



## **AGENDA**

### **The City of Santa Fe And Santa Fe County**

#### **Buckman Direct Diversion Board Meeting**

**THURSDAY, SEPTEMBER 5, 2019**

**4:00 PM**

**CITY HALL**

**CITY COUNCIL CHAMBERS**

**200 LINCOLN**

1. CALL TO ORDER
2. ROLL CALL
3. APPROVAL OF AGENDA
4. APPROVAL OF CONSENT AGENDA
5. APPROVAL OF MINUTES FROM THE JULY 11, 2019 BUCKMAN DIRECT DIVERSION BOARD MEETING
6. REPORT ON SEPTEMBER 3, 2019 FISCAL SERVICES AUDIT COMMITTEE (FSAC)

#### **INFORMATIONAL ITEMS**

7. Monthly Update on BDD operations. (Randy Sugrue, BDD Operations Superintendent, [rsugrue@santafenm.gov](mailto:rsugrue@santafenm.gov), 955-4501)
8. Report from the BDD Facilities Manager. (Rick Carpenter, Interim BDD Facility Manager, [rrcarpenter@santafenm.gov](mailto:rrcarpenter@santafenm.gov), 955-4206) **VERBAL**
9. LANL Presentation on NPDES permit re-application for Los Alamos National Laboratory discharges, NPDES permit No. NM0028355. (Alex Puglisi, Environmental Compliance Specialist, [aapuglisi@santafenm.gov](mailto:aapuglisi@santafenm.gov), 955-4232, and Mike Saladen and Jennifer Griffin, LANL) **VERBAL**

10. Presentation on Los Alamos National Laboratory Clean Up Efforts. (Doug Hintze, NNSA, Rick Carpenter, Interim BDD Facility Manager, [rccarpenter@santafenm.gov](mailto:rccarpenter@santafenm.gov), 505-955-4206, Kyle Harwood, BDD Legal Counsel, [kyle@egolfaw.com](mailto:kyle@egolfaw.com), 505-986-9641) VERBAL

### **CONSENT AGENDA**

11. Request for approval to enter into a Joint Funding Agreement with the US Geological Survey in the amount of \$61,752 for operation and maintenance of the stream-gaging station and installation of a sediment gage. (Mackie Romero, Financial Manager, [mmromero@santafenm.gov](mailto:mmromero@santafenm.gov), 955-4506)
12. Request for approval to reauthorize unexpended funds approved by the BDDB from the BDD Major Repair and Replacement Fund. (Mackie Romero, Financial Manager, [mmromero@santafenm.gov](mailto:mmromero@santafenm.gov), 955-4506)
  - a) Budget Amendment Resolution \$576,171.47
13. Request for approval to pay American Alternative Insurance Corporation an additional premium of \$1,644 for auto coverage of two new vehicles purchase by the BDDB. (Mackie Romero, Financial Manager, [mmromero@santafenm.gov](mailto:mmromero@santafenm.gov), 955-4506)
14. Request for approval of Amendment No. 5 to increase compensation with Excel Staffing Companies, LLC in the amount of \$16,000 inclusive of NMGR to provide a General Clerk III to perform administrative duties. (Mackie Romero, Financial Manager, [mmromero@santafenm.gov](mailto:mmromero@santafenm.gov), 955-4506)

### **DISCUSSION AND ACTION**

15. Request for approval of Amendment No. 2 to the original Professional Services Agreement, Item 18-1048 with ALS Group USA, Corp to increase compensation by \$75,500 inclusive of NMGR, for additional laboratory analysis services. (Mackie Romero, Financial Manager, [mmromero@santafenm.gov](mailto:mmromero@santafenm.gov), 955-4506)
  - a) Budget Amendment Resolution to move \$75,500 from solids to other Operating Costs to cover the increased compensation.
16. Presentation and Possible Action on Source Water Protection Plan (SWPP) Public Outreach options (Kyle Harwood, BDD Legal Counsel, [kyle@egolfaw.com](mailto:kyle@egolfaw.com), 505-986-9641)

### **MATTERS FROM THE PUBLIC**

### **MATTERS FROM THE BOARD**

**NEXT REGULAR MEETING: Thursday, October 3, 2019 at 4:00pm**

### **ADJOURN**



### **EXECUTIVE SESSION**

In accordance with the New Mexico Open Meetings Act NMSA 1978, §10-15-1(H)(7), discussion regarding pending litigation in which the BDDDB is a participant, including, without limitation, *Buckman Direct Diversion Board v. CDM Smith, et al.*, First Judicial District Court Case No. D-101-CV-2018-01610. (Nancy Long, BDD Legal Counsel, [nancy@longkomer.com](mailto:nancy@longkomer.com), 982-8405)

**END OF EXECUTIVE SESSION**

**PERSONS WITH DISABILITIES IN NEED OF ACCOMODATIONS, CONTACT THE CITY CLERK'S OFFICE AT 505-955-6520, FIVE (5) WORKING DAYS PRIOR TO THE MEETING DATE**

**RECEIVED AT THE CITY CLERK'S OFFICE**

**DATE: 8/28/19**

**TIME: 9:17 AM**

**MINUTES OF THE**  
**THE CITY OF SANTA FE & SANTA FE COUNTY**  
**BUCKMAN DIRECT DIVERSION BOARD MEETING**

**September 5, 2019**

This meeting of the Santa Fe County/City Buckman Direct Diversion Board meeting was called to order by Anna Hamilton, Chair, at approximately 4:00 p.m. in the Santa Fe City Council Chambers, 200 Lincoln Avenue, Santa Fe, New Mexico.

Roll was called and the following members were present:

**BDD Board Members Present:**

Commissioner Anna Hamilton, Chair  
Councilor Peter Ives  
Commissioner Anna Hansen  
Councilor Michael Harris  
Citizen Member Denise Fort  
Mr. Tom Egelhoff [non-voting]

**Member(s) Excused:**

None

**BDD Board Alternate Members Present:**

Mr. J.C. Helms [Citizen Alternate]  
Ginny Selvin [Las Campanas Alternate]

**Others Present:**

Rick Carpenter, Acting BDD Facilities Manager  
Nancy Long, BDD Board Consulting Attorney  
Mackie Romero, BDD Finance Manager  
Randy Sugrue, BDD Operations Superintendent  
Bernardine Padilla, BDD Public Relations Coordinator  
Sara Smith, Santa Fe County  
Kyle Harwood, BDD Counsel  
Brian Armstrong, BDD  
Alex Puglisi, City of Santa Fe Public Utilities  
Mike Saladen, LANL  
Jennifer Griffin, LANL  
Doug Hintze, DOE-EM LANL  
Steve Horak, DOE-EM LANL  
Charles de Saillan, NM Environmental Law Center  
Joni Arends, CCNS

SEC CLERK RECORDED 11/20/2019

Tom Stockton, Neptune  
Paul Black, Neptune  
Mike Kelley, Santa Fe County  
David Trujillo, Citizen

**3. APPROVAL OF AGENDA**  
[Exhibit 1: Agenda]

There were no changes offered.

Upon motion by Commissioner Hansen and second by Councilor Harris, the agenda was unanimously approved as published.

**4. APPROVAL OF CONSENT AGENDA**

CHAIR HAMILTON: What's the pleasure of the Board?

COUNCILOR IVES: I have a question that's fairly short on 11.

CHAIR HAMILTON: Do you want that pulled?

COUNCILOR IVES: If I could, that would be great.

CHAIR HAMILTON: Okay, we'll pull that. What's the pleasure of the Board for the remainder of the consent agenda?

COMMISSIONER HANSEN: Madam Chair, I move to approve the consent agenda absent of item 11.

COUNCILOR HARRIS: Second.

CHAIR HAMILTON: Thank you. I have a motion and a second.

**The motion passed by unanimous [5-0] voice vote.**

**CONSENT AGENDA ITEMS:**

11. Request for approval to enter into a Joint Funding Agreement with the US Geological Survey in the amount of \$61,752 for operation and maintenance of the stream-gaging station and installation of a sediment gage [removed – See page 21]
12. **Request for approval to reauthorize unexpended funds approved by the BDDB from the BDD Major Repair and Replacement Fund.**
  - a. **Budget Amendment Resolution \$576,171.47**
13. **Request for approval to pay American Alternative Insurance Corporation an additional premium of \$1,644 for auto coverage of two new vehicles purchase by the BDDB**
14. **Request for approval of Amendment No. 5 to increase compensation with Excel Staffing Companies, LLC in the amount of \$16,000 inclusive of NMGR to provide a General Clerk III to perform administrative duties**

**5. APPROVAL OF MINUTES: July 11, 2019**

CHAIR HAMILTON: That takes us to the minutes of the July 11<sup>th</sup> BDD Board meeting. Any changes or comments? Commissioner.

COMMISSIONER HANSEN: On page 6, line 5, I'm not sure, but I think it should be "joined" not "joint" at the end of the sentence. And then on page 18, line 22, Member Fort, it's possibly Regina Wheeler not Virginia.

CHAIR HAMILTON: So with those changes, what is the pleasure of the Board?

COMMISSIONER HANSEN: I move to approve with the changes.

COUNCILOR HARRIS: Second.

CHAIR HAMILTON: Thank you. So I have a motion and a second.

**The motion passed by unanimous [5-0] voice vote.**

**6. REPORT ON THE AUGUST 8, 2019 FISCAL SERVICES AND AUDIT COMMITTEE**

MACKIE ROMERO (BDD Financial Manager): Madam Chair, members of the Board, a Fiscal Services and Audit Committee meeting was held on Tuesday, September 3<sup>rd</sup>. In attendance was myself, BDD Financial Manager, Rick Carpenter, Interim Facilities Manager, from the City, Councilor Harris, from the County, Commissioner Hamilton and from our Las Campanas partners we had Tom Egelhoff, and Ginny Selvin. We discussed all financial items that were on the agenda and there were no major concerns or issues. If there are any comments from the members who attended, but that's my report, thank you.

CHAIR HAMILTON: Thank you very much. It was a very useful, well run meeting. Are there any questions? Thank you, thank you very much for the report.

MS. ROMERO: Thank you.

**INFORMATIONAL ITEMS**

**7. Monthly Update on BDD operations**

CHAIR HAMILTON: Mr. Sugrue.

RANDY SUGRUE (Operations Supervisor): Thank you, Madam Chair, members of the Board, we had another consistent month at BDD. We averaged about 5 million gallons per day of diversions. Our distribution to 4A/5A was just over 4 million gallons per day. Las Campanas about 800,000 gallons per day and on site and non-treated water about 100,000 gallons per day. We are providing about 31 percent of the City/County water supply at this time.

Again, it was a very stable month. We expect the demand to fall a bit towards the end of September and into October. I stand for any questions.

CHAIR HAMILTON: That's excellent. Are there any questions? Yes, Councilor Ives.

COUNCILOR IVES: Thank you, Madam Chair. On page 2 of the report

it notes that Santa Fe has received 63 percent of full firm yield to date. Yesterday, we had a report at Public Utilities, of course, that of – I believe we heard at Public Utilities last month that it was at 93 percent but now that it will be a full 100 percent of full firm yield that's delivered and I'm not sure that that's this point in time or shortly to be the case.

RICK CARPENTER (Interim Facilities Manager): Chair, Councilor Ives, we are anticipating 100 percent of full firm delivery this year.

COUNCILOR IVES: Where are we at now?

MR. CARPENTER: I think we're at that 93 percent level. We're pretty late in the year and we'll probably get one more good delivery but that will get us to the 100 percent.

COUNCILOR IVES: Good.

CHAIR HAMILTON: Thank you. Do you have any thought on -- it's just interesting that July and August were the first time this year that we've gone above the monthly average.

MR. SUGRUE: There was a bit of variation due to Canyon Road, again, having such an abundant water supply in their reservoirs. They've actually I think broken their record for water production. They went up 1 point above 10 million gallons per day due to some changes in management of the citywide water system to produce higher because they have a target by late fall that they want to meet of reservoir levels. So BDD has varied with them in order to maintain the City demand.

CHAIR HAMILTON: We just diverted more BDD I would have thought maybe if Canyon Road was producing so much.

MR. SUGRUE: Well, that's based too – it's based on an average over nine years and so there have been higher summertime demand for BDD and at other times we have been lower due to we've had really consistent clean water in the river this year. We've been able to divert more days. Essentially, we've lost no days due to stormwater and high turbidity. That has allowed us a higher average and it's been a real good summer in that respect.

CHAIR HAMILTON: Thank you. Thank you very much.

## **9. Report from BDD Facilities Manager**

MR. CARPENTER: Thank you, Madam Chair. I'll try and be brief. I just have a few items. We'll start off with staffing. Some good news, we've made a lot of progress on operator positions. We have three water system operator entry positions that have been offered and accepted. One water system operator basic position that has been offered and accepted. One water system operator intermediate position that has been offered and accepted. So that is five.

We have one lead operations position and we have a list of eligibles for it so we've got a good response there. And we have the intermediate control technician that we also have a list of eligibles for so we have a good response to that as well. So we are hopeful that we can fill those two positions.

The facility manager position closes on 15<sup>th</sup>. I haven't had a chance to look at whether or not we have a lot of applications yet. But we'll be hopeful for that and we'll report back to the Board at the next Board meeting on that.

Lastly on staffing, we were able to fill the position as I reported at the last meeting for maintenance supervisor. That position was filled on August 27<sup>th</sup>. Mr. Brian Armstrong who is in the audience here, if you wouldn't mind standing.

CHAIR HAMILTON: Welcome, and thank you very much.

MR. CARPENTER: So I'm going to read from a script that was prepared for me because his list of accomplishments is too much for me to remember.

So Brian currently manages seven maintenance staff with two more vacancies anticipated to be filled later this year. He previously worked at the BDD for six years as the maintenance mechanic. He assumed the interim maintenance superintendent which is a position he has now when Shannon Jones was running the facility before he retired in 2017. So he's back now and we're happy to have him. He originally started as the BDD lead journeyman mechanic in June of 2011. Prior to working for the BDD, Brian worked at the Canyon Road Water Treatment Plant from 2004 to 2011. He graduated with a certificate in facility maintenance from Santa Fe Community College. He has a Level 4 Water Operations Certificate and carries a Class A CDL license. In his spare time, Brian enjoys taking pictures and working on farm equipment as a side job so he keeps himself busy. So, welcome aboard, Brian.

CHAIR HAMILTON: Excellent. Welcome.

MR. CARPENTER: A couple more updates. This is some more good news, the Buckman Direct Diversion just recently won the City Water Taste Competition and we'll be submitting a sample to the upcoming Rocky Mountain AWWA Regional Competition. So that's good news for us as well.

And, then lastly, if I could invite Mr. Harwood up to the podium for an update on a prior matter from the July BDD Board meeting.

CHAIR HAMILTON: Welcome, thank you.

KYLE HARWOOD (BDD Counsel): Chair and Board members, so as you might remember we had a pretty extensive discussion back in July regarding a number of interconnected issues and I got a lot of homework at that meeting. We have been working on that homework. We didn't have an August meeting but I believe one of the recommendations is to have an executive session to discuss a number of related topics. So I just want to confirm that it is the Board's desire to have an executive session with a companion action item in open session as you will do if you talk about something and wish to take action. And then we would do that on the October agenda.

I apologize for any inconvenience if you were expecting it on this agenda. It is not. So what is the pleasure of the Board?

CHAIR HAMILTON: I will take comments but it's probably working out well that we will be able to focus on that. We otherwise have a long executive session today on another matter, so this is working out well.

COMMISSIONER HANSEN: I approve of that. I look forward to doing all the things in October.

CHAIR HAMILTON: Member Fort.

MEMBER FORT: A public session for just a briefing on the status of the executive division director's position.

MR. HARWOOD: I'm sorry.

CHAIR HAMILTON: On whose position?

MEMBER FORT: The position for the division director for the Buckman



facility; the status of that position.

CHAIR HAMILTON: The facilities manager?

MEMBER FORT: Facilities manager. Everyone knows that I am sleep deprived.

CHAIR HAMILTON: No problem, I was just double checking.

MEMBER FORT: Thank you.

MR. CARPENTER: Madam Chair, Board Member Fort, that position is announced. It is currently open and it closes on the 15<sup>th</sup> of this month and we will report back to the Board with what we find.

CHAIR HAMILTON: Instead of opened till filled, they're doing an opening and closing of it but they will open it again if there aren't – as needed. And they are doing that efficiently. There's a commitment to that rapidly but that's just their process at this point.

MEMBER FORT: I'm sorry, Madam Chair, if I interrupted. For purposes of clarification, for the topic of the closed meeting at our following executive session, could we be somewhat more explicit about that?

CHAIR HAMILTON: Oh, yes. Mr. Harwood, if you could address that first and then I'll go to the Commissioner.

COMMISSIONER HANSEN: Madam Chair, in the meantime I'll just say it was a number of the topics that we talked about in letters that were in the end of our minutes. That was part of it and Mr. Harwood, if you would like to.

