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4 MEETING MINUTES
5 THE FORMER MEMPHIS DEPOT
6 RESTORATION ADVISORY BOARD MEETING

7 April 3, 2008

8 1620 Marjorie Street
9 Memphis, Tennessee
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18 H & N COURT REPORTING
19 P.O. Box 41971
20 Memphis, Tennessee 38174
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APPEARANCES

Mike Dobbs: DLA/DDC Co-Chair

Turpin Ballard: US Environmental
Protection Agency

Peggy Brooks: Community Member

Reginald Eskridge: Community Member

Torrence Myers: Civic Rep, MLG&W

Johnnie Mae Peters: Community Member

Ulysses Truitt: Community Member

Mondell Williams: RAB Community Co-
Chair

Jamie Woods: TN Dept of Environment &
Conservation

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1 The Restoration Advisory Board (RAB)
2 meeting was held at 6:00 p.m. on April 3, 2008,
3 at the South Memphis Senior Citizens Center
4 located at 1620 Marjorie Street, Memphis,
5 Tennessee.

6 WELCOME AND INTRODUCTIONS:

7 MR. DOBBS: Good evening. My name is
8 Mike Dobbs. I'm Chief of Environment and
9 Safety for DLA/ DDC and I welcome you to
10 tonight's meeting. Did Mondell show up?
11

12 UNIDENTIFIED SPEAKER: Mondell is on
13 his way.

14 MR. DOBBS: Well, we'll just go ahead.
15 I have some introductions. I have a couple of
16 people here I want to identify to the group.
17 Stacy Umstead, she's with the DDC Public
18 Affairs. Brett Frazier is in the back. You know
19 Brett. He works for the Corps of Engineers. He
20 oversees the contractors as far as CH2MHill.

21 With us back there we have Brian Reneghan.
22 He is with the Air Force Center for Environmental
23 Excellence. He is the COR for the contractor,
24 for e²M. Beside Brian we have John Miller who is

1 with a contractor called Noblis. They're
2 basically a third party reviewer of all the
3 documents that we do that we retain.

4 And I have Laura Lock she's with TVG and
5 we have a visitor there as a representative. If
6 you want to identify yourself, you can. If you
7 don't, you don't have to.

8 MR. Curran: Dave Curran,
9 Commercial Advisors, here in town.

10 MR. DOBBS: Thank you. That's all I
11 have. Mondell, do you want to say a couple of
12 words to get us going?

13
14 **REVIEW AND APPROVE AGENDA:**

15 MR. WILLIAMS: First of all, I'd like
16 to apologize for being late. I was at the
17 Airways location instead of here. I normally
18 would be here on time. But, anyway, hopefully
19 everybody has received the agenda and so does
20 anybody want to add, take away or anything like
21 that to the agenda? If not, can I get a motion?

22 MS. PETERS: I move that we accept.

23 MR. WILLIAMS: Can I get a second?

24 MR. Truitt: Second.

1 MR. WILLIAMS: Okay. All in favor?

2 (Aye)

3 MR. WILLIAMS: Any opposed?

4 (No Response.)

5 MR. WILLIAMS: So moved.

6
7 OLD BUSINESS; COMMUNITY RAB HOUSEKEEPING:

8
9 MR. WILLIAMS: Okay. Last
10 meeting we had a certain situation come up about
11 cell phones and we cannot conduct any meeting of
12 any business on a cell phone if you're somewhere
13 else.

14 If you're part of the meeting, you need to
15 be here; if you're a member, you need to be
16 here. You cannot call in; you cannot get
17 someone to hold a cell phone and you talk 20, 30
18 minutes. That's not even anything that we can
19 vote on because I don't think that would be good
20 anyway, so -- and there's been a big discussion
21 about it. So as far as the cell phones and
22 people calling and putting you on speaker phone,
23 we cannot do that. All right.

24 MR. DOBBS: And, also, if you have a

1 We would greatly appreciate it for the other
2 members.

3
4 **NEW BUSINESS: ENVIRONMENTAL RESTORATION UPDATE:**

5 MR. DOBBS: Okay, we'll get started
6 tonight. The purpose is to brief the community
7 on where we're at and where we've been and the
8 progress. We have Tom Holmes from e²M. He's
9 going to get up and give us an update.

10 I believe that if you can hold your
11 questions to the end of his presentation, we'll
12 take questions at the end when we get through
13 with the presentation. It'll be a lot easier.

14 MR. HOLMES: Well, as Mike said, I'm
15 Tom Holmes, project manager for e²M. We are
16 the remedial contractor for the former Memphis
17 Depot.

18 There are -- I want to basically go over,
19 as we have in past meetings, go through all the
20 activities that are underway, both on the Main
21 Installation and Dunn Field. And those
22 activities are the Main Installation Remedial
23 Action, Dunn Field Source Areas Remedial
24 Action. We're going to talk about some casings
we

1 found during our excavation in one of the areas
2 of Dunn Field and then we'll talk about the Dunn
3 Field Off-Depot groundwater and then the
4 Five-Year Review that was recently completed and
5 then we'll go through the next steps that we
6 plan to accomplish over the next few years for
7 Remedial Action.

8 So the Main Installation Remedial Action
9 is focused in two areas. Treatment Area 1 is in
10 the southeast corner and treatment Area 2 is in
11 the east-central area of the site.

12 The activities for the Main Installation
13 Remedial Action are enhanced by a remediation
14 treatment, Monitored Natural Attenuation, in the
15 areas with lower levels of solvent groundwater
16 and land use controls over the entire
17 Installation, over the entire Main
18 Installation.

19 Let me go back, please, go back about
20 two slides-- okay. So just the enhanced remediation
21 treatment, we aren't going to talk very long
22 about the Main Installation. We've gone over
23 that a lot. Things are just sort of continuing
24 as they have been.

1 We are doing lactate injections into the
2 groundwater in those two treatment areas we
3 pointed out, Treatment Area 1, Treatment Area 2,
4 and that is speeding up a natural reaction to
5 bacteria in the ground by the lactate and as a
6 by-product of their activity they destroy the
7 solvents in the underground water. And we're
8 doing quarterly groundwater monitoring for that.

9 The Monitored Natural Attenuation, as I
10 said, is a natural degradation activity. The same
activity will

11 proceed at its own pace without any enhancement
12 in the rest of the Main Installation.

13 Recently over the past year we have
14 installed additional monitoring wells to make
15 sure we have a handle on the groundwater
16 contamination throughout. We're doing quarterly
17 groundwater monitoring for that.

18 And then institutional controls are implemented
19 through annual inspections where we're looking to
20 make sure there's no residential use or
21 facilities, such as daycare facilities, on the
22 property. Of course, it's a business park and a
23 warehouse facility so that would not be expected
24 and, also, no wells for groundwater use on the

1 property. So that is something we just check
2 every year.

3 The lactate injections are proceeding
4 well and we're seeing some good results with
5 that. The target date to complete the
6 injections is in September of this year and the
7 goal is that we would have met the objectives at
8 that time. So it looks good for us doing that
9 at present.

10 We expect to achieve the clean-up goals in
11 the rest of the area after a longer period, so
12 the activity is not enhanced in any way there.

13 We're planning some additional
14 investigation in some areas of the Main Installation
15 to look for the sources of some of that
16 groundwater contamination. It was done as part
17 of the Remedial Investigation on some initial
18 work then, but we decided to help with the
19 clean-up and speed up the process-- to allow the
20 transfer
21 of the property to proceed unimpeded to do
22 additional development-- we are not looking for any
23 additional contamination, just the source of the
24 solvents that are getting down into the
groundwater in our systems.

1 And then the land use inspections will
2 just continue indefinitely because they're
3 required on any superfund site-- on the surface sites
4 there
5 that aren't available for unrestricted reuse,
6 and I just went over what these inspections
7 entail just a little bit ago. So that's it for
8 the Main Installation.

