE will fund the maintenance, inspection,  
4 repair and replacement of the sampler as described in Appendix A. The BDD Board shall own and  
5 operate the sampling system, and thereby be responsible for the maintenance, inspection, repair  
6 and replacement of the system and its components.

#### 7 **4. Rio Grande Contaminant Fate Analysis**

8 DOE will fund for a one year period the analytes listed in Appendix A for: 1. the raw Rio Grande  
9 water at the BDD Project location, 2. the sediment return line of the BDD Project and, 3. the  
10 finished water produced by the BDD Project Water Treatment Plant. These samples will be  
11 monthly composites of flow weighted daily sampling. The BDD Board will be responsible for the  
12 collection of samples in accordance with standard operating procedures to be developed with DOE  
13 and NMED.

#### 14 **5. Data Sharing**

15 DOE shall be responsible for all costs associated with sampling analyses described in this  
16 Memorandum.

17 Analytical results of E050 and E060 sampling will be made available to the BDD Project via the  
18 RACER database (the Risk Analysis, Communication, Evaluation, and Reduction project is  
19 managed by the NM Community Foundation) within 30-60 calendar days after DOE receives  
20 sampling results from the analytical laboratory. Analytical results for E110 sampling will be made  
21 available as soon as practicable within the constraints of the agreement between DOE and Pueblo  
22 de San Ildefonso governing the collection and reporting of such data. Paper copies of the data will  
23 also be transmitted to the BDD Project within 90 days after DOE receives sampling results and  
24 validation from the analytical laboratory.

25 Analytical results of Rio Grande at BDD Project location and Rio Grande Contaminant Fate  
26 sampling programs will be provided directly to the BDD Project and DOE as soon as they are  
27 available.

#### 28 **6. Coordination**

29 DOE and the BDD Project Manager will coordinate with Pueblo de San Ildefonso and the New  
30 Mexico Environment Department on any issues related to the implementation of this Memorandum,  
31 and will engage in any consultation required to accomplish the purposes of this Memorandum.

#### 32 **7. BDD Project Rio Grande Diversion Records**

33 The BDD Project will make records available to the DOE when diversions have ceased, and this  
34 information shall be used in the Biannual Review process to identify changes to Appendix A,  
35 however such changes will require the consent of both parties.

#### 36 **8. Biannual Review**

1  
2 The BDD Project Manager and DOE staff shall meet twice annually to review the functioning of the  
3 early notification system and sampling programs, in March and September of each year. During  
4 this Biannual Review process, changes can be made only to Appendix A (with a presumption that  
5 such changes will be consistent with changes to the NMED approved sampling plan for LA/P  
6 Canyons), provided however that such changes will require the consent of both parties. The  
7 parties shall endeavor to keep the sampling conducted pursuant to this Memorandum consistent  
8 with changes to NMED sampling programs, subject to the provisions that govern changes to  
9 Appendix of this Memorandum. The Los Alamos Site Office Environmental Program Manager and  
10 BDD Project Manager are authorized to make such changes, provided a written Appendix A  
11 amendment is approved and executed by the authorized representatives of the parties. Any  
12 changes to this Memorandum outside of the scope of Appendix A must be made through an  
13 amendment to this Memorandum as described below and executed in the same manner as this  
14 Memorandum.

## 15 **F. Contacts**

16 All notices, correspondence and communication arising under this Memorandum shall be provided  
17 to the representatives listed below, and any notice, demand, request, or information authorized or  
18 related to this Memorandum shall be deemed to have been given if mailed (return receipt  
19 requested), hand delivered or faxed (with confirmation of transmittal) as follows:  
20

### 21 **DOE**

22 Los Alamos Site Office  
23 George Rael  
24 Manager  
25 Environmental Projects Office  
26 Los Alamos Site Office/NNSA/DOE  
27 phone: 505-606-0397  
28 cell: 505-690-0734  
29 [grael@doeal.gov](mailto:grael@doeal.gov)  
30

### 31 **with a copy to:**

32 DOE Counsel  
33 Silas DeRoma  
34 phone: 505-667-4668  
35 email: [sderoma@doeal.gov](mailto:sderoma@doeal.gov)  
36

### 37 **BDD Board**

38 BDD Project Manager  
39 Rick Carpenter  
40 Sangre de Cristo Water Division, City of Santa Fe  
41 801 San Mateo Road  
42 Santa Fe, NM 87505  
43 cell: 505-660-5696  
44 email: [rrcarpenter@santafenm.gov](mailto:rrcarpenter@santafenm.gov)  
45

1  
2 **with a copy to:**

3 BDD Board Counsel  
4 Nancy Long  
5 Long, Pound and Komer  
6 2200 Brothers Road  
7 PO Box 5098  
8 Santa Fe NM 87502  
9 cell: 505-470-2158  
10 email: nlong@nm.net  
11

12 **G. Period of Agreement, Modification, or Termination**

13 1. This memorandum is effective upon the signature of the BDD Board and DOE as shown below.  
14 This agreement shall expire five years from the date of the last signature, or may be terminated  
15 earlier as described below.