MR. HARWOOD: I am specifically relating to agenda item 8 from the July which was the presentation on pending litigation involving LANL and other parties, not the Board.

MEMBER FORT: Okay.

MR. HARWOOD: And I don't believe, just as a point of clarification because these topics have gotten a little woven together, I don't believe that in the October executive session there will be anything about the facilities manager hiring.

CHAIR HAMILTON: Correct, that is a distinct item. Thank you very much, Mr. Harwood. Yes, Councilor Harris.

COUNCILOR HARRIS: Yes, I just have a question for Mr. Carpenter. I was really pleased to hear the list of positions that are filled and that we have eligible – I am just curious how many of those are internal? How many of those positions are new people to the Board; do you have a sense of that?

MR. CARPENTER: Madam Chair, Councilor Harris, I was not on the interview panel but I think Mr. Sugrue could probably shed some light on that.

MS. ROMERO: Madam Chair, members of the Board, they are all external candidates.

MR. SUGRUE: These are all lower level. All of our operators, at this point, higher and all of these positions are lower levels, level 1 or level 2 operators. They're coming in, a couple are from other parts of the City and at least three are from outside the city.

COUNCILOR HARRIS: Okay, good. Thank you.

CHAIR HAMILTON: Thank you. Mr. Carpenter, does that complete the items that you have?

MR. CARPENTER: Yes, Madam Chair, that completes my report.

CHAIR HAMILTON: Excellent, thank you very much.

**9. LANL Presentation on NPDES permit re-application for Los Alamos National Laboratory discharges, NPDES permit No. NM0028355**  
[Exhibit 2: LANL presentation slide deck]

ALEX PUGLISI (City Environmental Compliance Specialist): Madam Chair, member of the Board, I asked for this item to be on the agenda because we were looking at LANL's permit reapplication and several members of the Board indicated that there might be some interest in this topic.

When I say LANL's permit reapplication I'm talking about the NPDES for the operating facilities, the hard piped outfalls. Not the stormwater outfalls covered under the IP permit which you may hear a little bit about later on, but the actual outfalls that come from operational facilities currently under the operating contractor, Triad.

Mike who is handing out the copies is Mike Saladen. He is the program manager for water quality programs up there. He's the manager for water quality programs. They've changed their names quite a bit over the years. And Jennifer Griffin is the LANL NPDES Industrial and Sanitary Outfalls Program Lead.

I think LANL has made significant strides in the last 20 years. When I was with NMED and later LANL, they had over 132 outfalls and at one time 140 outfalls. They are now down to 11 outfalls because of consolidation of outfalls both industrial and sanitary and with that I'm going to actually turn it over – at one time they were actually the largest permit in the United States, I don't know if they still hold that honor – but, it was actually an effort just to try and get 140 outfalls sampled and reported every month and I think with 11 it's probably a little bit more manageable. But still significant discharges to the canyons and I thought it would be interesting if they could give us a presentation on what's discharged, where it is discharged and how they're regulated. I'll turn it over to Jennifer with that.

JENNIFER GRIFFIN (LANL): Madam Chair and members of the Board, if I lack formality I apologize, it's the first time I've done this.

So Los Alamos National Laboratory has had an approved NPDES permit since 1978. So we were in at the very beginning of this being implemented. So we've had a permit for about 41 years. Before 1990, as mentioned earlier, we had about 141 outfalls and due to outfall consolidation when we created our sanitary wastewater system facility plant and then outfall elimination and various reduction projects, we have reduced that number down to 11 outfalls. Like I said, we have 11 permitted outfalls that are located at seven technical areas and spread out over the 36 square miles that are associated with LANL.

Our current permit term began in October 2014 and it is active. It expires here at the end of this month and we have already submitted a permit reapplication. We submitted that application back in March, 180 days before the expiration and we expect that the EPA will extend the permit at the end of this month.

The permit application effort included outfall survey, which means we went out and evaluated each outfall, visited the facilities that were discharging to identify all the waste streams or effluent streams and the condition of the outfall. We took fresh photographs and did a full outfall survey. And we also performed outfall sampling for all

the Form 2C constituents that are listed in the EPA approved forms.

We submitted that application on March of 2019 and then we expect a draft permit at the end of this month and a final permit at some time in 2020, probably the first of second quarter. That's where we're at.

Eleven outfalls, ten of those outfalls are industrial and one of those is a sanitary outfall. Most of the outfalls are associated with treated or non-contact cooling water and then we have a few specialty facilities; power plant, sanitary waste facility, radioactive waste treatment facility and the high explosives waste treatment facility that also has permitted outfalls. The locations of these outfalls, they are located in Sandia, Los Alamos and Mortandad Canyon and Water Canyon at CDB. This slide provides you with the receiving streams and whether or not they are continuous or intermittent. Of the 11 outfalls, six of them discharge routinely and the other four charge intermittently to maintain equipment and based on operational needs of the facility.

Just so that you can understand the location of these outfalls with respect to your facilities the two closest ones would be outfall 048 and 03A113 and they are located approximately 7-1/2 miles from the Rio Grande and those are actually above where you guys have your facilities. The closest outfall to the river is actually about 4-1/2 miles and that would outfall 13S but that outfall does not routinely outfall. That is the outfall that is associated with the sanitary waste facility and as I'll explain in a moment, we are recycling that outfall.

Outfall 001 is the only continuous outfall that we have that discharges all the time. We can discharge anywhere from 0.15 million gallons per day to 0.3 million gallons per day. So we are small compared to a large city outfalls and sanitary waste facilities. This outfall consolidates four effluent streams. We consolidated the power plant once through cooling facilities, the sanitary wastewater system effluent and the cooling tower blow down from one of our super competing facilities and sanitary reclamation facility which is our SERF that is our recycling facility. We send the SWWS effluent from the sanitary facility to the SERF and then recycle that effluent back up from cooling towers so we can use that again.

CHAIR HAMILTON: Do you mind if you get some intermittent questions?

MS. GRIFFIN: I do not.

CHAIR HAMILTON: Member Fort.

MEMBER FORT: What is the use of the recycled water?

MS. GRIFFIN: We use it in the cooling towers as makeup water. So instead of drawing municipal water from the County of Los Alamos, we are using the effluent, the recycled effluent.

MEMBER FORT: [with the microphone off, she asked about "term: gross alpha shown in the report.]

MS. GRIFFIN: Right, so what you see under monitoring is the requirements that are in our permit. So "term" means that we only need to take one sample to show that there was no adjusted gross alpha in the waste stream. So that is the one sample we took and there wasn't any and that is why we don't have to take any more samples.

CHAIR HAMILTON: Councilor Ives.

COUNCILOR IVES: Just a couple quick clarifying questions. I am

unfamiliar with the terms “cooling tower blow down,” could you explain what that is?

MS. GRIFFIN: Sure. A cooling tower works just like your evaporative cooler. You receive water it goes down the paths in your evaporative cooler and then you have some of them overflow, right, and discharge to the ground or the roof of your house. Cooling towers are similar. What we try and do is recycle the water through the cooling tower multiple times to be real efficient. So we have to blow down or pull some of that recycled water within the tower itself off because of conductivity and other issues which don't allow for the tower to operate efficiently.

COUNCILOR IVES: Another question was on the page where you have the receiving streams and you mentioned flow type and I wasn't totally clear whether that was in reference to a particular stream or the outflow?

MS. GRIFFIN: It is a reference to the outflow. Continuous means that we are always discharging water through that outflow. Intermittent means that we periodically discharge through that outflow. So it's more of a batch discharge.

COUNCILOR IVES: The depiction of Los Alamos, if you will, are the watersheds shown on here?

MS. GRIFFIN: No sir, those watersheds are not shown on this map. However, the permit application does include a watershed map that shows.

COUNCILOR IVES: Is that something that you might be able to send to us?

MS. GRIFFIN: Of course.

COUNCILOR IVES: That would be great, thank you. That's all I have for now.

CHAIR HAMILTON: Thank you.

MS. GRIFFIN: So for Outfall 001 our current permit requirements ask us to weekly test the temperature, pH and TRC is total residual chlorine. So with cooling towers you are always worried about residual chlorine because in cooling towers we use chlorine to help the algae and things from growing in the towers.

Monthly we test flow, total suspended solids, E.coli and that's because we have waste effluent from the sanitary facilities. And then yearly we do metals, aluminum, coopers, and PCBs at 001.

At Outfall 13S, this is our sanitary effluent facility it has the potential to discharge up to nearly half a million gallons or 0.5 million gallons per year and that is part of why we are recycling that water to reduce that amount of water that is being discharged. The effluent is sanitary effluent and that discharge is currently routed to what we call “the reuse tank” which is located at the power plant and then it is recycled through the SERF facility, the sanitary effluent reclamation facility, for use at the cooling towers. We also have the ability to discharge that effluent from the use tank directly to the outfall and we do have to do that when demand in the cooling towers is not as high. In the summertime we are recycling nearly all of the effluent from the sanitary facility. In the wintertime when it's really cold in Los Alamos we are having to blend that water into the outflow discharge.

At this facility we do not currently discharge to that outfall. It's located in Cañada del Buey and so that's part of why we're recycling and if we were to discharge we would also have some sampling requirements, weekly, monthly and yearly. But for the application we did go ahead and take an operational sample after the last treatment

step to make sure we understood what was in that waste stream if we ever had to.

CHAIR HAMILTON: Thank you. Member Fort, you had a question.

MEMBER FORT: Chair, thank you for this. I have some questions that relate to all of the permits and I wonder if in the interest of time we might ask some overarching questions?

CHAIR HAMILTON: And skip some of the outflow by outfall.

MEMBER FORT: Correct, and that would be up to you.

CHAIR HAMILTON: Is everybody good with that? We really appreciate the information but we also have it printed.

MS. GRIFFIN: Understood.

CHAIR HAMILTON: Is there –

MEMBER FORT: And I could suggest an overall arching question that I have if that's appropriate.

CHAIR HAMILTON: Why don't you go ahead and if the Commissioner has a specific question on a specific outflow we can do that.

MEMBER FORT: One question I would ask, as Councilor Ives has asked, in terms of the receiving streams, some of these would be intermittent; would they not?

MS. GRIFFIN: Yes.

MEMBER FORT: And does Los Alamos intend to pursue any opportunities presented by the rollback of the Waters of the United States jurisdictional issues of EPA to attempt to not have NPDES permits for these?

MS. GRIFFIN: No, to my knowledge we do not.

MEMBER FORT: Very good to hear. And you're not active before the EPA and attempting to –

MS. GRIFFIN: No, ma'am, we are not.

MEMBER FORT: Thank you very much. And have you had notices of violation on any of these NPDES permits in the past – within the past term of these permits?

MS. GRIFFIN: On this permit term, no.

MEMBER FORT: Thank you very much. And are there citizen activists who will be active in these NPDES permit reauthorizations as far as you know?

MS. GRIFFIN: We are expecting that, yes.

MEMBER FORT: Thank you. Those would be my overall questions, thank you.

COMMISSIONER HANSEN: I have a question.

MS. GRIFFIN: What question may I answer for you, ma'am.

COMMISSIONER HANSEN: I'm interesting in Outfall 051; do you want to go over it and then I'll ask a question.

MS. GRIFFIN: Of course. Zero-five-one is the outfall that is associated with the radioactive liquid waste treatment facility. It is an intermittent waste stream. It can discharge anywhere from 0.02 million gallons per day to 0.04, that's basically 20,000 gallons per day to 40,000 gallons per day. The effluent discharge can go either to the mechanical evaporator and that facility to a solar evaporation or it will eventually be able to go to solar evaporation or it can be discharged to the outfall. Our last discharge at that outfall was in June 18 of 2019. We intend to periodically discharge to that outfall to assess equipment operability and maintain the ability to use that outfall for equipment

maintenance and other issue that may occur with the mechanical evaporator or the solar evaporator. Monitoring at that facility currently is pH, TRC, radium 226, chromium, lead, cooper, zinc, the usual metals. We only collect these samples when we discharge and we actively collect those samples while the discharge is occurring. We also do hardness of perchlorate and all of the samples that you see sitting here on that list for under monitoring, were collected in June and they were compliant to the permit.

COMMISSIONER HANSEN: So you have a no discharge permit for this facility?

MS. GRIFFIN: No, ma'am, this is a discharging outfall.

COMMISSIONER HANSEN: And how often do you monitor?

MS. GRIFFIN: It's a batch discharge so we discharge one 20,000 tank at a time. The maximum that we could do would be two because we have effluent tanks, so we would sample it every time per the permit requirements that we discharge.

COMMISSIONER HANSEN: And then where does the discharge go?

MS. GRIFFIN: It discharges into Mortandad Canyon.

COMMISSIONER HANSEN: Mortandad Canyon is already incredibly contaminated with hexavalent chromium, so where does this go besides the plume that is already there?

MS. GRIFFIN: It evaporates. The water does not flow down the canyon nor is it expected to flow down the canyon. So it's --

COMMISSIONER HANSEN: How can that be? How can that be that it evaporates?

MS. GRIFFIN: So it's discharging into the ground then it is evaporating or soaking into the ground.

COMMISSIONER HANSEN: So it's discharging all of these chemicals into the ground.

MS. GRIFFIN: As I indicated, we have met the permit requirements with that discharge.

COMMISSIONER HANSEN: Are you not under RCRA on this?

MS. GRIFFIN: No, ma'am.

COMMISSIONER HANSEN: And you're not under a hazardous waste permit?

MS. GRIFFIN: No, ma'am. We are permitted under and NPDES Outfall Effluent permit.

COMMISSIONER HANSEN: Even though this is radioactive waste.

MS. GRIFFIN: It is not a radioactive waste effluent. It is just from the radioactive waste facility. The effluent is sampled prior to discharge to ensure that we have met the discharge criteria for any radioactive or potential radioactive.

CHAIR HAMILTON: Okay, thank you. Are there other general questions? Councilor Ives.

COUNCILOR IVES: Just a point of clarity on Outfall 03A113 and 03A022, the first one has a reference to comingles with stormwater, the second one just references stormwater; tell me about what that means.

MS. GRIFFIN: Okay. So on Outfall 03A113 we have the potential to comingle with stormwater. As you can see there is a corrugated metal pipe, that's a stormwater pipe and the actual outfall, there's a black hose that you kind of see down at

the bottom corner of that photograph, that's the outfall pipe. There is also a cooling tower that is upstream of that corrugated metal pipe that could potentially discharge to that pipe, but it is not currently discharging to that pipe.

CHAIR HAMILTON: Yes, Mr. Helms.

[Speaking away from a microphone, Mr. Helms noted that if the outflow is into the ground and dries up, harmful levels of chemicals are contained in the ground and eventually end up in the aquifer. He said as a citizen he found this alarming because it could end up in the drinking water.]

MS. GRIFFIN: This permit is not related to stormwater so I'm not sure that I can answer your concern.

The water that is coming from the -- to the containment facility has been treated with reverse osmosis and several other treatments. It is the same water treatment systems that are used for drinking water and so there are not -- when we tested the water and you can see that in the permit application, there were not a lot of detections of any residual chemicals in that water. And those that were there were very, very, very, very, very low.

CHAIR HAMILTON: One thing you all might be interested in, and I don't know if this would be available but the information on the way the water is treated prior to discharge I think would be useful and the permit limitations. Then people could see when you say all of the testing met permit limitations they would see what quantities are the upper limits to be compliant with the permit for this discharge or maybe for each of them if that's public information that you could make available to the Board. I think that would be interesting and informative to the Board members specifically with respect to these questions.

MS. GRIFFIN: So, Madam Chair, all of the permit information is publicly available through the NPDES, IPRA. We also have a copy of the current permit application in the reading room located in Pojoaque.

CHAIR HAMILTON: Okay, so if you could perhaps provide a copy or copies of that to the Board or Alex could do that that would be appreciated because that add information to this line of questioning.

MS. GRIFFIN: Of course.

CHAIR HAMILTON: Thank you. So are there other questions that people have in general; Councilor?

COUNCILOR IVES: I was just going to say, just on the timing because some permit is up at the end of September; did I read that right?

MS. GRIFFIN: So the current permit term ends at the end of September, September 30<sup>th</sup>. And we have already submitted our permit application and we expect that the EPA will extend the permit until the new permit can be approved and issued.

COUNCILOR IVES: Thank you. I just wasn't sure about how that was being handled.

CHAIR HAMILTON: Thank you. We really appreciate you coming down and providing this kind of information. It really is helpful to have this dialogue going and we appreciate your time.

MS. GRIFFIN: Thank you, Madam Chair. I appreciate the invitation.

CHAIR HAMILTON: Thank you. Mr. Harwood, did you have anything?

MR. HARWOOD: No, ma'am.

CHAIR HAMILTON: Yes, Mr. Puglisi. Can you come down because

this is recorded.