9 Now the Source Area Remedial Action, this
10 is the western part of Dunn Field and the yellow
11 line, dash line, along the side here is the
12 western boundary and the MLGW substation is
13 just sort of diagonally up from Treatment Area
14 1, up at the north end of Dunn Field, and then
15 there are four areas that we're looking at, one,
16 two, three, four.

17 And then the activities, remedial
18 activities, include the soil vapor, Fluvial Soil
19 Vapor Extraction system, some limited
20 excavation, transportation and disposal, Loess
21 Thermal-Enhanced SVE system, Zero-Valent Iron
22 injections in groundwater and land use controls.

23 This is just a cross section schematic to
24 give you an idea of what we're doing. So this
25 is just a cut-away of the upper soils there and

1 then you've got the Loess, the Fluvial sands and
2 then at the bottom of the Fluvial sands is
3 groundwater so that's the Fluvial aquifer.

4 Then there's a -- on Dunn Field there's a
5 big clay sequence below the Fluvial sands sort
6 of holding the water in place and forms the
7 bottom of the aquifer.

8 So we have started the Fluvial SVE
9 treatment and it's represented by these purple
10 lines. This is a well going in just above the
11 water level that draws in air. We have a vacuum
12 on it, so it pulls the air that carries the
13 solvents that are in the Fluvial sands into the
14 wells and then they go to the treatment system.

15 The next one of the other activities, is
16 the Loess Thermal-Enhanced SVE. So that's going
17 to take place up at this other area. This has a
18 depth of about 30 feet; this is about 80 feet
19 here, about 10 feet of water.

20 Then after the Loess Thermal-Enhanced SVE
21 is completed, we'll do ZVI injections to clean
22 up areas of groundwater. What's not shown on
23 here is the shallow areas of excavation, the two
24 areas that we did and then, of course, the land

1 use controls that impact the surface there. So
2 that's just sort of an idea of where the
3 different activities are taking place
4 underground.

5 So the Fluvial SVE system, as I said, is
6 underway. I think we talked about that in
7 October. We completed construction last year
8 and it was -- has been in operation since July.
9 As of about the end of the year we pulled out
10 19 hundred pounds of volatile organic compounds
11 from the soil and into the treatment systems.

12 It's operating under permit from the
13 Memphis/ Shelby County Health Department. We
14 had an annual inspection in January. Everything was
15 fine. It's operating below the permit limit as
16 far as the discharge is concerned. The system is
17 expected to
18 run for five years to meet the clean-up goals.

19 And we're seeing -- we're seeing that with
20 all the volatile organic compounds that are being
21 pulled out of the Fluvial, that's basically
22 cutting off the transport of those solvents,
23 contaminants, into groundwater and we're seeing
24 decreases in groundwater concentrations on Dunn
Field. So it's working well for the short

1 period of time it's been up.

2 Then the second area, second activity, was
3 the limited excavation, transportation and
4 disposal. That was performed in two areas. It
5 was done in October of '07 and January of '08.
6 One area called TA-1F was up in the northern
7 treatment area, Treatment Area 1, that was showed
8 earlier. That was a small excavation, about 20
9 by 25 feet. That's from the surface to a depth
10 of 15 feet and we removed about 116 cubic
11 yards of soil.

12 The other area we also talked about last
13 time was in Treatment Area 3 down in the central
14 part of the western end of Dunn Field. We
15 excavated 3600 cubic yards of crushed drums,
16 debris and soil from 120 foot wide and five
17 foot deep area.

18 All material excavated from both areas was
19 taken to an offsite landfill in Tunica as
20 nonhazardous waste. Confirmation samples were
21 collected. In general, the samples show
22 we've removed most of the target stuff. There
23 were a couple of samples that were still above
24

1 additional work in those areas to complete that.

2 Then during the excavation of Treatment
3 Area 3 in December around the middle of the day,
4 one day, we pulled out a bucket of soil from
5 that area where we were getting all these
6 chunks of metal. We found two metal casings,
7 one of them was intact, and the other one
8 was crushed.

9 Based on our work plan, we suspended the
10 work, secured the site, posted a guard at the
11 front gate to keep out activity until we
12 determined what -- how significant this was or
13 whether -- there was risk.

14 We contacted the Department of Army who
15 dispatched ordnance specialists to the site to
16 inspect the casings and determine what the next
17 steps were that needed to occur. We also
18 contacted EPA and TDEC to let them know the
19 cessation of activities there at the site.

20 And then the next day we contacted the
21 police and fire departments at the direction of
22 the Army. We maintained a guard on the facility
23 overnight so nobody had access to the property.
24 We issued a press release. We called the

1 members of the RAB. We hand-delivered the fact
2 sheets describing the activities in the area to
3 residents there along Dunn Field.

4 The specialists from the 22nd Chemical
5 Battalion from Gadsen, Alabama, arrived and
6 looked at the casings and determined that they
7 were harmless in a very quick manner.

8 The crushed casing was discarded as scrap
9 metal per the direction -- per instructions from
10 them, and was transported offsite with our other
11 soils in the group and the Memphis Bomb Squad
12 disposed of the intact casing. Even though
13 there was nothing in it, they wanted to do it
14 for their own practice.

15 So then on December 15, EPA and TDEC were
16 notified that the site was clear. The press
17 release -- another press release was issued.
18 The RAB members were called to let them know the
19 site was clear. In fact, a second fact sheet
20 was hand-delivered to the residents.

21 In summary, the procedures worked well,
22 protected the workers, the public and the
23 environment from this occurrence. Here are
24 couple of pictures of what we found. So this

1 was one casing, what we called the intact casing
2 was here and then the crushed casing was there.

3 So next we'll talk about the Loess
4 Thermal-enhanced SVE system. Construction began
5 in October and will be completed later this
6 month. The system start up and testing will be
7 at the end of the month and the system
8 operations are expected to be from May to
9 October. This is a picture just of the backhoe
10 that was digging a trench for the electrical
11 conduit.

12 Basically we're going to heat the soil up
13 in this upper zone, extract the vapors to pull
14 out the volatile organic compounds and they will
15 go through treatment. Then at the end of the
16 treatment we'll collect soil samples to confirm
17 whether the remedial goals were met.

18 The next one is a schematic of the
19 system. So scattered throughout the four areas, you
20 know, in each area that we have these heater
21 wells -- as I pointed out the treatment
22 zone is five feet below ground to about thirty
23 feet below ground.

24 So the heater boring extends from above

1 from a depth of about three feet down to a depth
2 of about thirty-five feet. We want to heat the
3 soil within this treatment zone to around 100
4 degrees to boil out the water that would carry
5 the volatile organic compounds.

6 There are vapor extraction wells scattered
7 throughout the area -- not scattered, but spaced
8 throughout the area that will extract the
9 vapors. As this heats up, the volatile organic
10 compounds move more freely and, also, the steam
11 that will be created by the heating will also
12 drive this stuff off and will be pulled into the
13 SVE wells which is basically the same thing as
14 the SVE wells we have in the Loess -- I mean in
15 the Fluvial sands I showed you earlier, pull
16 back through the treatment system.

17 We have got temperature monitoring points
18 that -- with a meter every five feet down to --
19 from five feet to thirty feet so we can have
20 good control and adjust the heating, turning it
21 up or down, to meet our goals.

22 And then we've also got the pressure
23 monitoring points scattered throughout. Those
24 measurements will be taken to show that we have

1 created a vacuum and that we're pulling all
2 the -- all the vapor and the steam that's being
3 created into the vapor structured wells.

4 Then that's just a picture of one of the
5 areas. We put down shotcrete on the surface.
6 We graded it down a little, put shotcrete down
7 to prevent rainwater infiltration because if
8 rainwater gets into it, then we have to heat
9 that water up, too, and it just drives up the
10 costs. So just to keep the rainwater from
11 pushing off to the sides of our treatment areas.

12 Then all of these little borings that you
13 see with the boxes on top, those are the heater
14 wells. Wires, electrical wires, carry the
15 current to it. The current, just like kind of a
16 toaster, heats the rod that goes into the ground
17 and then the other little holes, pipes, you see
18 sticking out of the ground that don't have the
19 little box on top, those are the vapor
20 extraction wells or the monitoring points.