16 2. The BDD Board and DOE may modify this Memorandum by written amendment and in the  
17 same manner as this Memorandum was executed. This Memorandum may not be amended or  
18 superceded by other formal agreements without the consent of the parties.

19 3. The BDD Board and DOE may terminate this Memorandum by mutual written consent, and a  
20 party's intent to seek termination shall be provided to the representatives listed with 90 days notice.

21 4. If this Memorandum has not been terminated before the date of expiration and the parties agree,  
22 this Memorandum shall continue without interruption in full force and effect until amended,  
23 superceded or terminated by the parties.

24 **H. Other Provisions**

25  
26 1. Nothing in this Memorandum is intended to conflict with current requirements of the parties or  
27 applicable laws. Any such conflicting term shall be invalid, but the remainder of the Memorandum  
28 shall remain in effect. If a term is deemed invalid, the parties shall immediately review the  
29 Memorandum and take appropriate action, including amendment or termination of the  
30 Memorandum. The activities described in this Memorandum are consistent with, and will be  
31 carried out subject to, all known policies, regulations, and applicable laws that pertain to the parties.  
32

33 2. If the parties disagree over how to interpret this Memorandum, representatives of the parties  
34 shall notify and present their differences to each other in writing in order to reconcile the dispute. If  
35 the parties fail to resolve their differences within 30 days, the BDD Project Manager and Los  
36 Alamos Site Office Environmental Projects Office Manager shall prepare a written description of  
37 the dispute and the BDD Board Chair and DOE Environmental Programs Manager shall meet to  
38 reconcile the dispute. These representatives shall use efforts such as negotiation, facilitation and  
39 mediation to resolve the dispute.  
40

41 3. This Memorandum in no way restricts the parties from participating in any activity with other  
42 public or private agencies, organizations, or individuals.

1  
2 4. Activities described in this Memorandum are subject to the availability of appropriated funds.  
3 The BDD Board and Los Alamos Site Environmental Projects Office Manager shall make the  
4 appropriation of funds for the activities described in this Memorandum a priority when seeking  
5 regular or project specific funding requests.  
6

7 5. This Memorandum describes the basis on which the parties will cooperate on the topics  
8 described herein. This Memorandum is not a financial obligation that serves as a basis for  
9 expenditures, and any financial obligations necessary to carry out the activities described herein  
10 shall be addressed in other documents internal to each party. Expenditures of funds, human  
11 resources, equipment, supplies, facilities, training, public information, and technical expertise will  
12 be provided by each party as necessary to fulfill its obligation under this Memorandum.  
13

14 6. This Memorandum is neither a fiscal nor a funds obligation document. Nothing in this  
15 Memorandum authorizes or is intended to obligate the parties to expend, exchange, or reimburse  
16 funds, services, or supplies, or transfer or receive anything of value. Any requirement for the  
17 payment or obligation of funds by DOE established by the terms of this Memorandum shall be  
18 subject to the availability of funds and Secretarial discretion, and no provision herein shall be  
19 interpreted to require obligation or payment of funds in violation of the Antideficiency Act, 31 U.S.C.  
20 §1341.  
21

22 7. This Memorandum is not legally enforceable and shall not be construed to create any legal  
23 obligation on the part of either party. This Memorandum shall not be construed to provide a private  
24 right, or cause of action, for or by any person or entity.  
25

26 NOW, in witness whereof, each of the BDD Board and DOE has caused this Memorandum to be  
27 executed and delivered by its duly authorized representatives as of the last date shown below,  
28  
29

30 BDD Board  
31  
32

33 \_\_\_\_\_  
34 Rebecca Wurzbarger, BDD Board Chair, DATE  
35  
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38 DOE  
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42 \_\_\_\_\_  
Dr. Ines Triay, Assistant Secretary for Environmental Management, Department of Energy, DATE