MR. PUGLISI: Just to let you know that the draft permit is expected to be issued within the next month and when I get a copy of that I'll be happy to pursue IPRA, I will circulate it to the Board. And that would have the proposed permit and that would probably be the one we would comment on if we do have comments. So I will circulate that to the Board.

I also have a copy of the current permit but it is huge. I'm sure if you want a copy of it; but I can actually get that out to you.

CHAIR HAMILTON: I don't know. If there were the excerpts that had the discharge limits and treatment information that's probably the most useful but I know that's an effort.

MR. PUGLISI: Yes, there are certain pages that relate to each outfall and I could get those out.

CHAIR HAMILTON: Great, thank you very much.

COMMISSIONER HANSEN: I have one more question, Madam Chair.

CHAIR HAMILTON: Yes.

COMMISSIONER HANSEN: I wanted to know, does LANL with this permit ever sample the Rio Grande to see what impact the discharges might have on the river and downstream users?

MS. GRIFFIN: So the environmental sampling of that nature is summarized and can be found in Intelius or can be found in our annual reports which are also public available.

COMMISSIONER HANSEN: So yes you do?

MS. GRIFFIN: There is sampling that occurs but I can't give you the details. I'm not privy to that information to know exactly what was sampled.

COMMISSIONER HANSEN: Okay, that would be very interesting to know. Could you provide that to the Board?

MS. GRIFFIN: We issue the ASER report which is our annual environmental report and that provides the information that I think you are looking for.

CHAIR HAMILTON: Member Fort.

MEMBER FORT: Just to clarify, it is helpful to have Alex Puglisi here and you'll be looking at the draft permit in terms of whether or not in our opinion LANL is doing whatever it can to reduce pollution from each of these NPDES permits, I assume. If I made myself clear, we would of course be looking for the most stringent levels achievable including no discharge where appropriate – I've been looking for that.

MR. PUGLISI: Madam Chair, members of the Board, we would also share that draft with BDD so that they could also review it but what we would be looking at is EPA appropriately setting limits for these outfalls. So we would look at the limits that EPA is applying and try to make a decision as to whether or not we feel that those are appropriate limits based on the information that we have.

MEMBER FORT: And, Madam Chair, to say this and this relates to our discussion about water quality standards in the Rio Grande that we would be – for some contaminant for which the Environment Department hasn't included in its water quality standards, there would be matters of judgment as to whether or not EPA's limitation were appropriate; is that not correct?

MR. PUGLISI: That is correct. And not only that, I think you hit on an



issue, a lot of the constituents of concern that are probably being talked about right now are not actually being regulated by EPA because EPA does not have the authority to regulate those radioactive constituents because of their source.

COMMISSIONER HANSEN: Then on that note, Madam Chair, if they do not have the right then would it not be a hazardous waste and then since it is radioactive waste wouldn't it fall under hazardous and RCRA? I don't understand why radioactive waste is not under RCRA.

MR. PUGLISI: I'm not sure that it's radioactive waste that would be regulated by RCRA other than some of the hazardous constituents that you were talking about at Outfall 051 and I think what you may be referring back to is under NPDES outfalls that are covered under NPDES under RCRA those outfalls as the sludge produced as a result of treatment at an NPDES permitting outfall are exempt from RCRA and I think that may be what you're referring to. So the sludge at TA50, is it TA50, I forget. TA50, yeah; TA 50 is exempted from RCRA because it's an NPDES permit at outfall.

CHAIR HAMILTON: And I'd like to suggest that if there's more information that is needed on this we can consider a separate item on a future agenda or a review session on the permit if that would be of interest.

MR. PUGLISI: Correct and I know you're short on time and there's people waiting to get up here. So if you want to discuss some of the exemptions that apply to some of these outfalls and how EPA and what authorities they have, we can do that at a later date.

CHAIR HAMILTON: Yeah. Councilor Ives.

COUNCILOR IVES: Thank you. If there are summaries of all of these in the annual reporting that is done, could we just simply get sent to us the last two annual reports; that would be an easy way. That way we can do what we need to.

MR. PUGLISI: The annual surveillance report; is that what we're talking about?

MS. GRIFFIN: Yes, we have the last two years, yes – 2018 is not currently out but it's been written.

COUNCILOR IVES: Good.

CHAIR HAMILTON: Okay, excellent that is appreciated.

MR. CARPENTER: We can make sure those are circulated.

CHAIR HAMILTON: Thank you very much. Thank you for coming, we appreciate your time.

**10. Presentation on Los Alamos National Laboratory Clean Up Efforts**  
*[Exhibit 3: Legacy Cleanup at LANL Presentation, dated 9/5/19]*

MR. HARWOOD: Good afternoon, Chair, members of the Board, so this is our regular check in with Doug Hintze with the Lab and I know he has a number of presentations that may have fit in our old calendar and which may not fit in our current calendar. So I'll leave it up to the Board to give us direction as to how much time you want to devote to this topic this evening.

Doug has committed to all of us, both elected and staff, that he'll be available but our courtesy back to him is we don't ask him to come to every meeting. He is here

tonight and he's committed to come to future meetings. But to the extent we can hear his presentation. He has made a special effort to be back in the state today so I'm going to turn it over to Doug.

CHAIR HAMILTON: Absolutely. Thank you very much and thank you for making that effort, Mr. Hintze.

DOUG HINTZE (NNSA): Madam Chair, members of the Board, it is good to be back here again and give you an update on the cleanup effort up there. I have a presentation that I believe everyone has that presentation and anybody who doesn't have it there are extra copies in the back

I'm not going to go through the first couple of slides because that's just the normal: here's what our mission is, we do things safety, efficiently, transparency. You can see our time frames. You can also see our mission activities and so forth.

I want to go to page 5 which is the outline of the laboratory up there so that you can see a little bit of the activities that we're working on through the entire course of the year. A lot of these presentations that we give are just one specific topic like the chromium-6 plume or the RDX and the fact of the matter is, our budget is approximately \$200 million a year so we're working on a lot of things at one time. So this chart that you see here where the little stars are these are the campaigns that in accordance with the consent order. We're working on nine campaigns simultaneously out of the 17 that are in the consent order. You'll see that there's actually 10 stars but a couple of these are similar campaigns, the known cleanup sites. And the other thing I just want to point out other than these are the sites that we're working on, we're working in every single area here in the cleanup. So we're not showing you every single thing even with these stars when we're talking about the activities. We're out there sampling, monitoring on a daily basis in every single area. Just from the major ones that you've heard from us before in the past, you can see over here to the west is the RDX Characterization Campaign, I'll talk a little bit more about that in the future here. You can see if you go straight to the east of that right above the little wedge that is the Pueblo de San Ildefonso land, you can see where the chromium interim measure/characterization campaign is right there. Those are two of them that we've been talking to you a lot about. Right to the north of the chromium-6 campaign is the Technical Area 21. I'll get into that a little bit and the cleanup for that area. And then over to the west of that you'll see the historic properties completion campaign. These were actually sites out in the Town of Los Alamos that we go out and we finish the field work for cleanup of all of those areas that we can get to. Some of the areas will have to be deferred because they're sitting under some of the buildings and facilities and so what happens is when those facilities go down, we go out and sample. And if the sample shows anything then we clean it up. But right now it is not desired by the owners or anyone to go out there and tear down facilities just to check. So we've completed the fieldwork as of now. The last one we just completed was the Old Los Alamos Inn was up there and it was taken down so we did sampling underneath of that and then cleaned up spots that were necessary. All of these areas up here in the historical property were from the original Manhattan were the processing facilities were around Ashley Pond and they had a lot of the outfalls that just went into the Los Alamos Canyon. So that's what we're doing. We're seeing where those outfalls were, doing the samplings and then doing remediation as necessary. So for right now, that field is completed but we're still working on the paperwork.

SFC CLERK RECORDED 11/26/2019

Next page, just a reminder, when you look at the division of labor sometimes folks get focused. We just heard a presentation from the laboratory from the Triad side. We're on the other side. You can see it's just the environmental management which is responsible for the waste disposition and the soil and water and D&D.

Next page, just a little update on the chromium interim measure projects/campaign. I've been out here and talked about this several times. We have the interim measure in the southern boundary which is along the border with the San Ildefonso property. That's been working for about year now and the sampling results that we've taken just north – this is a pump and treat system – and so just north of where we're injecting the water, the well there had samples of around 180 parts per billion above the state standard of 50 parts per billion. Last month our samples, once we have had the interim project running, we're down to less than 50 parts per billion at around 44 so we're very pleased with the way that it has been operating. That's from the southern boundary. We have an eastern boundary as well and right now we have not initiated that. We are still waiting for the permit to be approved from the State Engineer's Office so we can get the eastern side. That will then encompass our interim measures and that really is the pump and treat system just to hold the migration of the chromium-6 plume. And we're doing testing right now so that in about three or four years we'll go out there and propose a final remedy as to how we're going to address the chromium plume. That's another campaign under the consent order – it's just kind of a continuation but it's at that point really the cut over point is when we get to the point of having a final remedy proposed. That's when it then goes into the next phase.

COMMISSIONER HANSEN: Madam Chair.

CHAIR HAMILTON: Commissioner.

COMMISSIONER HANSEN: Mr. Hintze, what are you treating with right now?

MR. HINTZE: When you talk about the pump and treat system, we have ion-exchange. It's columns of resin that what we do is we pull of the contaminated water from the extraction wells. We send it through pipes to an ion-exchange resin which then treats the water. It's just like any ion-exchange it exchanges the chloride for the chromium-6 and then the water that is put back into the ground is when you look at it from a chromium perspective background is about 7 and what this is going back in is somewhere between 2 and 5 parts per billion. So it's very clean water.

We take the resin, the ion-exchange resin, and we have a series of the columns so that when one gets about to be full, you switch it to the next one and you always have a backup. We send that back to the vendor and the vendor recycles the resin, refreshes it.

COMMISSIONER HANSEN: Thank you.

CHAIR HAMILTON: Thank you.

MR. HINTZE: Just on page 9, a little bit about the RDX Characterization Campaign. You saw in that map, you saw where the RDX is. RDX is a Royal Demolition Explosives, it's an explosive that has been used since World War II and there is also a plume in the aquifer out there that you saw in the Technical Area. We put in a well several years ago, R68, and at first the expectation was that it had not reached the aquifer. When we put that well in, it showed that it did, so working with the State instead of proposing any sort of final remedy we put in a monitoring well, R69. So that went in last December and since that timeframe what we're doing is using that and you can see

here that there's nine other wells to monitor to see exactly what the characteristics of the plume are as far as highs. It's different than what we've experienced as far as the chromium-6 plume but, again, it's one of those that we have to make sure that we have characterized so we can propose a final remedy that is adequate for what the plume is. We don't want to try and propose a remedy before it's time. So that's where we are now in the characterization phase for the RDX.

Next page, Technical Area 21 -

CHAIR HAMILTON: Excuse me for a second. Member Fort.

MEMBER FORT: It's been found in the subsurface groundwater and is that the town's water source or is this shallow groundwater?

MR. HINTZE: This, Madam Chair and members, this is actually in the drinking water aquifer. At first it was thought that it was in the perched aquifer above that but, no, it was identified in the actual drinking water aquifer. If you look at it from a - and I don't have that chart and that's probably one of the things that we should normally show in these, we have on other charts, are the actual locations of the water supply wells. That one the RDX plume is not close to any of the water supply wells. The biggest concern, we were talking about the chromium, if you look at the map there you see where the line talks about East Jemez Road where it right there just a little bit to the northeast of where the star is for the chromium, that's about where the water supply well PM3 is for the county. So that's our concern is that's the well that is closest to any of the contamination plumes.

MEMBER FORT: Thank you.

CHAIR HAMILTON: Thank you. Councilor Ives.

COUNCILOR IVES: Thank you, Madam Chair. Just two quick questions. When will the chromium plume be fully characterized?

MR. HINTZE: Madam Chair, members of the Board, right now we would say based on all the wells that we have in place, we have it fairly characterized as far as, you know, I won't say completely because you can't look down 1,000 feet and see exactly where it is. The first interim measure is to make sure that we have a hydrologic barrier so it doesn't go any further. To answer your question, the second part of the characterization is to identify a final remedy and that's what we call part of the characterization. We will continue to do the pump and treat and we'll probably do the pump and treat even as a part of the final remedy as we continue to drill wells as necessary to identify location and then also we've talked before in the past, I've come here and talked about a couple of amendments as far as using molasses as a possible remedy or sodium dithionite a chemical injection. So we're seeing that the combination of the monitoring wells to fully get that outer boundaries as well as what the final remedy will probably be, 2023, 2024. The good thing is once we've got the interim measures, it is held in place.

COUNCILOR IVES: Yeah. You mentioned four years and I just wanted to understand that relationship. How about for the RDX, when do you anticipate having that characterization complete?

MR. HINTZE: The expectation is that we will at the end of this year believe that we will have enough characterization that we can propose a final remedy.

COUNCILOR IVES: Very good, thank you.

CHAIR HAMILTON: Thank you.

MR. HINTZE: You are welcome. Page 10, Technical Area 21, this was kind of the second generation of processing sites. It's out on the mesa top. When you go up the hill and the airport is on your right, if you look across it's a small mesa off of Delta Prime Road. This here, during the Recovery Act, they tore it down – or D & D – the facilities down to slab. You see this picture here shows that this was some of the debris that was left there, it was clean debris. We've already cleared that out with one of the contracts we have in place this year. Our next contractor has already started to work. There is one building left there, a radioactive, an old radioactive liquid waste facility which is going through the characterization process now and then we'll take down that facility and then this contract is to pull up the process lines that are throughout the mesa top and then to go and see if we have to cleanup underneath of those process lines. Most of us probably believe that we will have because they weren't just completely tight in the past. So that's the next phase and then the next year in TA 21 we're looking at the – we have the slabs and then we have to pull up the slabs and then pull up any sort of lines that are underneath those slabs and see if we have to remediate. And then the campaign beyond that, we have two material disposal areas up there in DAs A and T that we have to go through and figure out what the final disposition of those is going to be. Those are again, a little bit down the wagon.

CHAIR HAMILTON: So Councilor Ives has one more.

COUNCILOR IVES: Perhaps a humorous question, when you say it was the "housed plutonium processing facilities and was where groundbreaking tritium research" that's in the sense of discovery as opposed to the activities that you've described?

MR. HINTZE: Right, groundbreaking. Yes, that is correct. Although, we are still breaking ground out there.

Page 11, just talks about the legacy waste management. One of the things that our contract was because when we were going through the award process for the contract, there was limited operations down at the Waste Isolation Pilot Plant. They're back up now accepting 10 shipments a week. And so, even though our contractor, we weren't expecting to do shipments of the transuranic waste down to WIPP until a couple of years into the contract, we're actually now into a regular schedule. We're getting one shipment a week down to WIPP and we're looking to continue to make our processes efficient so that we can continue maybe as many as three or four shipments a week. Because for all of us, waste off the hill is good. And the second part of that is that we have a lot of the transuranic waste at about 50-50 percentage wise is above ground versus in retrievable form below ground. So we don't want to retrieve the waste and bring it up above ground because our biggest concern is wildfires. And so you don't want to backlog it up in the dome, you want to move it off. So that's what our concentration now, is get the approximately 3,500 drums of transuranic waste that we can ship off to WIPP as it gets certified. Some of it has to be treated other stuff just has to go through the paperwork review so that it can be sent down there.

COMMISSIONER HANSEN: Chair.

CHAIR HAMILTON: Yes.

COMMISSIONER HANSEN: When I was at the WIPP Strategic Planning meeting last Monday, I mentioned that I felt it was really important to get the barrels off the hill. I thought it was 4,000 so you're down to 3,500 that are above ground.

And I mentioned with them to please work with you to categorize those drums as soon as possible and get them off the hill because I know that Idaho and Washington also are shipping a tremendous amount of waste to WIPP and I would like to see as much of the waste off of the hill as possible. So I hope they heard me and that they are working with you.

MR. HINTZE: Yes.

CHAIR HAMILTON: Councilor Ives.

COUNCILOR IVES: Doing the quick math if it's one shipment a week, 3,500 containers, 70 years?

MR. HINTZE: Madam Chair, members of the Board, no, when we're talking one shipment, one shipment can be depending on the configuration, can be as many as 42 drums in a shipment. It's not that simple because you have limits on weight and some of our drums have been concreted to stabilize them and other ones are limited by the fissile material that is inside. So what it is is it's a puzzle. And so just like Commissioner Hansen said, we want to get through that certification process so that we can get the best and most efficient packages to put together to get the closest to 42 drums in a shipment as opposed to right now because most of the drums that we're shipping are concreted drums are about 25 drums in a shipment. So that takes up space down in Waste Isolation Pilot Plant that we'd rather not put empty space down there.

COUNCILOR IVES: Thank you.

CHAIR HAMILTON: Thank you.