21 Then finally I said the last action on the
22 Source Area Remedial Action will be Zero-Valent
23 Iron injections. With the Fluvial we cut off
24 the transport of the stuff going down to the

1 Fluvial sand. The Loess will take care of most
2 of where we think most of the volatile organic
3 compounds in the upper soil and then the last
4 thing is to treat the groundwater.

5 So groundwater samples will be collected
6 to identify the possible ZVI injection locations
7 after the Thermal SVE is completed.

8 The plan is that based on -- the approved
9 plan for the activity, the Zero-Valent Iron
10 injections will focus on areas of high
11 concentrations. So we're going to inject ZVI on
12 Dunn Field where we exceed one thousand parts
13 per billion.

14 As I said earlier, we're seeing good
15 decreases in groundwater concentrations from
16 that Fluvial SVE and it could be that we don't
17 have any concentrations above 1,000 parts per billion
at the end,

18 in which case we wouldn't have to do the ZVI,
19 but if we do need it, then we have it and we're
20 already planning to do it; we have somebody set, if
21 needed, so we'll move straight through that after
22 we do the Loess and get the groundwater samples. It
23 would occur in March to June of 2009.

24 Then confirmation groundwater samples were

1 planned after the ZVI injections to confirm that
2 we reduced the concentrations. -- That will be
3 the last of the Remedial Action Source Areas.

4 When that's done, we'll prepare an interim
5 Remedial Action Completion Report that will
6 describe all the activities and confirmation
7 sampling and the results and so forth. That will
8 be reviewed by the EPA and TDEC and then once
9 it's approved, it will go into the information
10 repository.

11 This figure is the off-Depot
12 groundwater and hopefully you can see this on your
13 drawings, Dunn Field is here. This black line is
14 the western boundary. This is the railroad and
15 then MLGW substation.

16 The groundwater, sort of faint orange
17 lines, shows the area of groundwater total
18 CVOCs, Chlorinated Volatile Organic Compounds,
19 in groundwater above 500 micrograms per liter.
20 That's not our clean-up goal, but that's sort of
21 the area of focus and the higher contamination
22 and what we are focusing on for the active
23 treatment. The other areas will be treated by
24 Monitored Natural Attenuation.

1 But you have four groundwater plumes on
2 the site that correspond to the treatment areas,
3 one, two, three and four treatment areas I
4 showed earlier, where we're doing the Loess treatment
in
5 the soil because of the stuff sinking down into the
6 groundwater from the surface. So we're cleaning
7 up the source here and then we get to the
8 groundwater.

9 Then, of course, you can see in Treatment
10 Area 2 the groundwater contamination, the plume
11 extends about to the MLGW substation, or just
12 under it to the edge of it. So
14 the off-Depot Groundwater Remedial Action will
15 focus on the area that's off the Depot to reach the
remedial
16 goals for groundwater, which are the drinking
17 water standards.

18 The final Off-Depot Groundwater RD is to
19 be submitted to EPA and TDEC in May of this year.
20 The RD completion has been delayed some. We
21 talked about some of the other studies we've
22 been doing to focus and determine the best
23 approach. A remedy was selected -- remedy
24 selected in the ROD and we decided that it wouldn't

1 quite work.

2 But what we're going to do now, moving
3 forward with remedial design to be submitted in
4 May, is air sparging and soil vapor extraction.
Basically it
5 blows air into the groundwater which then by
6 bubbling back up through the groundwater, it
7 strips out the volatile organic compounds
8 carrying them out. Those are picked up through soil
9 vapor extraction and go through the treatment just
10 like the other soil vapor extraction systems
11 I've described.

12 The final Off-Depot Groundwater RD is
13 scheduled for approval in September this year.
14 A public briefing will follow prior to the Remedial
15 Action and then upon approval, like the other
16 documents, would be placed in the Information
17 Repository.

18 Now as I mentioned we're looking at a change to
19 the remedy. These changes are based on new
20 information that's been developed since the
21 approval of the Record of Decision in 2004.

22 As I said, the initial remedy selected in
23 the ROD was ZVI permeable reactive barrier. We
24 determined, as we have described to you, that

1 that wasn't the most effective because of
2 specific site conditions, construction
3 challenges based on a field study we undertook
4 and the need for additional technology
5 down gradient of where the PRB would have gone.

6 We looked at enhanced bioremediation.
7 We did a fairly detailed study. It was
8 promising, but it was determined that there were
9 problems identified with its implementation and
10 concerns about whether -- whether it would be as
11 effective as we wanted.

12 So in additional discussions we selected
13 the air sparging/soil vapor extraction. Soil vapor
extraction has
14 been used in a number of areas. It's a physical
15 process. You don't have the little microbes,
16 that while they are effective, we thought it
17 wouldn't be the most effective for off-Depot.

18 These changes will require a modification
19 to the Dunn Field Record of Decision and a
20 public comment period and meeting will be held
21 to discuss that and to accept comments from you
22 and the public and that will be later this year.

23 The Five-Year Review was completed by DLA
24 and signed by the EPA in January 2008. The

1 Five-Year Review is required for Remedial Action
2 under CERCLA where the remedy does not allow for
3 unrestricted reuse.

4 It was triggered by the start of the first
5 Remedial Action, which was the interim remedial
6 action groundwater system on Dunn Field in 1998.
7 The first Five-Year Review was done in 2003
8 and the second one was done this year.

9 The purpose is to decide, to determine, if
10 the Remedial Action continues to be protective
11 of human health and the environment. I've
12 included -- this is basically the text of the
13 protectiveness statement that's in the Five-Year
14 Review and, of course, it's available for your
15 review. But overall the remedy is
16 expected to be protective of human health and
17 the environment upon completion.

18 And, of course, we haven't implemented all
19 of the Remedial Action yet, but we do feel we've
20 selected the right remedies and the ones that
21 have been installed are working as planned. So
22 we think it will be protective and the EPA
23 agreed with that.

24 Then we have the time period for attainment of

1 the Remediation Goals and five years for the
2 Dunn Field surface soils, basically 10 years
3 from the beginning of the Monitored Natural
4 Attenuation on both Dunn Field and the Main
5 Installation.

6 In the interim, before those remediation
7 goals are met, the exposure pathways are being
8 controlled and the institutional controls
9 prevent exposure to contaminated groundwater.

10 So that's it for basically the summary.

11 The accomplishments of what we've done in
12 2007, I'm happy about. The final Dunn Field
13 Source Area Remedial design was approved by EPA
14 and TDEC in April. We conducted a RAB meeting
15 in April to let you know what was going on.
16 The Dunn Field Source Area RD public briefing was
17 held in May and the Remedial Action on source
18 areas began with construction of the Fluvial SVE
19 system.

20 The Fluvial SVE system was built and
21 started up in July. The RAB meeting was
22 conducted again in September and the Source
23 Areas Remedial Action implementation continued
24 with the limited ET&D and the beginning

1 construction of the Loess SVE system in
2 October.

3 Continuing in 2008 we'll continue the
4 Main Installation Remedial Action
5 Long-Term Monitoring and we will continue the
6 injections until at least August, I guess, which
would

7 be two years, and continue long-term monitoring.

8 We'll continue the Dunn Field Source Areas
9 Remedial Action while operating the Fluvial SVE
10 system and complete construction and operate the
11 Thermal-Enhanced SVE Loess system. And we'll
complete

12 the Off-Depot Groundwater RD, conduct a public
13 briefing, and we'll continue public involvement
14 in 2008.

15 We'll continue Main Installation Remedial
16 Action. We'll be down to long-term monitoring
17 is our expectation in 2009 and performing ZVI
18 injections as needed on Dunn Field in 2009; begin
19 the Off-Depot Groundwater Remedial Action and
20 continue public involvement.