MR. HINTZE: So the last thing that I'd just like to do is give a couple minutes to a couple of our colleagues over here. One of the things that we've been working on the last couple of months that we brought in N3B a prime contractor and as we looked at the way, for example, the Rocky Flats Plant was closed, one of the things we realized was we needed to enhance our community participation program. So over the last couple of months we've had four forums. One up in Los Alamos, Española, Taos and then down here in Santa Fe, and that was just to say, Hey, we need to do things differently than the way we have done. We're not looking for input. We're looking for engagement and participation in the decision making process. So the next step is that we're looking to hold a series of values workshops where the community will come in so that we can make sure that we understand what is important to each and every one of the folks. And so my two colleagues, Paul Black and Tom Stockton over here, I think have a single slide, I think. A sole slide on here just to talk about – because what we need to do, we do these workshops we need to make sure that people actually are there. They're just going to give a real brief description of what that is so that we can get folks out there. And the second thing for this community involvement process, as I say we're doing things differently, the other thing is, and if you were at the meetings you heard me talk, it's a marathon not a sprint. Our program is supposed to go until the 2037 timeframe, 36-37 timeframe. So it's not like you come show up for one meeting and it's over. That's what we're trying to make sure that the community continues to be involved in the process here because we are all the community here and it's not just for the cleanup right now, it's the cleanup that last into generations, our kids, our kids' kids and so forth. Now is the time to do it the way that we all agree to and then we'll execute to make sure. Because what we don't want to do and you might have heard me say this, is the point in term D&D – decide and defend. That doesn't work because then when you say we have

all the experts and we'll decide what the remedy is and then just try and convince you that's the right one, that normally doesn't work. We need the folks in the room understanding what the challenge is, the risk associated and then once you make the decision then it gets into the public hearing phase it should go fairly smoothly. So that's what we're trying to do. So let me turn it over to Paul and Tom.

PAUL BLACK (Neptune): So, Madam Chair and members of the Board, thanks for having us here, we appreciate it, and Doug as well. Years ago we developed a process with EPA that's called Structured Decision Making. We built some software to support it. The approach is more important than the software but the software captures all of the relevant information that goes into how to make a decision. What we tried to do with the stakeholders, and I guess it is written up here, our software is called GiSdt, that's how we pronounce it and it facilitates the application of a structured decision making process which goes through the five steps that are in the circles up there. The first step in the circles is, let's define the problem that we're dealing with. The second step is, let's understand what the objectives are and the objectives come from talking to stakeholders and understanding what their values and concerns are. So we're after the community value system. We go through a process of what we call "elicitation" but it's a facilitated meeting where we're trying to obtain the values and concerns, things that matter to the stakeholders so that we can build that into the decision system. This is not just about a cost-risk tradeoff. There are other values and attributes that matter in systems like this. So if we were to dig up waste and move it elsewhere there's worker safety concerns to deal with. There's cultural resources to deal with. But those types of issues are not our issues, they're the stakeholder issues and we want to understand what they are and put the right value system in place and now work out what are the best options which is now step three. Define options that actually achieve those objectives of the different stakeholder groups. Then once we've identified options, we'll work out what models – whether it is human health risk assessment models or ecological risk assessment models or cost models or whatever it is that is needed to evaluate those options. So now we're evaluating options against the value system and that's how we go about coming up with what is collectively the best decision we can arrive at to move forwards. That's the basic process and since you are all here and we met Mr. Ives in Taos a few weeks ago, and he heard a much longer presentation than this, so I'm going to put him on the spot for all of you, you're all welcomed to talk to him about it.

COUNCILOR IVES: And you've had those four listening sessions at this point in time; am I correct?

MR. BLACK: Yes.

COUNCILOR IVES: And the one in Santa Fe was two weeks ago?

MR. HINTZE: Madam Chair, those were just the announcement of us doing business differently than we were doing going down this path. We haven't done any of these workshops to elicit as Paul was talking about. Those will kick off here in the near future.

COUNCILOR IVES: Good. Obviously, I think everybody sitting up here would love to know when those are going to be and so would simply ask to get plenty of notice just because schedules get busy.

MR. BLACK: Yes, absolutely, and as many stakeholder groups in the area to accommodate as well, so I expect that this will be, as Doug said earlier, it's a

marathon not a sprint. The same is true for this so that we can put a system together that really helps us.

COMMISSIONER HANSEN: And can this slide be sent to us, please?

MR. HARWOOD: On behalf of the Board, I've submitted requests to this group on a series of criteria and locations and I'll get that stuff and I can push it on to the Board.

CHAIR HAMILTON: Is it possible to get either this slide or maybe the longer presentation like a hard copy?

MR. HINTZE: Madam Chair, we'll give you this slide and we'll also give you the presentation that was about 40-45 minutes. We can give you both of them.

CHAIR HAMILTON: That's very much appreciated, thank you so much for coming and providing the information.

MR. BLACK: Actually, we have one page that is back and front that will give you and provide more information about it that we can hand out now. [Exhibit 4]

CHAIR HAMILTON: Thank you, thank you. We very much appreciate it.

MR. BLACK: Okay, thank you very much.

CHAIR HAMILTON: Okay. And thanks so much for coming and making yourself available in a tight schedule.

#### CONSENT AGENDA ITEMS:

**11. Request for approval to enter into a Joint Funding Agreement with the US Geological Survey in the amount of \$61,752 for operation and maintenance of the stream-gaging station and installation of a sediment gage**

CHAIR HAMILTON: Councilor Ives, you can please ask your question.

COUNCILOR IVES: Yes, just a few quick questions. And because my memory is imperfect, where exactly is this gage?

MS. ROMERO: Madam Chair, Councilor Ives, the gage is at the BDD diversion structure just right above it. And if you need a more specific location I can look to either Rick or Randy.

COUNCILOR IVES: That sets the stage. The other question I had is that you know it obviously broken down into the various phases and I think that from my perspective, from the knowledge perspective understanding these three which is the installation and model development of a high sediment monitoring equipment to provide real time estimates of suspended sediment is a very significant one given many pollutants tend to follow sediments or bind to sediments as they come down the river. What's the status of that and what sort of reporting will we be able to get on it?

MR. ROMERO: So Madam Chair, members of the Board, once we've agreed to this agreement and the US Geological will start model development of this high sediment, we are anticipant that they will provide a collection of daily and event-based, mean daily suspended concentration, suspended sediment concentration from discrete samples and particle sized analyzed on a monthly integrated sample schedule. So all of that information will be provided to Ms. Bowman our regulatory compliance officer.

COUNCILOR IVES: So when do we anticipate seeing the first results?

MS. ROMERO: I'm not sure, Madam Chair, Councilor Ives, I'm not sure



what the time frame is to when the model development will occur and how long it will take to actually get this equipment installed and operating but hopefully within the year.

COUNCILOR IVES: Very good. Thank you. That's all I had.

CHAIR HAMILTON: Thank you. Is there any other questions on this particular item? If not, what is the pleasure of the Board.

COUNCILOR IVES: Move to approve.

COUNCILOR HARRIS: Second.

CHAIR HAMILTON: Thank you. I have a motion and several seconds.

All in favor.

**The motion passed by unanimous voice vote.**

CHAIR HAMILTON: Good, thank you very much and thank you for the additional information, Mackie.

MS. ROMERO: Thank you.

#### **DISCUSSION AND ACTION ITEMS**

**15. Request for approval of Amendment No. 2 to the original Professional Services Agreement. Item 18-1048 with ALS Group USA, Corp. to increase compensation by \$75,000 inclusive of NMGRT for additional laboratory analysis services.**

**a. Budget Amendment Resolution to move \$75,500 from solids to other Operating Costs to cover the increased compensation**

MS. ROMERO: Madam Chair, members of the Board we are requesting amendment number two to our professional service agreement for an additional compensation of \$75,500. This is due to the New Mexico Environment Department radiation control barrel. These regulators have determined that the BDD needs to conduct additional samples of our GAC media and solid waste generated at the BDD.

In order to evaluate the concentrations at the BDD at these levels it's going to require substantial amount of samples be taken. The cost to perform the level of sampling is estimated to be \$75,500. As stated, ALS already has a contract with BDD to conduct this type of analysis and therefore this amendment would just increase that to provide the additional compensation needed for this.

This sampling requirement was not included in our operating budget and therefore this request does include approval of a budget amendment resolution to move the money from our Solids categories to Other Operating Costs to cover the cost of this contract.

Are there any specific questions?

CHAIR HAMILTON: Yes, Member Fort then Councilor Ives.

MEMBER FORT: Madam Chair, I would appreciate a little background on this. Under what program is the NMED asking us to do this and perhaps Mr. Harwood will be called on in the absence of Daniela?

MR. ROMERO: Actually, we'll let Mr. Carpenter he was included in this meeting and maybe he can provide that information.

MR. CARPENTER: The representatives that visited the BDD that precipitated the necessity for this are with the NMED Radiation Control Bureau.

MEMBER FORT: I'm sorry. Madam Chair, I'm still not understanding why we're doing this surface water sampling for the NMED.

CHAIR HAMILTON: No, no, they are sampling the GAC.

MS. ROMERO: GAC media and solid waste.

MEMBER FORT: The solids.

CHAIR HAMILTON: And somebody might mention that this was linked to the freelance sampling that was done previously and the communications that then led to their being aware of this situation at all and so this is to do a more appropriate technically defensible sampling of that material so they know whether to be concerned or not. And just to that point, I just wanted to add, because I questioned this at our FSAC meeting, that if I'm not mistaken and hopefully my understanding is correct that Glorieta Geoscience will be actually reviewing whatever the sampling plan that is suggested for this; is that correct?

MS. ROMERO: Madam Chair, members of the Board, that's correct.

MR. CARPENTER: That's correct.

CHAIR HAMILTON: Then they can then rely on the results. Do you have other questions?

MEMBER FORT: Thank you, Madam Chair. Did they find something in the GAC in the solids that led them to believe that we should –

CHAIR HAMILTON: It wasn't them. It was what was found – maybe Mr. Harwood wants to speak to this.

MEMBER FORT: I'm sorry. I may have missed a meeting or I'm missing something.

MR. HARWOOD: Thank you, Board. You may remember about a year ago there was some GAC removed from the top of the vessel. There was as the Commissioner mentioned some freelance sampling done of it and that's a pretty generous description of it. So this is to do some sampling to see if there is a problem with the GAC media aggregating contaminants of concern. So this is carbon, literally granulated carbon that is used as a finishing step and it will go a long way to answering some of the questions that were raised last year.

CHAIR HAMILTON: Councilor Ives.

COUNCILOR IVES: Thank you, Madam Chair. It's good to understand that in context because those were questions that were being asked so this seems to be a natural progress and we had talked about sharpening our pencils on the protocols from the get go to ensure that the sampling was done according to protocols that would yield valid results which was something of a question previously.

How many additional samples are we going to take and what's the timing on it?

MR. CARPENTER: That's undetermined at this point. That will come out when we develop a sampling plan and NMED and Glorieta has weighed in on that.

COUNCILOR IVES: Okay. I think between what was said previously and that, those were my questions. So thank you.

CHAIR HAMILTON: Commissioner Hansen.

COMMISSIONER HANSEN: Chair, I would like to move to approve.

COUNCILOR IVES: Second.

CHAIR HAMILTON: Great. So was there further discussion or Mackie was there additional information? And perhaps you can help, we have this and the

associated BAR that goes with it, so does your motion – can we do that in one motion or do we need two separate motions?

NANCY LONG (BDDDB Counsel): Madam Chair, members of the Board, you can do it in one motion so long as that motion is clear that it covers both.

CHAIR HAMILTON: So does the motion include the BAR as well?

COMMISSIONER HANSEN: Yes, absolutely.

CHAIR HAMILTON: Thank you, and the second?

COUNCILOR IVES: The second understood.

**The motion passed by unanimous voice vote.**

**16. Presentation and Possible Action on Source Water Protection Plan (SWPP)  
Public Outreach options**

CHAIR HAMILTON: Mr. Harwood.

MR. HARWOOD: Thank you, Madam Chair. So as you might remember, several months ago, in a rather disjointed conversation about the source water protection plan there were some questions about how Albuquerque Bernalillo County Water Utility Authority had run their public engagement process, and so I was asked whether I could engage with the staff down there and just understand how they had conducted their public engagement process around their source water protection plan. So obviously there's a lot of primary documents that are not included here. This was just my summary of review of the primary documents in conversation with their staff.

The second page sort of describes some of the more relevant details of the process that they ran, and then a reference here to the public-facing website with of course a great website address: [newmexicosourcewaterprotection.com](http://newmexicosourcewaterprotection.com). That's Albuquerque grabbing up those good addresses earlier. And then a set of recommendations which I'll emphasize and with a note in the very last paragraph that for some of these recommendations the Board will likely, I think it's reasonable to expect the Board may need to engage services of someone like a Lynn Komer who you've used in the past because I think there's a general understanding among the staff, as I understand it, that running these kinds of public meetings is not simple around their existing workload and also requires some pretty well defined skills in terms of listening and note-taking and summarizing and so that I'll just share with you was one of the pieces of feedback I did get from the staff, also observing of course that Albuquerque is a much bigger system. They have a lot more staff internal to hand issues and so there you have it.

We have, just to remind the Board, in my understanding procedurally, there's a 2017 draft that has been provided and worked with the state agencies but this Board has never adopted it as I understand it. So there are a couple paths going forward, one of which is to have some public engagement on the draft and ask these questions about the source water protection area that's appropriate and then to do additional work if that area is bigger than the area that's in the current draft and then to proceed however the Board wishes to go. And I'll leave it there because I know we're pressed for time.

CHAIR HAMILTON: Are there questions? Member Fort.

MEMBER FORT: I appreciate this description of what Albuquerque has done. I actually think the structured decision making handout we just got might have

been an additional possibility to think about how one does public engagement, and I would – if it is difficult for the existing staff to do this then I would think using a contractor to do it. We have a number of people I know within the City – I don't know the person you mentioned – who would be very capable of doing it. It seems to me it's good for this Board to be as transparent and open with the public as possible and these processes are ones that would give us a change. These meetings are not well attended and this would give us a chance to have meetings where we publicize them and meet in different parts of the city and talk about what goes on with this aspect of our water supply.

I don't know if it's appropriate where we are procedurally on this to make a motion or if a motion is necessary, but I would hope we would retain one of the people who is good at doing this public outreach.

CHAIR HAMILTON: Okay. Yes, Councilor Ives.

COUNCILOR IVES: Thank you. Just a couple of questions on it. At the bottom of the first page there is a statement: It is important to note that the service area, the ABCWUA also encompasses a portion of the SWPA, as such public outreach and education are an important part of its SWPP. Which SWPA is referred to there?

MR. HARWOOD: Source water protection area.

COUNCILOR IVES: Is that ours? Is that theirs?

MR. HARWOOD: No. I think I will apologize now for my fondness for acronyms, which you have appropriately pointed to.

COUNCILOR IVES: Don't mind. I'm just trying to figure out which acronym – what's being referred to by the acronym in the particular. Because it is certainly possible that Albuquerque going in an exercise here would say, well, Santa Fe's discharge is something that gives us concern.

MR. HARWOOD: That is not what I was trying to get at. What this sentence was trying to convey, and obviously did not succeed in doing so, so I apologize for that, is just that the service area, the Albuquerque Utility Area Water Authority, so that is the area to which it supplies water, is also part of their protection area. So if you think about Albuquerque, the north diversion channel drains all over the East Side. It collects all sorts of contaminants – I actually did my master's thesis on that diversion so I know a little bit about it – and it dumps into the Rio Grande just upstream of where they divert water. So literally, they are managing as a land use matter what produces the pollution that drops in right upstream of their intake and we know how much interest there are for utilities to be concerned about contaminants of concern hitting the Rio Grande just upstream of their intake. So that's all I was trying to say there is that their source water protection area is sympatric with their service area. A very interesting issue for them.

COUNCILOR IVES: I actually would have presumed that to be the case, so I appreciate the explanation.

MR. HARWOOD: Okay, good.

COUNCILOR IVES: But it does raise a question of what about the Santa Fe River?

MR. HARWOOD: Which discharges of course right at Cochiti, so we don't have the same dynamic topographically. The contamination that comes off of our urban area runs down the Santa Fe River which intersects the Rio Grande only a half mile

behind Cochiti. I don't know how well you know that intersection down there which as we know is well downstream of our BDD intake. So, yes, we don't have quite the problem of the scenario that Albuquerque does.

COUNCILOR IVES: At one point in time our discussions were to look at possibly unifying these efforts in some way.

MR. HARWOOD: With Albuquerque?

COUNCILOR IVES: No, no, no, no. Trying to take the grand view of Santa Fe water in looking at both SWPAs for purposes of a single instrument, but that does not seem to be contemplated here.

MR. HARWOOD: What I took from the Board's prior conversation is that 200 feet downstream and ten miles upstream was far too small of a relevant footprint for analysis, given the sorts of issues that we have.

COUNCILOR IVES: No argument.

MR. HARWOOD: Right. And so the biggest issue of course if the Española wastewater treatment plant which is just outside of this limit. So if I recollect -- and this is going back several months -- the question was to have a public engagement process to say how far upstream and which tributaries and how far up them does the Board think is a relevant area of analysis. Did I get that right, Professor? Okay. But it is not the Santa Fe Urban Watershed. Because of the way our topography works none of our urban watersheds go to the Rio Grande upstream.

COUNCILOR IVES: Understood. I'm just saying that that was part of our discussion as well so I just wanted to be clear that we're just talking about the Rio Grande, basically, and looking upstream.

MR. HARWOOD: Yes. So there was another part of the conversation that now I think you're referring to which is whether or not the BDD source water protection plan should be integrated with the general theme protection plan which brings in the watershed and potentially the involvement of surface water contamination to the groundwater system for the City wellfield and the Buckman wellfield. That I think is a topic for Rick and Jesse Roach to see whether they want to integrate across the Board's purview with the City and then of course the involvement of the County.

COUNCILOR IVES: Another thing that's been mentioned many times, speaking of -- although it would be presumably covered I believe by the ten-mile rule currently in place is the treatment plan that San I is proposing to develop.

MR. HARWOOD: Well, there's an intake at San I for the Pojoaque Regional Water System and then there are plans, I believe, for wastewater treatment in the Nambe-Tesuque-Pojoaque Valley, but I believe the wastewater treatment plant -- other people may know more than I about this but I don't believe those plans are very far along.

COUNCILOR IVES: I wasn't sure, but I've heard that mentioned in our discussions on this topic, and of course there's no reference to engaging -- there's reference to engaging the municipalities of Española and Los Alamos and LANL, but not Rio Arriba County or any of the pueblos in these discussions and we're certainly downstream from everybody in those categories.

MR. HARWOOD: Right. And so if I remember the basic construct of this question it was to run a public involvement effort with the customers and served population to see where that edge should go to, and then that would inform the Board's

direction on how to engage with folks in that presumably larger area.

COUNCILOR IVES: Yes, and at some point in time, looking at ag uses going north also I think makes sense in terms of loads into the river. And given the algae plumes down in Cochiti.

CHAIR HAMILTON: And up in Abiquiu.

COUNCILOR IVES: And in Abiquiu. Yes. That could all become very interesting. So I'm very in favor of moving this forward and getting this done.

MR. HARWOOD: I think the motion if you were going to make one consistent with what I've heard would be – I don't know.

CHAIR HAMILTON: I have actually a few clarifying questions directly related to that, because there are several things recommended here, and one additional thing that was put on the floor.

One of them is the public-facing website. I don't think that's necessarily hard-linked to what we want to accomplish with the outreach and development of the plan, and it can be expensive, although having that information available would be a big benefit. I think that's almost a separate consideration. I don't know how the Board members feel but somebody, frankly, would probably need to come forward and say, well, we could do it easily, or it could be a big effort and we could just in one motion lay a lump of work on somebody that we can't really handle right now and might be a little ahead of the game.

The other is what our goals are for the public outreach. Frankly, I really agree with Member Fort and your recommendation considering a professional to do that, because I think that's difficult to do, but we really also have to be clear on what we're trying to get from the public outreach. You separately mention the other outreach as Councilor Ives mentioned to the other municipalities and what not. I think that's pretty critical to get adequate information on whether we need to move up to as far as Española, but I would say that that's a partially technical decision. It should be informed and use the public outreach to help inform that, but if nobody from the public ever showed up and said, oh, yeah, I know for sure that the Española wastewater treatment plant must be affecting you, I still think it needs consideration. So there needs to be some technical consideration given to that aspect, to that question.

And so I wonder, having – and then how this public outreach process intersects with the timeframe that's required for development of a source water protection plan, because we have not acted on the – because it was two years old and the data that was in it was old, and we thought the area that was defined was inadequate. And we separately thought, all those things are intersecting, that there was public outreach that was needed, but now I've lost track of what our required timeframe is for development and approval of the plan, because we must have some regulatory limit; right?

MR. HARWOOD: No, there's no deadline. This is meant to be a tool for utilities to help them plan and understand their own place on the water geography. But as I understand it, there is no deadline. There is no requirement to have such a plan at all. It's really just been offered up as a resource and initial work into the 2017 was I believe a state-funded contract with a private Albuquerque water resources group to come and assist utilities to create their plan. But as I understand it there's no deadline.

CHAIR HAMILTON: So if it took six months to develop this outreach, to develop a process for reaching out to the different municipalities and other groups that might have interest as stakeholders that represent ag and other – as Councilor Ives

mentioned, we would not be tying ourselves or backing ourselves into any corner.

MR. HARWOOD: And I think it's also important to note, it's going to take two or three months to procure.

CHAIR HAMILTON: Sure.

MR. HARWOOD: And you may want that expert to bring you a report on how they're going to structure the public meetings and who they're going to reach. So we may not even – as a student of this a little bit over the last little while, it could take six months before you start a public process, let alone revisions to the plan itself.

CHAIR HAMILTON: So I just want everybody – I'm sure you all have thought about this but there are fiscal implications of doing this. I don't think – we don't want to blow it out of proportion to what we're gaining from it, but the idea, if we're going to do a source water protection plan for it to be appropriate seems to make sense to me. I don't know if anybody feels – wants to make comments about what kind of limitations. Member Fort and then Commissioner.

MEMBER FORT: Madam Chair, I do want to clarify, in my mind we're looking at a contractor to help develop the Source Water Protection Plan, not just to look at the questions of what geographic area it includes. So I see this as a single process and it's primarily a technical question, what is affecting our –

CHAIR HAMILTON: That's not what I thought. I thought the recommendation was for a facilitator to do the public outreach, not to develop the source water protection plan at all. I mean that's partially drafted. But the facilitator presumably would then summarize the outcomes and that would be input to the revision of the existing draft. Is that – and you're suggesting something different. I'm not trying to blow that off. I just don't think that's what this suggestion was.

MEMBER FORT: Madam Chair, I don't think that – just to be clear, we should have our public input on lots of questions in addition to what the geographic – I think the Board has said we want a larger geographic area and I think the Board or staff are capable of giving that direction to whomever on staff is charged with preparing the plan. So that to me isn't the sole purpose of the public outreach. The purpose of the public outreach is to talk about, as we do in almost every Board meeting, what are potential sources of contamination? What's happening with respect to water quality standards and so on? And to provide that input to the staff person. And that's fine.

CHAIR HAMILTON: Okay. Commissioner Hansen.

COMMISSIONER HANSEN: Just a little update since Councilor Ives asked about a wastewater plant at San I. San I is planning to develop and build a wastewater plant and the discharge, I believe, would go into the Pojoaque River and then into the Rio Grande.

CHAIR HAMILTON: And do you know the timeframe? A general timeframe? There's no way to know that?

COMMISSIONER HANSEN: I do not know what San Ildefonso is planning. I just know that we have, through our discussions with Aamodt we heard their interest in having a wastewater plant also.

CHAIR HAMILTON: Thank you. Councilor Ives.

COUNCILOR IVES: I think the first questions really are more technical, quite frankly, than just asking anybody what they think how far up we should look. Because we know there are point sources for discharges into the rivers. Gathering that

information and having that information before us, and that actually gives us then I think something more to go out to the public with, once we understand what those potential sources are and what they're putting in the river. I think going out to the public when we gathered that information would be a much more productive exercise than just asking people to weigh in, how far up should we look? So I'd be in favor of doing more of the technical – having folks cognizant of those sources, helping us understand how far we should look as we develop that plan, and then engage the public actually in the plan.

CHAIR HAMILTON: So what are you suggesting as a process?

COUNCILOR IVES: I think the first thing we would be doing, and if it's necessary and we don't have the expertise in-house, determine a reasonable geographic limit looking upstream, and as well as looking at what potential pollutants there are, we should contract for that, but we may have a good deal of that expertise in-house. I think that's a first step. And if we can from that define the board outlines of the geography and the pollutants, that's a great time to engage the public in that discussion.

CHAIR HAMILTON: That all sounds reasonable. Is there some sort of motion to give direction that makes sense to you? Member Fort.

COUNCILOR IVES: I was going to say it's really initially a self-assessment. Do we have that capacity internally to engage in those processes, and to the extent we don't, to bring forward a potential contract to engage somebody who could facilitate that process and that could be done at our next meeting.

CHAIR HAMILTON: Is that a question there's an answer to? Or is there somebody – staff, Mr. Carpenter or Mr. Harwood, that you want to contribute to? Because I'm not sure I read that as a motion.

MR. CARPENTER: Madam Chair, members of the Board, I'll take a stab at that. I'm not sure if we have the technical capabilities in-house. I'd have to take a look at that, but I can say with reasonable certainty, given the staffing levels and the other priorities that we have, we probably do not have the resources to do that in-house.

CHAIR HAMILTON: So in my mind there are two options. We have GGI under contract. It's probably not in their current scope. Do they do that sort of thing? Or else it would have to be procured.

MR. HARWOOD: And the company that was assisting the state I believe was Daniel B. Stephens and Associates in Albuquerque which are experienced folks, If I can hazard to volunteer Rick, which is always dangerous, that some degree of a plan to gap-fill around staff's existing skill sets would be prepared and presented to the Board at the next month, so that there would be technical skills that need to be filled and then the public facilitation skills need to be filled, so that you can consider whether to direct staff to run an RFP for that.

CHAIR HAMILTON: So you have, essentially, enough direction from us without a further motion to do that and bring that information forward? Excellent. Thank you. Everybody good with this? Thank you.

MR. HARWOOD: Thank you.

## **MATTERS FROM THE PUBLIC**

CHAIR HAMILTON: Is there anyone from the public? Please, come forward and identify yourself.



JONI ARENDS (CCNS): Madam Chairman-Chairwoman and members of the committee. My name is Joni Arends and I'm with Concerned Citizens for Nuclear Safety. CCNS formed in 1988 and we've been watching this NPDES permit process at LANL for probably 25 years, and every time the Lab provides us with a copy, a paper color copy, of their application. Generally, it is two four-inch binders with large maps to be able to see the pathways down where the discharge goes. And this year they'll only provide us with one CD. Now the problem is that our practice is to compare the maps from one version to another. It's going to cost about \$450 for us to print, to have the whole thing printed out and I just wanted to make a public comment that we think that that's unacceptable that the Lab won't provide their application to us in a paper color copy. Thank you.

CHAIR HAMILTON: Thank you. Is there anybody else here from the public who wants to address the Board? Seeing, none I'll close public comment.

### **MATTER FROM THE BOARD**

CHAIR HAMILTON: Is there anyone besides me that has something? Under matters from the Board, I wanted to make a statement for the record and our minutes that the only matter discussed during the executive session for the last Board meeting on July 11, 2019, was the matter as stated in the motion to go into executive session and no action was taken.

COMMISSIONER HANSEN: This was on our desk on the dais –

CHAIR HAMILTON: It wasn't on mine; what is that?

COMMISSIONER HANSEN: Oh, do you want me to announce this?

There's a Common Water and Sacred Water Tribal Perspective on water in New Mexico November 6<sup>th</sup> through 8<sup>th</sup> at Buffalo Thunder.

CHAIR HAMILTON: Thank you.

### **EXECUTIVE SESSION**

**In accordance with the New Mexico Open Meetings Act NMSA 1978 Section 10-15-1(H)(7), discussion regarding threatened or pending litigation in which the BDDB is a participant, including without limitation: *Buckman Direct Diversion Board v. CDM Smith, et al.*, First Judicial District Court Case No. D-101-CV-2018-01610**

CHAIR HAMILTON: We have an executive session? Ms. Long, can you tell us –

MS. LONG: Yes, Madam Chair, you should ask for a motion to adjourn and go into executive session, all at once and in accordance with the New Mexico Open Meetings Act, NMSA 1978 10-15-1(H)(7) for discussion regarding pending litigation in which the BDD is a participant, include without limitation Buckman Direct Diversion Board versus CDMB Smith, et al.

CHAIR HAMILTON: Oh, and I would just ask everybody to note that the next meeting in Thursday, October 3<sup>rd</sup> at 4 p.m. I would entertain a motion.

COUNCILOR IVES: I so moved.

COMMISSIONER HANSEN: To adjourn and into executive session.

CHAIR HAMILTON: So I think I have two motions on the same matter. I'm going to count one of those as a second. Can I have a roll call?

**The motion to go into executive session passed by unanimous [5-0] roll call vote as follows:**


Commissioner Hamilton	Aye
Councilor Ives	Aye
Commissioner Hansen	Aye
Board Member Fort	Aye
Councilor Harris	Aye

**ADJOURNMENT**

Having completed the agenda, Chair Hamilton declared this meeting adjourned at approximately 5:50 p.m.

Approved by:

*Anne Hamilton*  
 \_\_\_\_\_  
 Anne Hamilton, Board Chair



Respectfully submitted:  
*Karen Farrell*  
 Karen Farrell, Wordswork

ATTEST TO:  
*Geraldine Salazar*  
 \_\_\_\_\_  
 GERALDINE SALAZAR  
 SANTA FE COUNTY CLERK

COUNTY OF SANTA FE )  
STATE OF NEW MEXICO ) ss

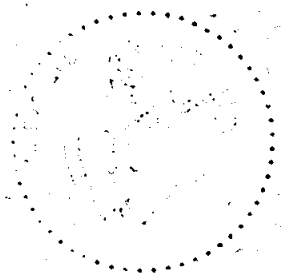
BUCKMAN DIRECT DIV MIN  
PAGES: 66

I Hereby Certify That This Instrument Was Filed for Record On The 20TH Day Of November, 2019 at 03:32:13 PM And Was Duly Recorded as Instrument # 1902401 Of The Records Of Santa Fe County



Witness My Hand And Seal Of Office  
Deputy *Estrella* County Clerk, Santa Fe, NM  
*Martinez*

SEC. CLERK RECORDED 11/20/2019





## AGENDA

### The City of Santa Fe And Santa Fe County

#### Buckman Direct Diversion Board Meeting

**THURSDAY, SEPTEMBER 5, 2019**

**4:00 PM**

**CITY HALL**

**CITY COUNCIL CHAMBERS**

**200 LINCOLN**

1. CALL TO ORDER
2. ROLL CALL
3. APPROVAL OF AGENDA
4. APPROVAL OF CONSENT AGENDA
5. APPROVAL OF MINUTES FROM THE JULY 11, 2019 BUCKMAN DIRECT DIVERSION BOARD MEETING
6. REPORT ON SEPTEMBER 3, 2019 FISCAL SERVICES AUDIT COMMITTEE (FSAC)

#### **INFORMATIONAL ITEMS**

7. Monthly Update on BDD operations. (Randy Sugrue, BDD Operations Superintendent, [rsugrue@santafenm.gov](mailto:rsugrue@santafenm.gov), 955-4501)
8. Report from the BDD Facilities Manager. (Rick Carpenter, Interim BDD Facility Manager, [rcarpenter@santafenm.gov](mailto:rcarpenter@santafenm.gov), 955-4206) **VERBAL**
9. LANL Presentation on NPDES permit re-application for Los Alamos National Laboratory discharges, NPDES permit No. NM0028355. (Alex Puglisi, Environmental Compliance Specialist, [aapuglisi@santafenm.gov](mailto:aapuglisi@santafenm.gov), 955-4232, and Mike Saladen and Jennifer Griffin, LANL) **VERBAL**

10. Presentation on Los Alamos National Laboratory Clean Up Efforts. (Doug Hintze, NNSA, Rick Carpenter, Interim BDD Facility Manager, [rrcarpenter@santafenm.gov](mailto:rrcarpenter@santafenm.gov), 505-955-4206, Kyle Harwood, BDD Legal Counsel, [kyle@egolfaw.com](mailto:kyle@egolfaw.com), 505-986-9641) **VERBAL**

### **CONSENT AGENDA**

11. Request for approval to enter into a Joint Funding Agreement with the US Geological Survey in the amount of \$61,752 for operation and maintenance of the stream-gaging station and installation of a sediment gage. (Mackie Romero, Financial Manager, [mmromero@santafenm.gov](mailto:mmromero@santafenm.gov), 955-4506)
12. Request for approval to reauthorize unexpended funds approved by the BDDDB from the BDD Major Repair and Replacement Fund. (Mackie Romero, Financial Manager, [mmromero@santafenm.gov](mailto:mmromero@santafenm.gov), 955-4506)
- a) Budget Amendment Resolution \$576,171.47
13. Request for approval to pay American Alternative Insurance Corporation an additional premium of \$1,644 for auto coverage of two new vehicles purchase by the BDDDB. (Mackie Romero, Financial Manager, [mmromero@santafenm.gov](mailto:mmromero@santafenm.gov), 955-4506)
14. Request for approval of Amendment No. 5 to increase compensation with Excel Staffing Companies, LLC in the amount of \$16,000 inclusive of NMGRT to provide a General Clerk III to perform administrative duties. (Mackie Romero, Financial Manager, [mmromero@santafenm.gov](mailto:mmromero@santafenm.gov), 955-4506)