21 In 2010 we expect to complete the Interim
22 Remedial Action Completion Report on both the
23 Main Installation and Dunn Field and
24 we'll request the "Operating Properly and

1 Successfully" determination by EPA.

2 We'll complete -- that will allow us -- we
3 will have completed all our construction
4 activities at that time; we will complete the
5 Preliminary Closeout report and upon approval of
6 that, receive the construction complete status
7 for the site. That won't mean we're done, just
8 have a plan to put in the ground and in the
9 ground and operating.

10 Then also in 2010 we'll complete the
11 Findings of Suitability To Transfer. Number five
12 and six will take care of the remainder of the
13 Main Installation and Dunn Field. We'll conduct
14 a public comment period and public briefing for
15 the FOSTS as we've done in the past and continue
16 public involvement.

17 So that's a lot of information and we'll
18 be happy to take any questions now if there are
19 any.

20 MR. WILLIAMS: Does anyone have any
21 questions? If so, do so by being recognized by
22 the chair.

23 I have a couple of questions here. First,
24 in your quarterly monitoring have you found

1 that -- what is the difference in your
2 monitoring quarterly, you know, what have you
3 found out?

4 MR. HOLMES: Well, we're doing --
5 performance monitoring in enhanced treatment
6 areas. Treatment Areas 1 and 2 are on the
7 Main Installation, and there we're seeing
8 concentrations of the solvents, the CVOCs
9 decrease in those areas. Then throughout the
10 plume and other areas the concentrations were
11 generally fairly stable, not seeing a lot of
12 reduction there.

13 But we're not seeing -- I guess positive
14 news is it's not increasing really, it's staying
15 fairly stable and then where we have the
16 treatment in the ground, at least on the Main
17 Installation, it's decreasing and where we have
18 treatment operating on Dunn Field the Fluvial
19 SVE we're seeing a decrease in there as well--

20 MR. WILLIAMS: So during the rainy
21 season right now, you don't find as much
22 chemicals coming to the surface or being
23 recognized during the rainy season?

24 MR. HOLMES: Well, not to the surface

1 because most of the -- I mean, the surface water
2 that's ponding is just from the surface and most of
3 the
4 contamination solvents are in the ground. So
5 what happens is the water infiltrates through and
6 might push some down.

7 But we really don't see -- we see some
8 variation in concentration, but they generally
9 bounce up and down in the rain. So we don't --
10 that's not really that closely correlated with
11 the rainfall.

12 MR. WILLIAMS: Okay, so we have two
13 processes going on at one time, we've got the
14 Zero-Valent Iron for the water and we've got the
15 heat vapor for the soil.

16 MR. HOLMES: But we've got the
17 non-heated vapor in the sands, which is sort of
18 right in between the groundwater and the upper
19 clay soil, and that's working well and that's
20 operating because we can just pull the air
21 through the sand without any help. The upper
22 soils are clay and are really tight. It's hard
23 to pull air through that...

24 So with air we are heating it up and when

1 we heat it up and create that steam, steam takes
2 up a lot more space than the water does and it
3 forces its way through the soil and is extracted
4 by the vapor system.

5 Mr. Ballard: ZVI is not going in until after the
6 completion of the heating, the soil heating.

7 Mr. Holmes: So the two things we have
8 going on now is the Fluvial SVE operating, the
9 Loess treatment being under construction and
10 being close to

11 operating.

12 MR. WILLIAMS: We have found the flow
13 of contamination coming -- we have a flow of
14 contamination coming on to the property; am I
15 right?

16 MR. HOLMES: There is one area in the
17 northeast corner of Dunn Field where TDEC is
18 doing a study about that contamination coming
19 on-site then moving west. For the northeast
20 plume - Jamie could say what's going on there.

21 MR. WILLIAMS: Is there any way to
22 secure the on-flow of the contamination from
23 coming on?
24

1 we heat it up and create that steam, steam takes
2 up a lot more space than the water does and it
3 forces its way through the soil and is extracted
4 by the vapor system.

5 Mr. Ballard: ZVI is not going in until after the
6 completion of the heating, the soil heating.

7 Mr. Holmes: So the two things we have
8 going on now is the Fluvial SVE operating, the
9 Loess treatment being under construction and
10 being close to
11 operating.

12 MR. WILLIAMS: We have found the flow
13 of contamination coming -- we have a flow of
contamination coming on to the property; am I

1 MR. HOLMES: Well, we're looking at
2 that. I guess Jamie can answer that.

3 MR. WOODS: We're trying to identify
4 exactly where its source is, so if we do
5 anything as far as DLA goes to keep it from
6 coming on to Dunn Field, basically we'll be
7 able to recover costs from whoever
8 contaminated and, like I say, we've got to
9 identify those people first, just to the north of
10 Dunn Field there.

11 MR. WILLIAMS: Okay. I was going to
12 say, in 13 years we haven't figured out who's
13 doing it?

14 MR. WOODS: Well, we've tried a few
15 times in the past four or five years. We only
16 get one shot a year, basically, for a site
17 discovery. In the last three years, three or
18 four years, we've done two or three sites and we
19 think we have one of them possibly now.

20 But there's still something a little bit
21 squirrely going on with the groundwater. The
22 contaminants don't exactly match up from the
23 site we've identified to how they're coming onto
24 Dunn Field as far as the concentration goes.

1 we're trying to figure out why.

2 MR. Ballard: There may be more than
3 one source to that offsite portion.

4 MR. WILLIAMS: Ms. Peters?

5 MS. PETERS: Johnnie Mae Peters.
6 What I want to know is at one time you thought
7 something was coming from like a cleaners or
8 something like that. Are you speaking on that?

9 MR. WOODS: Yes, ma'am. The site
10 we've recently identified is Cintas. They're like
11 an industrial cleaner of some sort and they use
12 solvents similar to what we're seeing on Dunn
13 Field. Like I said, that's coming from the
14 north.

15 MS. PETERS: Is that cleaners still
16 located where it was located?

17 MR. WOODS: No, they're gone now.
18 They're defunct and gone but it's their old
19 building.

20 MR. BALLARD: Cintas is not there.

21 MR. WOODS: No.

22

23 MR. BALLARD: It was Uniform something and then
24 Cintas bought it and now they - now own it.

1 MR. WOODS: Cintas owns it but it's empty. The
2 building has been burglarized; all the copper
3 wiring within it was stripped. ~~now own it. In~~
4 ~~fact, we've had to build a strip in the past few~~
5 ~~months for all the copper wiring and stuff.~~

6 MS. PETERS: So there is no other
7 factors that could be doing this close to --

8 MR. WOODS: Well, we looked at three,
9 and two of them have been no good and then the
10 one we have currently on the hook, the Cintas
11 property, it looks like they're contributing
12 some, but not completely. Like Turpin said,
13 there may be another source that we're not
14 exactly aware of yet.

15 UNKNOWN: So which way would you feel
16 that the flow is coming from, north, south, east,
17 west?

18 MR. WOODS: We think north or east.

19 MR. BALLARD: It's sort of coming from
20 the northeast and flowing to the southwest and
21 then, of course, when it gets on Dunn Field it
22 flows more to the west from Dunn Field to the
23 MLGW substation.

24 MR. UNKNOWN: Okay.

1 Could you handle that?

2

3 MR. DOBBS: Are there anymore RAB
4 members that have questions before we go to
5 the -- we're in the community and then we'll go
6 to the public.

7 MR. ESKRIDGE: I have a question.
8 Reginald Eskridge, a RAB member. Pertaining to
9 these metal casings that were found, one person
10 had a comment -- I was not notified so I'm a RAB
11 member and been one for a long time and I did
12 not get that notice.

13 And there's been a lot of cleanup on that
14 property over there, a lot of money being spent
15 to pull these things out of the ground. Why was
16 this particular one overlooked; at what depth was
17 this casing found?

18 MR. HOLMES: All of this was within
19 the area of drums at a depth of about five feet
20 and the area had not been identified
21 previously. It wasn't identified as one of the
22 disposal sites.