### **DISCUSSION AND ACTION**

15. Request for approval of Amendment No. 2 to the original Professional Services Agreement, Item 18-1048 with ALS Group USA, Corp to increase compensation by \$75,500 inclusive of NMGRT, for additional laboratory analysis services. (Mackie Romero, Financial Manager, [mmromero@santafenm.gov](mailto:mmromero@santafenm.gov), 955-4506)
- a) Budget Amendment Resolution to move \$75,500 from solids to other Operating Costs to cover the increased compensation.
16. Presentation and Possible Action on Source Water Protection Plan (SWPP) Public Outreach options (Kyle Harwood, BDD Legal Counsel, [kyle@egolfaw.com](mailto:kyle@egolfaw.com), 505-986-9641)

### **MATTERS FROM THE PUBLIC**

### **MATTERS FROM THE BOARD**

**NEXT REGULAR MEETING: Thursday, October 3, 2019 at 4:00pm**

### **ADJOURN**

SPC CLERK RECORDED 11/29/2019



### **EXECUTIVE SESSION**

In accordance with the New Mexico Open Meetings Act NMSA 1978, §10-15-1(H)(7), discussion regarding pending litigation in which the BDDDB is a participant, including, without limitation, *Buckman Direct Diversion Board v. CDM Smith, et al.*, First Judicial District Court Case No. D-101-CV-2018-01610. (Nancy Long, BDD Legal Counsel, [nancy@longkomer.com](mailto:nancy@longkomer.com), 982-8405)

**END OF EXECUTIVE SESSION**

**PERSONS WITH DISABILITIES IN NEED OF ACCOMODATIONS, CONTACT THE CITY CLERK'S OFFICE AT 505-955-6520, FIVE (5) WORKING DAYS PRIOR TO THE MEETING DATE**

RECEIVED AT THE CITY CLERK'S OFFICE

DATE: 8/28/19

TIME: 9:17 AM

SEC CLERK RECORDED 11/28/2019



**Los Alamos**  
NATIONAL LABORATORY

EST. 1943

EXHIBIT  
**2**



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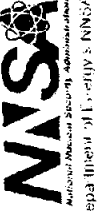
REC'D 11/28/2019



**Los Alamos**  
NATIONAL LABORATORY

EST. 1943

Delivering science and technology  
to protect our nation  
and promote world stability



Authorized National Security Agency Information  
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# NPDES Sanitary and Industrial Permit 2019 Permit Re-Application

Jennifer Griffin  
NPDES Permit Engineer and Program Lead  
Los Alamos National Laboratory

September 5, 2019



Managed by Triad National Security, LLC for the U.S. Department of Energy's NNSA

LA-UR-19-28934

REC'D CLERK RECORDED 11/20/2019

# Background

- LANL Approved Permit Since 1978 (41 Years)
- Before 1990 - 141 Outfalls
  - Outfall Consolidation to the Sanitary Wastewater System (SWWS)
  - Outfall Elimination/Reduction Projects
- Present Day
  - 11 Permitted Outfalls
    - Located at 7 Technical Areas
    - Spread Out Over 36 square miles
  - Current Permit Term
    - October 2014 to Present
    - Expires September 30, 2019
  - Permit Re-Application
    - Outfall Surveys
    - Outfall Sampling (Form 2C Requirements)
    - Submitted to EPA and NMED March 2019
    - Draft Permit Expected End of September
    - Final Permit Early 2020

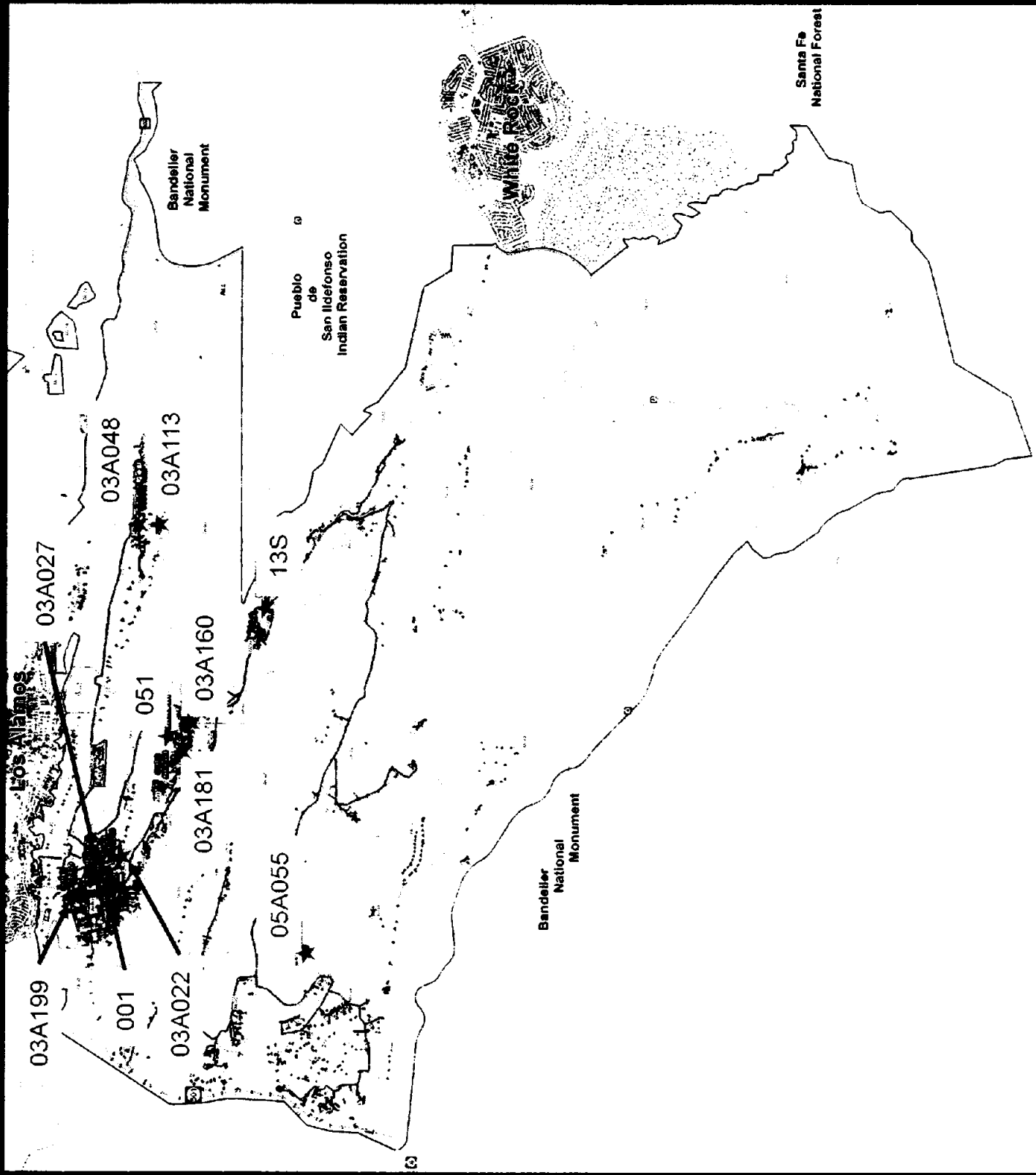


# Permitted Outfalls

Outfall ID No.	No. of Outfalls	Outfall Category/Effluent Type
001	1	Power Plant (001)
13S	1	Sanitary Wastewater System Facility (SWWS) Effluent (13S)
051	1	Radioactive Liquid Waste Treatment Facility Effluent (051)
03A022		
03A027		
03A048		
03A113	7	Treated/Non-Contact Cooling Water (03A)
03A160		
03A181		
03A199		
05A055	1	High Explosive Wastewater Treatment Facility Effluent (05A)

## Receiving Streams

Outfall ID No.	Receiving Stream	Watershed	Flow Type
001	WQS 20.6.4.126 NMAC	Sandia	Continuous
13S	WQS 20.6.4.128 NMAC (Routed to Outfall 001)	Canada del Buey	Intermittent (at Outfall 001)
03A027	WQS 20.6.4.126 NMAC (Routed to Outfall 001)	Sandia	Intermittent (at Outfall 001)
03A199	WQS 20.6.4.126 NMAC	Sandia	Intermittent
03A113	WQS 20.6.4.126 NMAC	Sandia	Intermittent
03A048	WQS 20.6.4.128 NMAC	Los Alamos	Intermittent
03A160	WQS 20.6.4.128 NMAC (SWWS or Outfall 03A160)	Mortandad	Intermittent
03A181	WQS 20.6.4.128 NMAC	Mortandad	Intermittent
03A022	WQS 20.6.4.128 NMAC	Mortandad	Intermittent
051	WQS 20.6.4.128 NMAC (MET, SET, or Outfall 051)	Mortandad	Intermittent
05A055	WQS 20.6.4.128 NMAC (Evaporator or Outfall 05A055)	Water/CdV	Intermittent

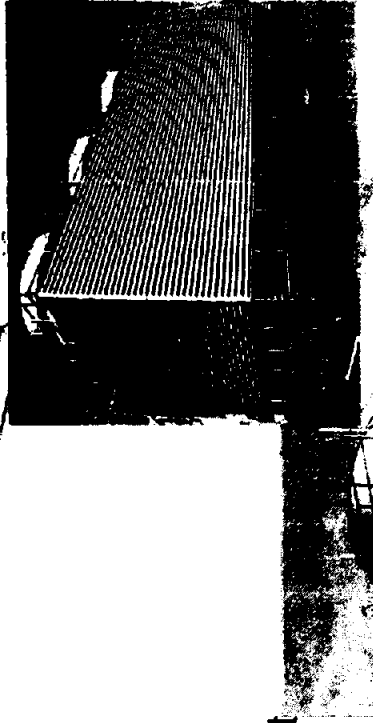


5102/EZ/11 0302002013

SEC CLERK RECORDED 11/20/2013

# Outfall 001

- Continuous: 0.154 MGD – 0.333 MGD
- Consolidates 4 Effluent Streams
  - Power Plant Once Through Cooling
  - Sanitary Waste Water System (SWWS) Effluent
  - Cooling Tower Blowdown
  - Sanitary Effluent Reclamation Facility (SERF) Effluent
- Monitoring
  - Weekly: Temperature, pH, TRC
  - Monthly: Flow, TSS, E.coli
  - Quarterly: Whole Effluent Toxicity (WET)
  - Yearly: Metals (Al, Cu), PCBs
  - Term: Gross Alpha



# Outfall 13S

- Intermittent: 0.229 MGD – 0.418 MGD
- Effluent
  - Sanitary Waste Water System Effluent
  - Discharge is Routed to the Reuse Tank at the Power Plant
  - Recycled through SERF for Use as Cooling Tower Makeup
  - OR Discharged to Outfall
- Monitoring [ONLY if Discharged to Canada del Buey]
  - Weekly: pH, TRC
  - Monthly: Flow, BOD, TSS
  - Yearly: PCB, AI, WET
  - Term: Gross Alpha



# Outfall 03A027

- Intermittent: 0.051 MGD – 0.201 MGD
- Effluent
  - Cooling Tower Blowdown
  - Fall 2016 Routed to Outfall 001
- Monitoring
  - Weekly: pH, TRC
  - Monthly: E. Coli
  - Quarterly: TSS, Phosphorus
  - Yearly: PCB, Al, Cu
  - Term: Gross Alpha, WET





# Outfall 03A199

- Intermittent: 0.036 MGD – 0.074 MGD

- Effluent

  - Cooling Tower Blowdown

- Monitoring

  - Weekly: pH, TRC

  - Quarterly: TSS, Phosphorus

  - Yearly: Al, Cu, Hg

  - Term: Gross Alpha



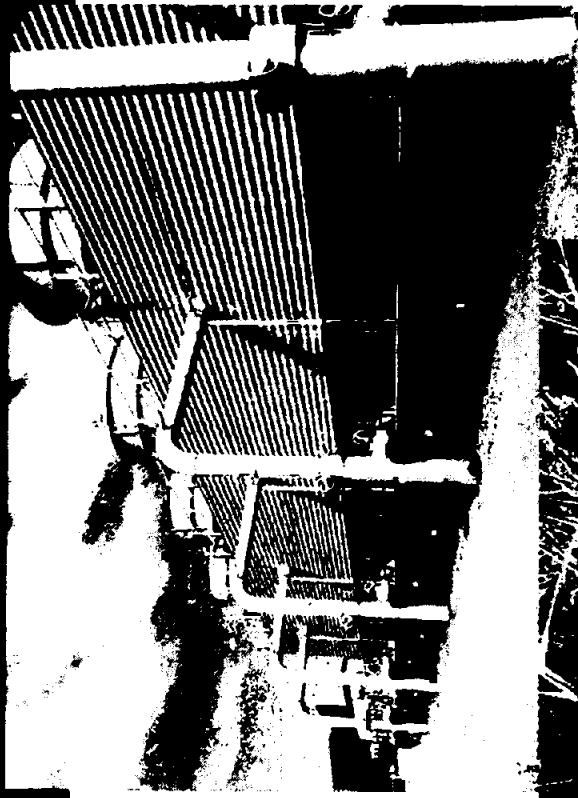
# Outfall 03A113

- Intermittent: 0.0016 MGD – 0.015 MGD
- Effluent
  - Cooling Tower Blowdown
  - Comingles with Storm Water
- Monitoring
  - Weekly: pH, TRC
  - Quarterly: TSS, Phosphorus
  - Yearly: Cu, Al
  - Term: Gross Alpha



# Outfall 03A048

- Intermittent: 0.088 MGD – 0.169 MGD
- Effluent
  - Cooling Tower Blowdown
- Monitoring
  - Weekly: pH, TRC
  - Quarterly: TSS, Phosphorus
  - Yearly: As, Cu, Hg, Al
  - Term: Gross Alpha, CrVI



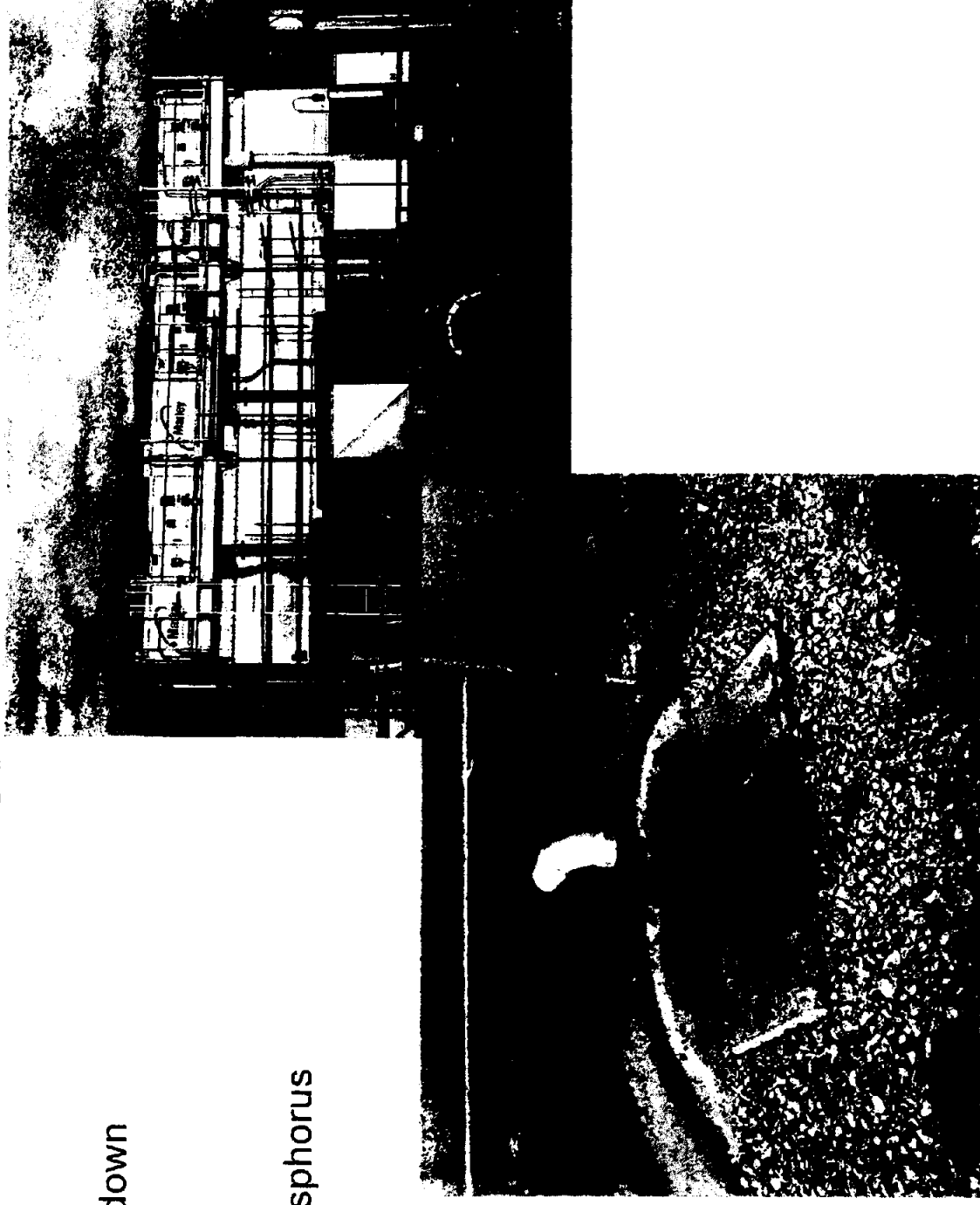
# Outfall 03A160

- Intermittent: 0.0026 MGD – 0.0065 MGD
- Effluent
  - Cooling Tower Blowdown
  - Ability to Discharge to SWWS Added May 2018
  - SWWS or Outfall
- Monitoring
  - Weekly: pH, TRC, Cu
  - Monthly: Cyanide
  - Quarterly: TSS, Phosphorus
  - Yearly: As, Al
  - Term: Gross Alpha, CrVI



# Outfall 03A181

- Intermittent: 0.009 MGD – 0.032 MGD
- Effluent
  - Cooling Tower Blowdown
- Monitoring
  - Weekly: pH, TRC
  - Quarterly: TSS, Phosphorus
  - Yearly: Cu, Al
  - Term: Gross Alpha



# Outfall 03A022

- Intermittent: 0.001 MGD – 0.028 MGD
- Effluent
  - Once Through Cooling Water
  - Emergency Treated Once Through Cooling Water
  - Storm Water
- Monitoring
  - Weekly: pH, TRC
  - Quarterly: TSS
  - Term: Al, Cu, Gross Alpha



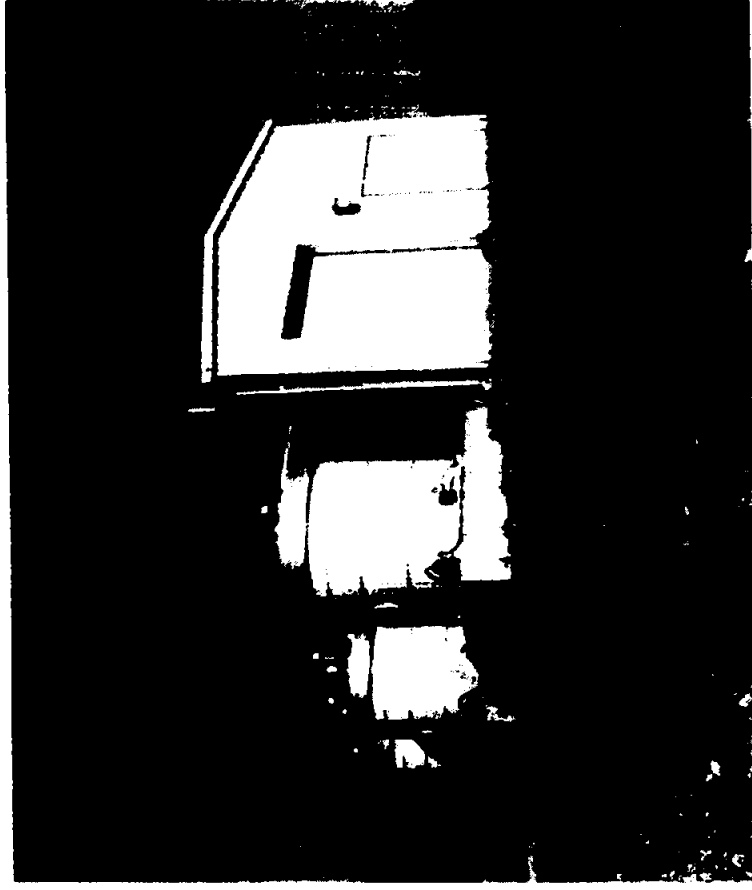
# Outfall 051

- Intermittent: 0.020 MGD – 0.040 MGD
- Effluent
  - Radioactive Liquid Waste Treatment Facility (RLWTF) Effluent
  - Discharge Options: MET, SET, or Outfall
  - Last Discharge June 18, 2019
  - Periodic Discharge to Assess Equipment Operability
- Monitoring
  - Weekly: pH, TRC, Ra 226/228, Cr, Pb, Cu, Zn, Hardness, Perchlorate
  - Monthly: COD, TSS, TTO
  - Quarterly: WET
  - Term: Cd, Hg, Ni, Se, Al, PCB, Gross Alpha, CrIII, CrVI



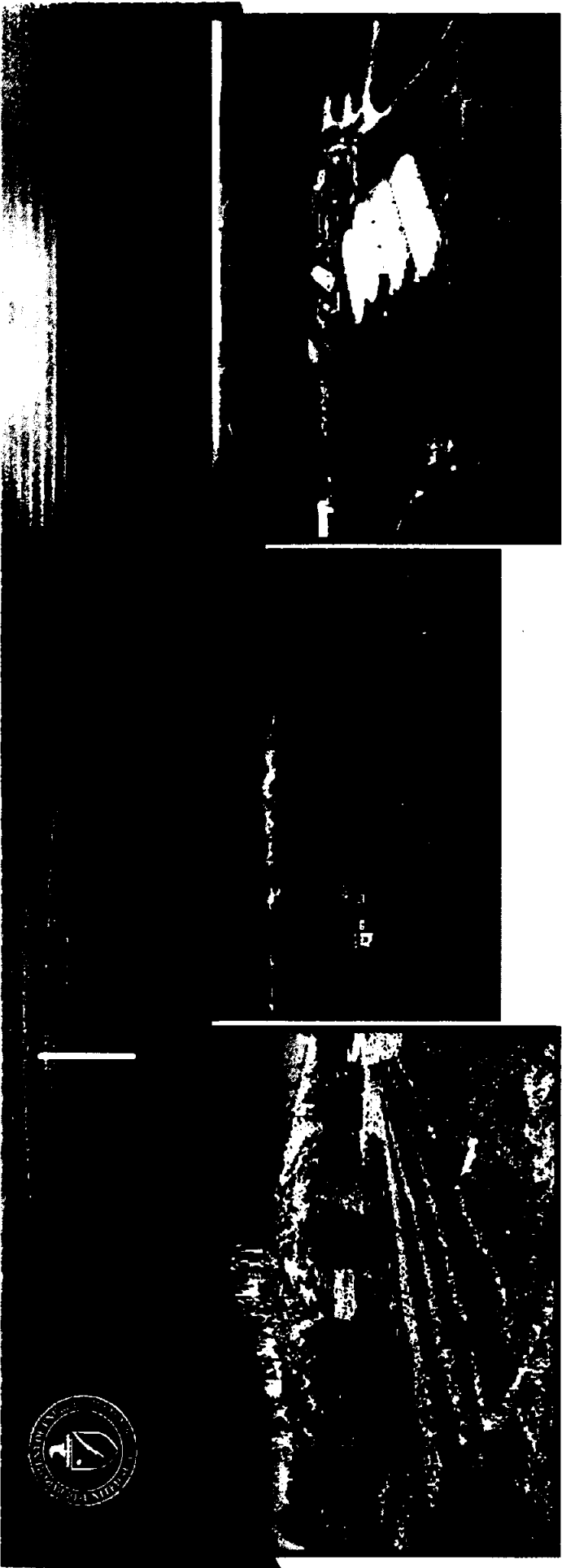
# Outfall 05A055

- Intermittent: 0.0003 MGD – 0.0021 MGD
- Effluent
  - High Explosives Waste Water Treatment Facility (HEWTF) Effluent
  - Discharge Options: Evaporator or Outfall
  - No Discharge Current Permit Term
  - Periodic Discharge to Assess Equipment Operability
- Monitoring
  - Weekly: pH, TRC
  - Monthly: RDX
  - Quarterly: COD, TSS, TTO, Oil and Grease, Trinitrotoluene
  - Yearly: Perchlorate
  - Term: Al, Gross Alpha, WET





# Questions



# Legacy Cleanup at Los Alamos National Laboratory

EXHIBIT  
**3**

Doug Hintze, Manager  
Environmental Management Los Alamos Field Office  
September 5, 2019



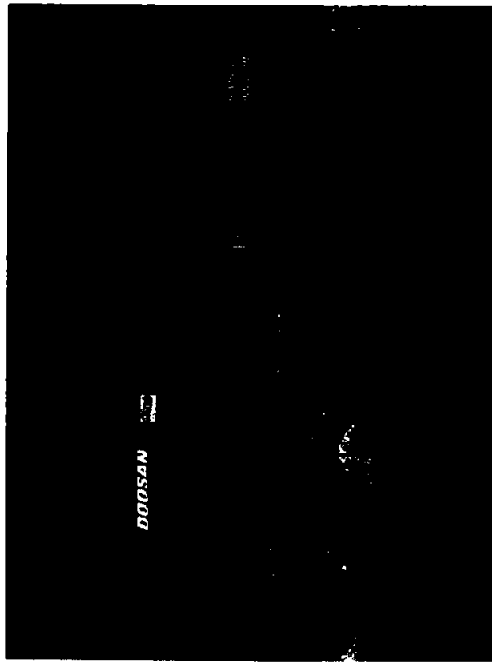
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Environmental Mission at

# Los Alamos National Laboratory

- The EM-LA mission is to safely, efficiently, and with full transparency complete the cleanup of legacy contamination and waste (pre-1999) resulting from nuclear weapons development and government-sponsored nuclear research.



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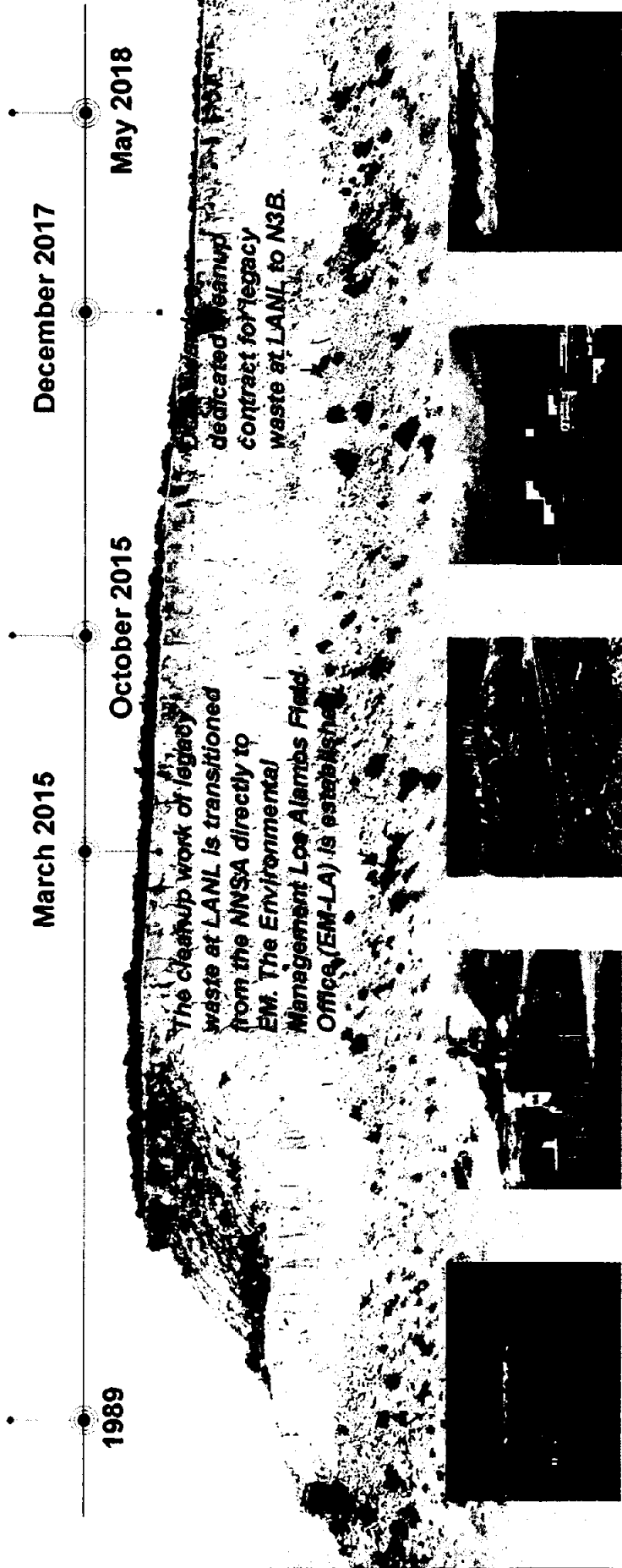


# Environmental Management at Los Alamos National Laboratory

The DOE Office of Environmental Management (EM), under the Defense Programs, begins the cleanup of legacy material, facilities and waste sites at Los Alamos National Laboratory (LANL).

Los Alamos National Security (LANS) begins to perform EM scope at LANL for EM-LA under a Bridge Contract.

N3B commences work on the Los Alamos Legacy Cleanup Contract.





# Cleaning Up

## Legacy Contamination

### ➤ **Mission activities**

- Surface and groundwater monitoring and remediation
- Removing contaminated soil
- Decontaminating and decommissioning surplus process-contaminated buildings
- Legacy waste management

### ➤ **Cleanup locations**

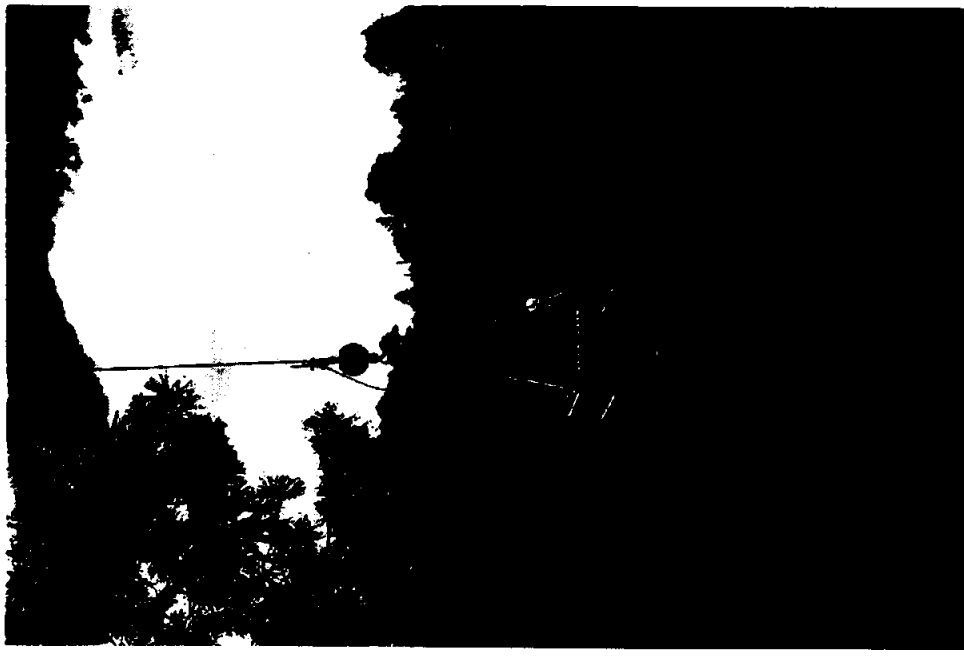
- Former LANL buildings
- Hillsides, canyon sides and canyon bottoms
- Old landfills