23 And I think it was the last meeting we
24 discussed that we found it when we were

1 installing the Fluvial SVE conveyance lines. We
2 had a trench going through this area and we found
3 it at that time and also when we were drilling
4 one of our monitoring points there.

5 So that's when we found it and we went
6 back and -- went back and did a geophysical
7 survey, found the remnants of it and then went
8 ahead with the excavation.

9 Now because of the -- because we're
10 getting ready to drill all these holes and do
11 all this additional work, we did another
12 geophysical survey. We had done one previously
13 that for one reason or another didn't identify
14 the site.

15 And we did another survey and, you know,
16 we didn't find anything else, other than the
17 utilities on the ground in that survey. So we
18 don't think there is anything else under the
19 ground. That's about all I can say about that.

20 MR. ESKRIDGE: Further on that,
21 should the citizens be concerned that there may
22 be additional bomb casings that are still not
23 located and identified at this time; will there
24 be any other efforts to go over that entire

1 area to make sure that we don't have any bombs
2 still left there?

3 MR. HOLMES: Well, I want to say
4 about the bomb, as far as the term bomb, this
5 was an empty casing. It wasn't an old bomb that
6 had been buried, so we're not quite sure why it
7 was there, but one possibility is that since the
8 Depot took training materials, they could have
9 had empty casings that were used for training
10 and that could be disposed of at some point, but
11 we don't think there's anything else
12 underground.

13 MR. DOBBS: I will reiterate on this
14 a little bit. Those who have been around, you
15 know that at one time we had one event in the
16 40s where we had casings; it was a documented
17 event. We were bringing mustard back in the
18 40s. It was found leaking at the railroad and
19 it was taken to Dunn Field and the casings were
20 drained, neutralized and buried.

21 That was pretty well documented. There
22 were 29 casings and that site has been
23 remediated. As we started going in to remediate
24 the empty drums, we ran across these two

1 casings. Based on what we see they were
2 never active.

3 They were like sort of something that the
4 government stored, like a dummy bomb that you
5 would use as a practice or ballast as weight. So
6 we believe at that time they were just put in
7 there as scrap metal, because that's what it
8 was, it was a bunch of scrap metal buried.
9 We did the geophysics across the whole
10 area. We don't see any other anomalies out
11 there that, so we don't perceive any
12 other casings out there.

13 MR. Truitt: If I might add, since
14 the 1960s anything of that nature would not
15 have been shipped to the depot. It would have
16 been turned in by local law enforcement
17 agencies, Tennessee, Arkansas, Mississippi, and
18 we would require, by regulatory requirements, to
19 call in the Army Explosive Ordnance Detachment,
20 which the closest one was Fort Campbell.
21 We had stuff turned in, different things,
22 ammo, hand grenades, 105 Howitzer shells and
23 what have you, but we were not allowed to handle
24 that. The Explosive Ordnance Detachment would

1 come here and generally they helicoptered it
2 back for destruction at their facility. So
3 since the 1960s nothing like that went into
4 Dunn Field.

5 MR. WILLIAMS: Anyone else? I guess
6 we'll move on to the public comment period at
7 this time. So if anyone with the public would
8 like to ask a question, please stand up, state
9 your name clearly and go ahead.

10
11 **PUBLIC COMMENT PERIOD:**

12 MR. RICHARD MACK: Excuse me, this
13 is my first time at this meeting. My name is
14 Richard Mack. I am with the (inaudible)
15 Environmental Protection and I have, I guess, a
16 two part question. The site that we are
17 speaking of -- I would like to be brought up to
18 speed. I did a little research on this earlier,
19 but I'm not up to speed on it.

20 The monitoring that you were speaking of,
21 is this only going on in the area of the depot,
22 on Airways at that point there?

23 MR. HOLMES: Well, it's going on at
24 the Depot and in the identified areas of site on

1 the off-Depot areas, as I said, on the Main
2 Installation and on Dunn Field and then to the
3 west of Dunn Field, so just in the Depot area.

4 MR. MACK: In your findings, if you
5 can answer this for me, did you -- I heard the
6 word mustard gas and that kind of shakes me a
7 little bit if mustard gas was being transferred
8 into that area.

9 Had y'all found any signs of benzene or
10 any other toxins?

11 MR. BALLARD: Well, the -- as Mike
12 mentioned, the whole mustard gas removal was --
13 the disposal was documented. It occurred in
14 1946 and the decontamination methods that they
15 used were documented back then.

16 And in 2002 we completed the removal
17 action to basically remove any residue from that
18 event off-site. So that issue of mustard has
19 been resolved.

20 MR. DOBBS: But that issue of the
21 mustard was an isolated event. The Depot never
22 shipped, stored or received any type of chemical
23 warfare materiel. Again, it was coming back from
24 World War II. It was escorted in a train and it was

1 discovered to be leaking.

2 They took it to the closest Depot, that
3 was the Memphis Depot. They brought in people,
4 tech experts from Aberdeen, took it to Dunn
5 Field; they dug a hole. They drained the
6 mustard into it; neutralized it and buried the
7 casings. That was all documented. That was an
8 isolated event one time.

9 The site showed up again on a BRAC
10 list and ordered it to make the property
11 available for transfer. We had the command and
12 we went ahead and re-excavated all that stuff
13 that was buried and we took samples and that was
14 in 2002.

15 MR. BALLARD: That was the mustard.
16 You mentioned benzene. Benzene has not been
17 identified as a contaminant of concern for -- at
18 the depot. What we have identified are called
19 chlorinated volatile organic compounds,
20 tetrachloroethylene, trichloroethylene, things
21 like that.

22 Those occur primarily in subsurface soils
23 and in the groundwater. The biggest mass of
24 them occurred on Dunn Field. In the subsurface

1 soil, if you look on page -- the page that
2 showed the picture of the thermal treatment,
3 eight, let's look at page eight.

4 This red-cross hatch area is where the
5 greatest mass of the CVOCs occurs on Dunn
6 Field. Then an additional mass occurs in the
7 yellow area and then there is -- has been
8 migration of contaminants into the groundwater
9 and then flow of that groundwater to the west
10 off-site.

11 The Remedial Actions that we're going to
12 be taking -- we've already started, have broken
13 the migration pathway of contaminants to the
14 groundwater through implementation of the soil
15 vapor extraction in the yellow area.

16 Basically we're creating an upward vacuum
17 so nothing can get into the groundwater there,
18 and it's having a very good effect on the
19 groundwater concentrations.

20 The next step, which is going to hopefully,
21 just flip -- a switch will be flipped some time
22 in mid- May to start heating the soil to drive
23 the major mass of contamination into additional
24 vapor extraction wells.

1 These two efforts here in the subsurface
2 soils will eliminate a vast majority of the mass
3 that's in the area.

4 And the remainder of the work will have to
5 do with cleaning up the residual groundwater
6 contamination under Dunn Field and the
7 groundwater contamination to the west of Dunn
8 Field.

9 In fact, there's no one currently using
10 that groundwater for drinking and there's no --
11 there's no current exposure that we've been able
12 to find of anybody to that groundwater. It's
13 just EPA policy that when the groundwater
14 exceeds the drinking water standards we can take
15 some sort of action to address that.

16 MR. MACK: So all of this
17 monitoring you're speaking of is inside the
18 Depot itself; is that correct?

19 MR. BALLARD: No.

20 MR. MACK: It's outside?

21 MR. BALLARD: And it's not just monitoring.
22 We are monitoring because any time you take an
23 action, we want to monitor to ensure
24

1 the effectiveness of the action. So we are
2 taking active measures to clean up and monitor
3 the effects of those measures by taking
4 groundwater samples.

5 We have a lot of groundwater wells offsite
6 to the west of Dunn Field. In the vicinity of
7 the substation, MLGW substation, by Menager and
8 what's the north- south -- to the west of the
9 substation? Menager and Ragan Streets, okay.

10 So those sort of establish -- we actually
11 monitor north Persons, as well, and we have some
12 monitoring wells to the west of Ragan, as well.
13 So we do have pretty robust off-site monitoring.

14 MR. MACK: So that would cover the
15 interface of the Main Installation area?

16 MR. BALLARD: Yes. And we don't
17 preclude additional monitoring as part of our
18 final design. As Tom mentioned, we're going to
19 be -- the regulators will be receiving the Remedial
20 Design for review and it will contain any
21 monitoring plan, long-term monitoring plan, and
22 we'll review that for, you know, robustness.

23 Sometimes when you have a long-term
24 monitoring plan, you find that you have existing

1 wells that you don't need anymore and you
2 abandon those. Sometimes you have some
3 additional wells in strategic locations and you
4 add those in. You end up with a monitoring
5 network that is designed to, you know, give you
6 the best information about the effectiveness of
7 your remedy.

8 MR. MACK: One more final
9 question. In your monitoring -- I'm sure these
10 are toxic chemicals that are harmful as a health
11 defect, has there been any of the -- of the
12 people in that area, have they been tested for
13 any of these chemicals or will there be any
14 chemical testing of any of their tissues?

15 MR. BALLARD: I don't think there
16 will be any -- we have no plan to test
17 individuals. That would be something that would
18 more likely to be done through your county
19 health or the health agencies.

20 The mission of this project is to protect
21 public health and the environment by cleaning up
22 releases that exist. And, also, I don't think,
23 and I'm not a toxicologist, but I don't think
24 that the groundwater contaminants we're dealing

1 with- CVOCs are fat stored anyway, not like
2 PCBs and other contaminants which can be stored
3 in fat and held in the body for a long time.
4 But they are carcinogens and that's one of the
5 reasons that we don't want to leave them
6 unaddressed.

7 MR. MACK: Speaking of carcinogens
8 itself, that is a carrying -- that is -- that is
9 a type of chemical that can travel into the
10 airways and travel into the water and get into
11 your earth and get into your tree and all of that.
12 That's the reason I asked the question, will
13 there be any testing, because an environment
14 without people is no good.

15 And my question, again, is that if people
16 are not going to be tested in that area, what's
17 the use of doing what you're doing now for the
18 research? Because you're doing it for health
19 reasons; am I right?

20 MR. BALLARD: I guess --

21 MR. MACK: And I'm not trying to
22 ask a trick question, but my point is this, if
23 you're looking out for the health of people, why
24 not test because you're already working in

1 conjunction with the EPA and the health
2 department, local health department, and you
3 want to meet that standard.

4 MR. WOODS: We're more geared towards
5 cleaning up the environment as far as EPA and
6 TDEC. The health department we would -- if we
7 thought we had issues, they would, obviously,
8 come and look at it separately.

9 We'll obviously work with the health
10 department, you know, to the point of the right
11 direction that we need to take, but like I said,
12 we're here for the environmental cleanup aspect
13 to protect the people from being exposed to the
14 soil and the groundwater. The health department
15 will have to deal with the actual people.

16 MR. BALLARD: I should mention,
17 though, and you can look in the document that's
18 in our repository, but there was a public health
19 assessment performed for the Depot. There have
20 been a couple of them, really, but the most
21 recent was performed -- I believe it was
22 finalized in 2002 by the Agency for Toxic
23 Substances and Disease Registry, or ATSDR.

24 They did it in conjunction and cooperation

1 with the state and local health departments and
2 they looked at -- they were unable to evaluate
3 any exposure that occurred before 1989 because
4 of lack of data. They had no data on those
5 kinds of exposures.

6 But they also did a cancer cluster study
7 and the results of the study indicate that the
8 incidences of cancers in the population around
9 the Depot are not materially different from the
10 incidences of cancers for the Memphis population
11 as a whole.

12 So it's -- that's just a, I guess, fancy
13 way of saying it's not that people aren't getting
14 cancer, but it's very tough to say that there
15 are more people around the Depot getting cancer
16 -- more people around the Depot are getting
17 cancer than elsewhere, and than other places in
18 Memphis. You can't say that more people are
19 getting it because the statistics are showing
20 otherwise. That's basically what we go on at
21 this stage.

22 MR. MACK: Well, I did a small
23 study. I'm not really up to speed on
24 everything, but my study was after '89 and the

1 cancer rate in that particular area is higher
2 than any other area in Memphis, Tennessee. I
3 didn't bring my documentation with me. I was
4 trying to find it.

5 MR. TRUITT: Where did you get your
6 data?

7 MR. MACK: I got it from one of the
8 sites. I can't quote it.

9 MR. TRUITT: Because Memphis and
10 Shelby County Health Department uses death
11 statistics from the death certificates as their
12 source of data, and it doesn't show what you're
13 saying.

14 MR. MACK: I'll tell you what I'll do,
15 you give me your card and your name and I'll find
16 what I've got and we can compare to see what
17 you have --

18 MR. TRUITT: Okay.

19 MR. BALLARD: But I also would
20 encourage you to look -- since you have done
21 your own study, I would encourage you to look at
22 the one done by ATSDR, compare the results; see
23 if you're working off the same database or
24 different databases.

MEETING ADJOURNED:

1
2 MR. WILLIAMS: Any more comments?

3 MR. MACK: Thank you very much.

4 MR. WILLIAMS: Any more comments?

5 Would anyone like to make a motion to adjourn
6 the meeting?

7 MR. TRUITT: So moved.

8 MR. WILLIAMS: Any second?

9 MS. PETERS: Second.

10 MR. WILLIAMS: All in favor?

11 (All Say: aye.)

12 MR. WILLIAMS: Any opposed?

13 (No Response.)

14 MR. WILLIAMS: So be it. Thank you.

15
16
17
18
19
20
21
22
23
24

C E R T I F I C A T E

STATE OF TENNESSEE:

COUNTY OF SHELBY:

I, CATHY A.HASTINGS-NICKELSON

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 Cathy A. Hastings-Nickelson
 CCR, RPR, Court Reporter and
 Notary Public*****

My commission expires:

July 27, 2011



Memphis Depot

Environmental Restoration Program Update

Presented by



Tom Holmes, Project Manager
engineering-environmental Management Inc.

Memphis Depot Restoration Advisory Board Meeting
April 3, 2008

Presentation Overview



Updates:

Main Installation Remedial Action (RA)

Dunn Field Source Areas RA

- **Excavated Casings Found Harmless**

Dunn Field Off-Depot Groundwater

Five-Year Review

Next Steps

MAIN INSTALLATION

Remedial Action



Installation Location
Memphis, Tennessee



MAIN INSTALLATION

Remedial Action



- **Enhanced Bioremediation Treatment (EBT)**
 - Monthly Lactate Injections through September 2008
 - Quarterly Groundwater monitoring
- **Monitored Natural Attenuation (MNA)**
 - Additional well installation for compliance well networks
 - Quarterly groundwater monitoring
- **Land Use Controls (LUC)**
 - Annual Inspections

MAIN INSTALLATION

Remedial Action



- **Expect to achieve cleanup goals in EBT areas, Winter 2008/2009.**
- **Expect to achieve cleanup goals in MNA areas, Fall 2016.**
 - **Additional investigation planned, Summer 2008.**
- **LUC annual inspections will continue indefinitely.**