### ➤ **Current cleanup priorities**

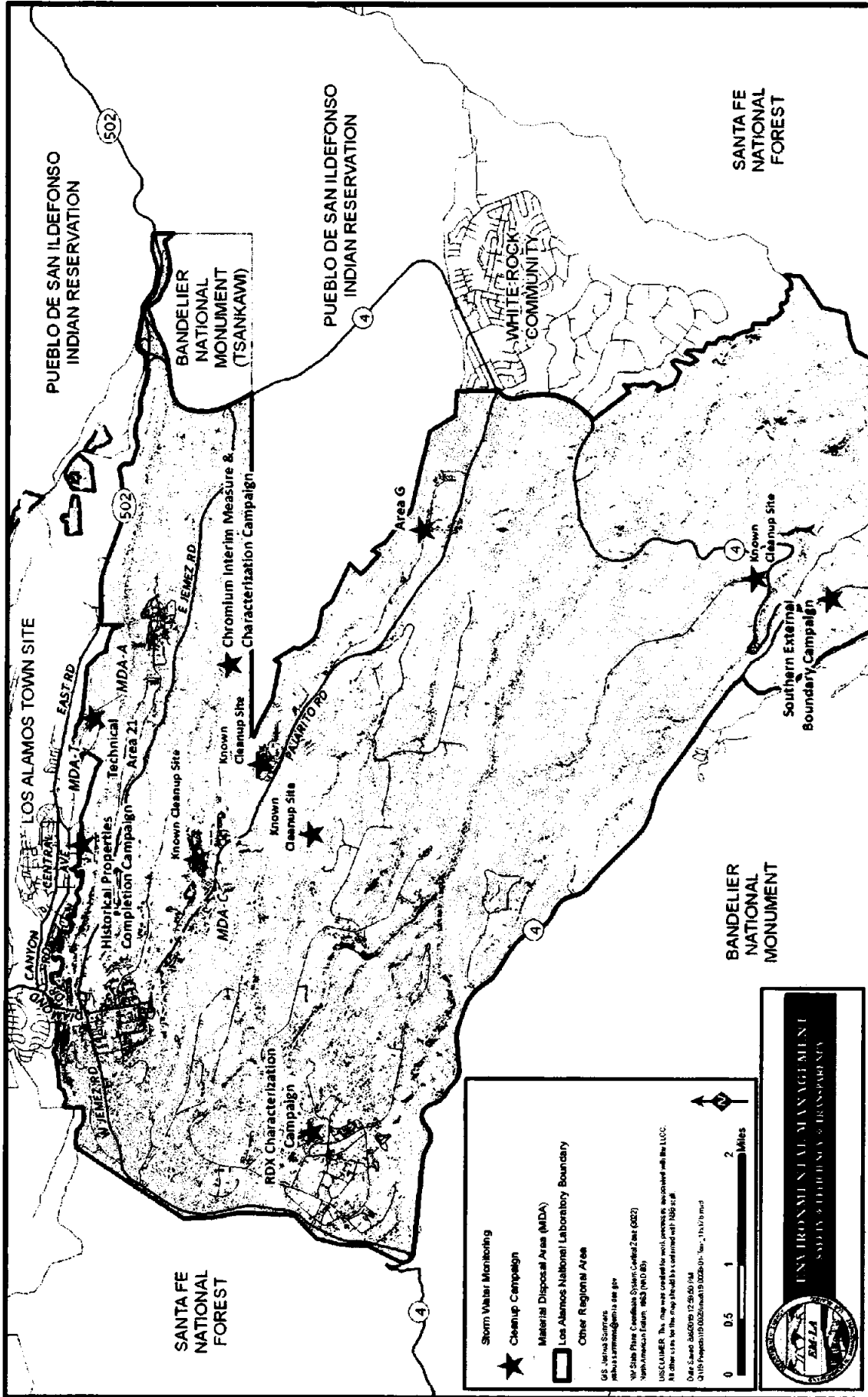
- Chromium Interim Measure and Characterization Campaign
- Royal Demolition Explosives Characterization Campaign
- Technical Area 21 Campaign
- Removing TRU waste from Technical Area 54




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*A crane places workers at a cleanup site in Los Alamos Canyon*



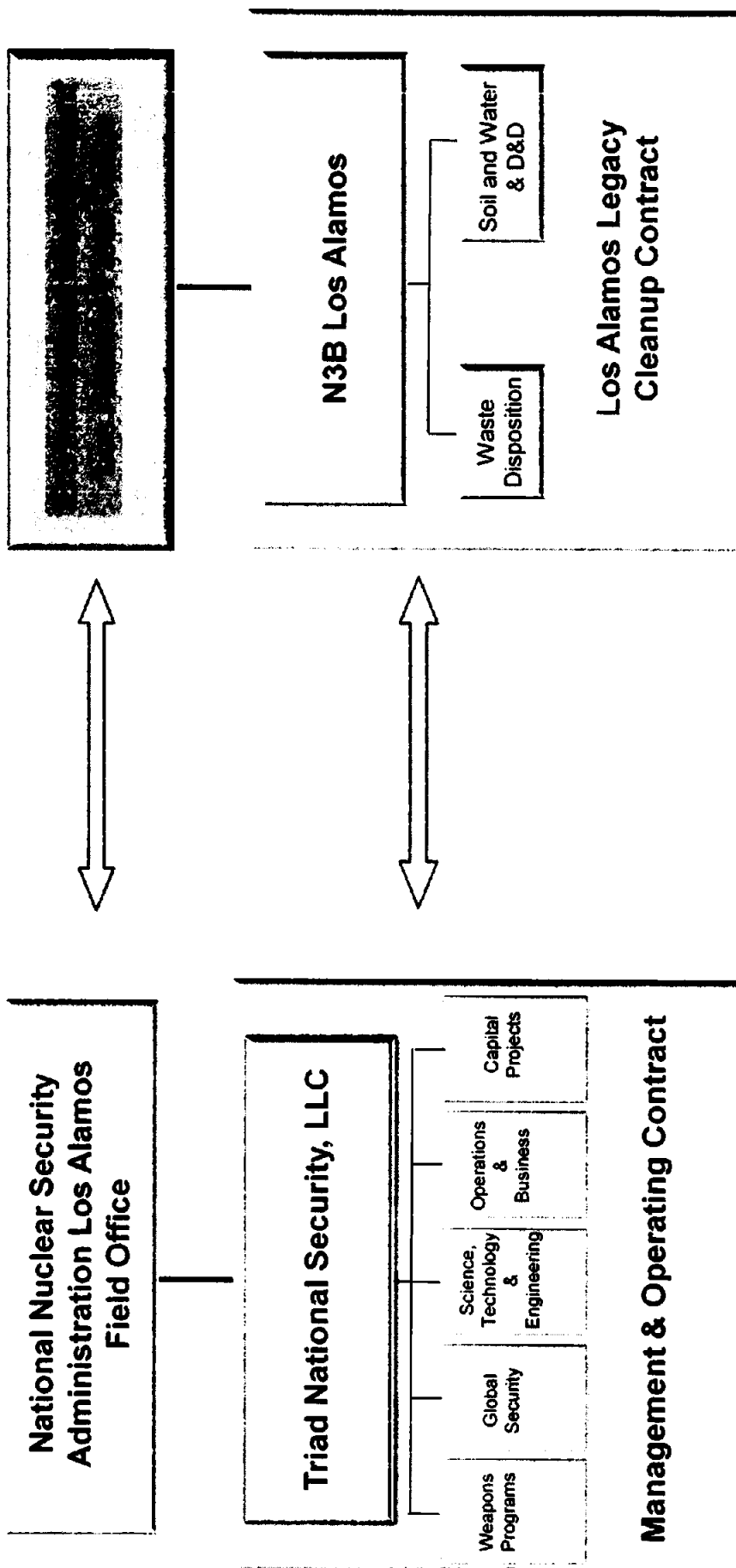
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# Los Alamos National Laboratory Organizational Structure



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# Chromium Interim Measure and Characterization Campaign



*Crews install the monitoring well R-70.*



*Infrastructure has been designed to have a minimum visual impact.*



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- There is a chromium plume beneath Sandia and Mortandad canyons.
- An Interim Measure is underway to control plume advancement and shrink its footprint.
- Recent samples at the regional aquifer well R-50, near the Laboratory boundary with San Ildefonso, are showing consistently decreasing trends in chromium concentrations.
- This data helps to indicate that hydraulic plume control under the Interim Measure is taking hold.



## Characterization Campaign: Actions Taken So Far

- Since elevated hexavalent chromium concentrations were discovered in one well on LANL property in 2005, DOE has taken the following actions:
  - Installed 25 monitoring wells to characterize and monitor plume extent and behavior
  - Developed comprehensive groundwater model to guide installation of wells and to support a better understanding of the plume
  - Planned and implemented an Interim Measure (IM) consisting of 5 extraction and 5 injection wells, groundwater treatment system, and 3 miles of piping necessary to arrest migration of the downgradient edge of the plume
  - Operating the IM along LANL's boundary with the Pueblo de San Ildefonso for over one year, successfully shrinking the plume along the southern boundary
  - Pumped and treated over 103 million gallons of water from the plume
  - Developing plans to install two additional monitoring wells to better characterize the northwestern and southwestern portions of the plume
  - Spent over \$90M to characterize the plume, arrest its migration through operation of the IM, and study remedial options for a final remedy





# RDX Characterization Campaign

- Royal Demolition Explosives (RDX) was used widely in World War II and remains common in military applications.
- RDX in groundwater was first identified in LANL's Technical Area 16 in the late 1990s and discovered in the regional aquifer in 2005.
- Residual RDX remains in the subsurface groundwater.
- There are nine wells monitoring the regional groundwater as part of the RDX Characterization Campaign.



*N3B staff conduct field work near the latest RDX monitoring well, R-69.*



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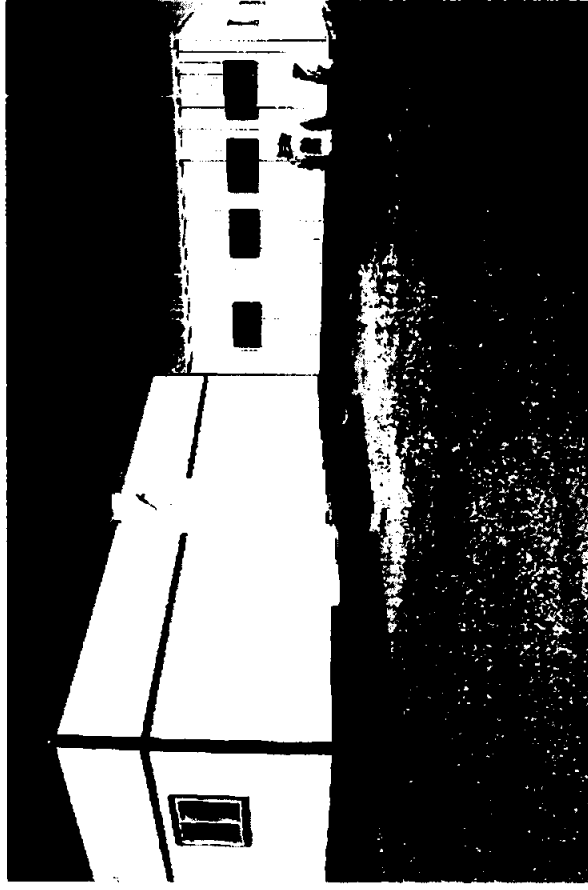


# Technical Area 21

- Technical Area 21 is a former Manhattan Project and Cold War-era complex of buildings that housed plutonium processing facilities and was where groundbreaking tritium research for energy, environment and weapons defense took place.



*Concrete slabs and other debris will be cleaned up from Technical Area 21 in FY 2019.*



*Trailers have been installed at TA-21 to accommodate staff.*



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*Structured decision making (SDM) provides a transparent framework to develop optimal solutions to complex problems. The process is reproducible and technically defensible, integrating science and values in an analytic-deliberative structure. Using this structure, we can achieve a common understanding of objectives, develop a rich set of options, conduct science-based consequence modeling, and explicitly acknowledge sources of uncertainty. Neptune continues to develop SDM methods and tools that improve the quality and transparency of decisions.*

**STRUCTURED DECISION MAKING IS AN INTERACTIVE PROCESS THAT, BY DESIGN, IS TRANSPARENT, REPRODUCIBLE, AND ADAPTIVE**

Neptune's approach to structured decision making (SDM) begins with a comprehensive understanding of the decision landscape (e.g., the scientific, social, economic, policy, and regulatory aspects of the decision). Establishing this context makes it possible to quickly identify critical issues as well as areas of common ground. Because critical issues are invariably a function of values and preferences among stakeholders, we emphasize the importance of value-focused thinking throughout the early stages of the decision process. Value-focused thinking not only leads to a rich

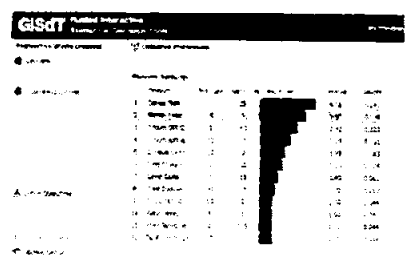
set of potential options and strategies, but it also ensures that the values, rather than the options, drive the decision. Simply put, by making values and preferences explicit, and providing a structure with which to "translate" these values and preferences into decision objectives, we create a process designed to select an option that optimizes overall value.

The "science part" of SDM revolves around probabilistic consequence modeling. One approach Neptune uses for consequence modeling is Bayesian Belief Networks (BBN). BBNs provide

a graphical, intuitive way to capture the complexity of the decision problem, with nodes representing variables in the "system" under study. The BBN provides for forward and backward reasoning, and supports sensitivity analyses to identify influential variables and value of information analyses to address sources of uncertainty. Ultimately, SDM provides insight into how our values, preferences, and assumptions influence the decision, and how we can make the best use of available science and data to arrive at optimal decisions in a transparent and resource-efficient manner.

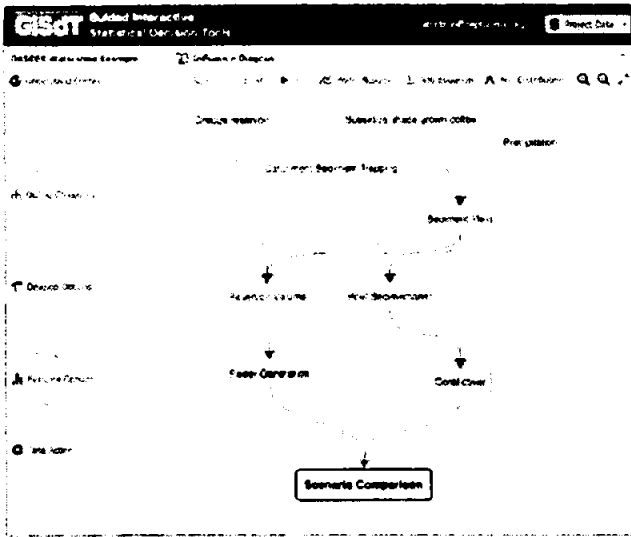
**Neptune's Guided Interactive Statistical Decision Tools (GiSdT)**

- Neptune developed GiSdT in response to the increasing complexity of problems and the overarching need for transparency facing the environmental, energy, and health industries.
- GiSdT is a suite of tools that is continuing to evolve through internal investment as well as through development and application to meet the needs of our clients.
- At its core, SDM in GiSdT combines value-focused thinking with robust statistical and Bayesian modeling tools to compare tradeoffs among competing priorities.



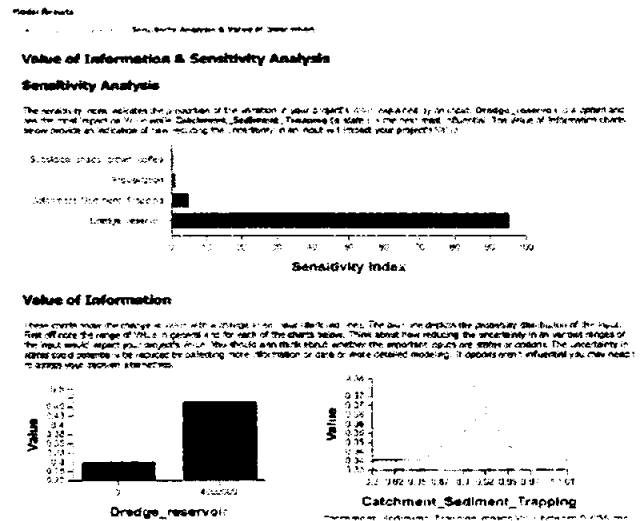
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# Case Study: Sustainable Watershed Management



Typically, complex decision problems cover a wide range of stakeholder values and objectives including, for example, economic (public and private), environment, public health, energy, water, feasibility of controls, and social policy. Given the heterogeneity in values and objectives, developing an “optimal” solution is challenging, to say the least. Neptune applied GiSDT to a decision problem involving watershed planning/management that considered implications for coffee growers, power generation, and the tourist industry in Guánica Bay, Puerto Rico. The figure to the left provides a simple depiction of two options (yellow); modeled inputs, or states, relevant to environmental quality (pink); and two primary decision objectives (green). As suggested by this figure, the choice of management options will have different impacts on different stakeholders. For example, supporting a more environmentally sustainable coffee industry would require a subsidy to plant and maintain trees within coffee growing areas (top yellow bubble). This watershed management option would also result in reduced sediment loads to the reservoir and less sedimentation of the coral reef, improving power generation and protecting the coral reef.

The figure to the right provides a snapshot of GiSDT capabilities designed to support the sensitivity analysis of options/states and the value of information. The sensitivity index (top) indicates that dredging has the most impact on the overall value, and sediment trapping is the next most influential option. The figures at the bottom depict a value of information analysis that shows how a change in input translates into a change in value. The histogram (left) shows the relationship between value and cost of option, indicating that an investment of 4M in dredging has significant value (an increase of 0.15). The output distribution (right) suggests that reducing the uncertainty in a state (sediment trapping) has marginal value (an increase of 0.04). Therefore, investing resources to improve the knowledge base on sediment trapping may not be warranted given the modest improvement in value.



NEPTUNE AND COMPANY, INC

KELLY BLACK, PRESIDENT

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 kblack@neptuneinc.org

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