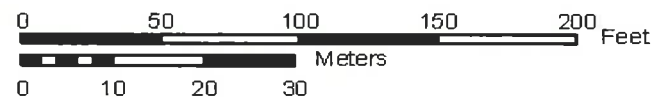


DUNN FIELD

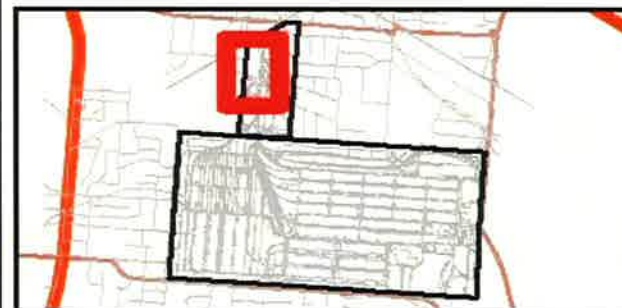
Source Areas Remedial Action



1:1,500



Installation Location
Memphis, Tennessee



Date: January 2007
Edition: Draft



DUNN FIELD

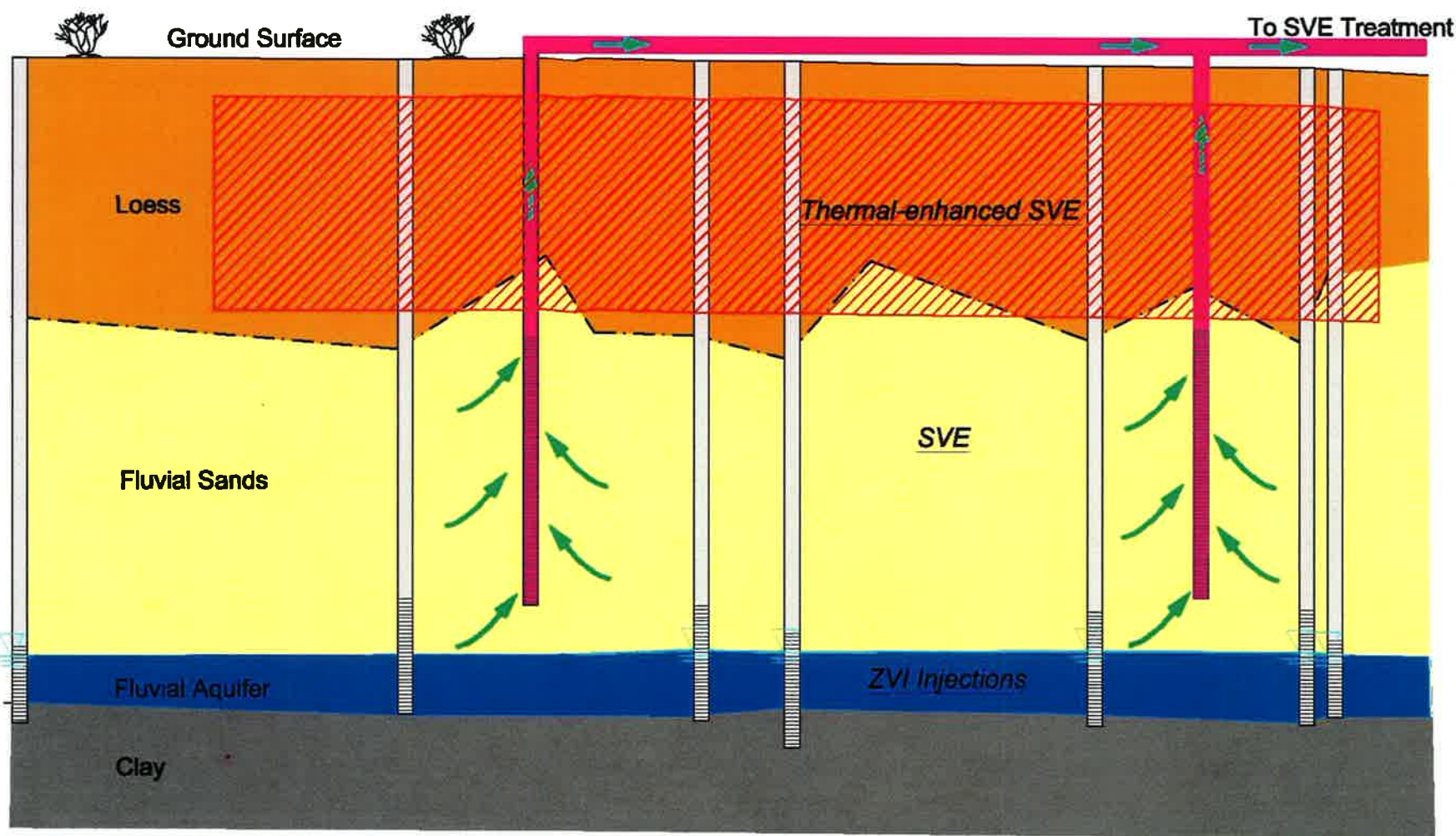


Source Areas Remedial Action

- **Fluvial Soil Vapor Extraction (SVE) System**
- **Limited Excavation, Transportation and Disposal (ET&D)**
- **Loess Thermal-enhanced SVE System**
- **Zero-valent Iron Injections in Groundwater**
- **Land Use Controls**

DUNN FIELD

Source Areas Remedial Action



DUNN FIELD

Source Areas Remedial Action



Fluvial SVE System

- **System in operation since July 2007.**
- **Approximately 1,900 pounds of volatile organic compounds removed since operations began.**
- **Memphis/Shelby Co. Health Department inspected January 2008, showed operation within permit limits.**
- **System expected to run for 5 years.**

DUNN FIELD

Source Areas Remedial Action



**Limited excavation, transportation and disposal
(ET&D)**

- **ET&D in two areas performed October 07- January 08.**
 - **TA-1F: excavated 160 cubic yards of soil from a 20 by 25 foot area to depth of 15 feet.**
 - **TA-3: excavated 3600 cubic yards of crushed drums, debris and soil from a 120 by 120 foot area to depth of 5 feet.**
- **Material transported to off-site approved landfill as non-hazardous waste.**
- **Confirmation samples collected.**

DUNN FIELD

Source Areas Remedial Action



Excavated Casings Found Harmless

December 13

- During excavation at TA-3, two metal casings found-- one intact, one crushed.
- Work suspended, site secured, guard posted at front gate.
- Dept. of Army contacted who sent ordnance specialists to identify casings.
- EPA, TDEC contacted.

DUNN FIELD

Source Areas Remedial Action



Excavated Casings Found Harmless

December 14

- **Memphis Police and Fire Departments contacted.**
- **Press releases issued, RAB called, fact sheets hand-delivered to area residents.**
- **U.S. Army 22nd Chemical Battalion Ordnance specialists, (Gadsden, AL) inspected both casings.**
- **Ordnance specialists declared casings harmless.**
- **Crushed casing declared scrap metal; transported off-site for disposal at approved landfill.**
- **Memphis Police Bomb Squad disposed of intact casing.**

DUNN FIELD

Source Areas Remedial Action



Excavated Casings Found Harmless

December 15

- **EPA, TDEC notified that site was clear.**
- **Press releases issued, RAB members called, fact sheets hand-delivered to area residents.**
- **Procedures worked well to protect workers, the public and the environment.**

DUNN FIELD

Source Areas Remedial Action



DUNN FIELD

Source Areas Remedial Action



Loess Thermal-enhanced SVE System

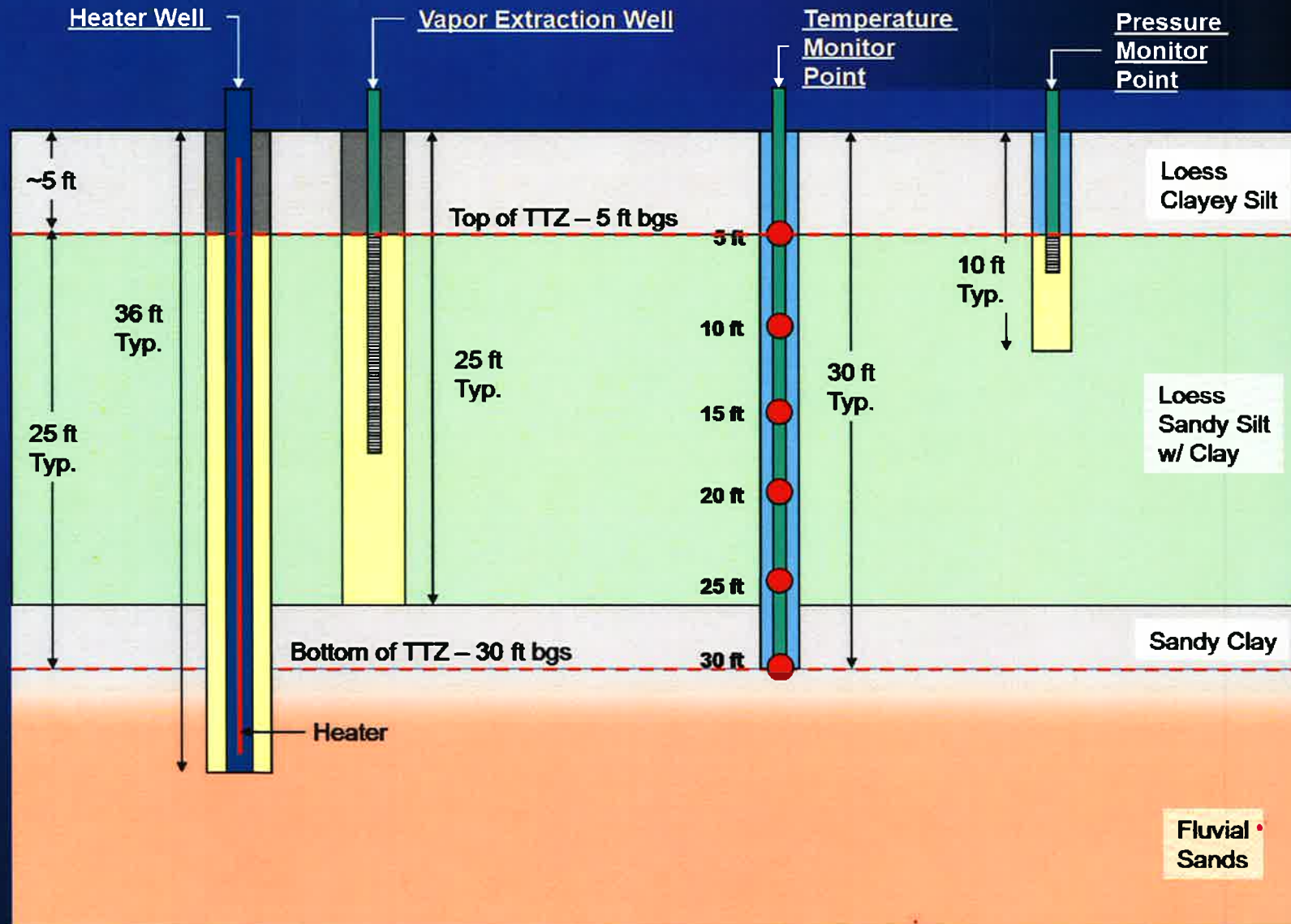
- Construction of Loess SVE system began October 2007 with completion in April 2008.
- System start-up and testing in late April 2008.
- System to operate from May to October 2008.
- Soil samples to confirm whether remediation goals are met.



Installation of electrical conduit for thermal SVE.

DUNN FIELD

Loess Thermal-enhanced SVE system



DUNN FIELD

Loess Thermal-enhanced SVE system



Wiring for thermal elements in TA1E.

DUNN FIELD

Source Areas Remedial Action



Zero-Valent Iron (ZVI) injections

- **Groundwater samples will be collected to identify possible ZVI injection locations after Loess thermal-enhanced SVE operations.**
- **If needed, ZVI injections planned for March through June 2009.**
- **Confirmation groundwater samples planned in July and October 2009.**

Source Areas Interim Remedial Action Completion Report to be submitted January 2010.

DUNN FIELD

Off Depot Groundwater

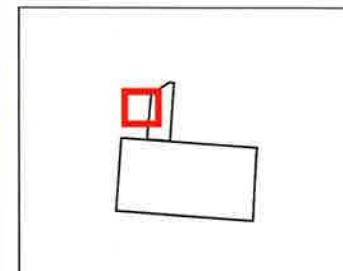


Legend

Total CVOC CONTOUR

- 500 ug/L (Nov. 2005)
- Dunn Field Perimeter

Installation Location Memphis, Tennessee



DUNN FIELD

Off-Depot Groundwater



- **Final Off-Depot Groundwater RD, Rev. 0 to be submitted to EPA and TDEC May 2008.**
- **RD completion has been delayed to allow completion of studies and revision to the selected remedial technology.**
- **Air Sparging/Soil Vapor Extraction is being incorporated into the final groundwater remedy.**
- **Final Off-Depot Groundwater RD scheduled for approval September 2008.**
- **Public briefing on RD in Winter 2008.**
- **Upon approval, the Off Depot RD will be placed in the Information Repository for public information.**

DUNN FIELD

Off-Depot Groundwater



- **Changes based on new information since approval of the Dunn Field Record of Decision (ROD) in April 2004.**
- **ZVI Permeable Reactive Barrier determined to be not effective because of site conditions, construction challenges and need for supplemental technologies.**
- **Enhanced bioremediation was the initial alternative, but recent studies have identified problems with its implementation.**
- **Overall changes to the remedy require a modification to the Dunn Field Rod.**
 - **A Public Comment period and meeting will be held for the modification.**

MAIN INSTALLATION AND DUNN FIELD



Five-Year Review

- The Five-Year Review was completed by DLA and was signed by EPA in January 2008.
- A Five Year Review is required for remedial actions under CERCLA where the remedy does not allow for unrestricted re-use.
- The purpose of the Five-Year Review is to determine if the selected remedial action continues to be protective of human health and the environment.

MAIN INSTALLATION AND DUNN FIELD

Five-Year Review



- **The Five-Year Review contained the following summary of protectiveness:**
 - Overall remedy expected to be protective of human health and the environment upon completion of remedial actions for subsurface soil at Dunn Field and for groundwater at the MI and Dunn Field.
 - Attainment of Remediation Goals in the subsurface soils at Dunn Field are expected to be met within 5 years. Attainment of cleanup goals in groundwater will be achieved through active treatment and natural attenuation; groundwater RGs are expected to be met 10 years after remedy implementation on the MI (2016) and at Dunn Field (2018).
 - In the interim, exposure pathways that could result in unacceptable risks are being controlled and institutional controls are preventing exposure to, or the ingestion of, contaminated groundwater.
- **The Five-Year Review Report is available in the Information Repository for public information.**



2007 Accomplishments

Final Dunn Field Source Areas Remedial Design (RD) approved by EPA, TDEC in April.

RAB meeting conducted in April.

Dunn Field Source Areas RD Public Briefing conducted in May.

DF Source Areas Remedial Action (RA) began with construction of Fluvial SVE system in May.

2007 Accomplishments cont.

Fluvial SVE system start-up in July.

RAB meeting conducted in September.

**Source Areas RA continued with limited ET&D
beginning in October**



Next Steps 2008

Continue Main Installation RA, long-term monitoring.

Continue Dunn Field Source Areas RA.

- Operate Fluvial SVE system.
- Complete construction and operate Thermal-enhanced SVE in Loess.

Complete Off-Depot Groundwater RD; conduct Public Briefing.

Continue public involvement.

Projected schedule is based on current information and may be subject to change.



Next Steps 2009

Continue Main Installation RA long-term monitoring. .

Perform ZVI injections to complete Dunn Field Source Areas RA.

Begin Off-Depot Groundwater RA.

Continue public involvement.

**Projected schedule is based on current information and may be subject to change.*

Next Steps 2010



Complete Main Installation and Dunn Field Source Areas Interim Remedial Action Completion Reports (IRACRs); request Operating Properly and Successfully (OPS) determinations by EPA.

Complete Preliminary Closeout Report and upon approval receive Construction Complete status.

**Projected schedule is based on current information and may be subject to change.*

Next Steps 2010

Complete FOSTs 5 & 6 for remainder of Main Installation and Dunn Field.

Conduct Public Comment Period and Public Briefing for FOSTs 5 & 6.

Continue public involvement.

Projected schedule is based on current information and may be subject to change.



Memphis Depot

Environmental Restoration Program Update

Presented by



Tom Holmes, Project Manager
engineering-environmental Management Inc.

Memphis Depot Restoration Advisory Board Meeting

April 3, 2008

2008 04 03 RAB Presentation