

**Massachusetts Military Reservation Cleanup Team (MMRCT)/
Senior Management Board (SMB) Meeting
Quality Inn
Bourne, MA
September 16, 2009
6:00 – 8:45 p.m.**

Meeting Minutes

Member:	Organization:	Telephone:	E-mail:
Jon Davis	AFCEE/MMR	508-968-4670	jon.davis@brooks.af.mil
Mike Minior	AFCEE/MMR	508-968-4670	mike.minior@brooks.af.mil
Hap Gonser	IAGWSP	508-968-5107	kent.gonser1@us.army.mil
Ben Gregson	IAGWSP	508-968-5821	Benjamin.p.gregson@us.army.mil
Mike Ciaranca	E&RC	509-968-5121	Michael.ciaranca@us.army.mil
LTC Richard Bertone	MAARNG	508-968-5883	richard.bertone@us.army.mil
Capt Dan Abel	USCG	508-968-6300	dan.b.abel@uscg.mil
Mary Sanderson	US EPA	617-918-1381	sanderson.mary@epa.gov
Paul Marchessault	US EPA	617-918-1388	Marchessault.paul@epa.gov
Lynne Jennings	US EPA	617-918-1210	Jennings.lynne@epa.gov
Millie Garcia-Serrano	MassDEP	508-946-2727	millie.garcia-serrano@state.ma.us
Len Pinaud	MassDEP	508-946-2871	Leonard.pinaud@state.ma.us
Ellie Grillo	MassDEP	508-946-2866	ellie.grillo@state.ma.us
Martha Steele	MDPH	617-624-5757	Martha.steele@state.ma.us
Steve Hurley	MMRCT/MDFW	508-759-3406	steve.hurley@state.ma.us
Chuckie Green	SMB/Mashpee rep	508-539-1400	ggreen@ci.mashpee.ma.us
Dana Barrette	SMB/Town of Sandwich	508-888-7645	selectman@danabarrette.com
Virginia Valiela	SMB/Falmouth rep	508-563-9028	valiela@hotmail.com
Tom Guerino (sitting in for Steve Mealy)	SMB/Administrator Town of Bourne	508-759-0600	tguerino@townofbourne.com
Jean Crocker	MMRCT/Cotuit	508-428-4283	jhccotuit@comcast.net
Phil Goddard	MMRCT/Bourne	508-759-3043	pgoddard@aol.com
Charles LoGiudice	MMRCT/Falmouth	508-563-7737	irextut@msn.com
Diane Rielinger	MMRCT/Falmouth	508-563-7533	one-brain@verizon.net
Harold Foster	MMRCT/Falmouth	508-564-4818	
Dan Dinardo	MMRCT/Falmouth	508-457-1659	ravensnests1@live.com
Greg Taylor	MMRCT/Sandwich		gtaylor1@prodigy.net
Ronald Reif	MMRCT/Falmouth	508-495-1373	rreif@whoi.edu
Wade Saucier	MMRCT/Sandwich	508-833-6002	wajsaucier@aol.com
Facilitator:	Organization:	Telephone:	E-mail:
Patrick Field	CBI	617-492-1414	pfield@cbuilding.org
Attendee:	Organization:	Telephone:	E-mail:
Tom Sims	AFCEE	404-562-4200	Thomas.sims@hq.af.mil
Doug Karson	AFCEE/MMR	508-968-4670	doug.karson@brooks.af.mil
Kris Curley	IAGWSP	508-968-5626	kris.curley@us.army.mil
Pam Richardson	IAGWSP	508-968-5630	Pamela.richardson@us.army.mil
Lori Boghdan	IAGWSP	508-968-5635	lori.boghdan1@us.army.mil
Bill Gallagher	IAGWSP	508-968-5622	bill.gallagher@us.army.mil
Paul Nixon	IAGWSP	508-968-5620	paul.nixon@us.army.mil
Dave Hill	IAGWSP	508-968-5621	dave.hill@us.army.mil

Joanne Palmer	E&RC	508-233-6517	jbeanpalmer@yahoo.com
Emily Derbyshire	E&RC	508-968-5146	Emily.derbyshire@us.army.mil
Sally Hartmann	E&RC	508-968-5145	sally.hartmann@us.army.mil
Randy Cordeiro	HQCE	508-968-6487	randall.j.cordeiro@us.army.mil
Carol Keating	US EPA	617-918-1393	lim.robert@epa.gov
Jeanethe Falvey	US EPA	617-918-1020	Falvey.jeanethe@epa.gov
Mark Begley	EMC	508-968-5127	mark.begley@state.ma.us
Dale Young	MA EEA	617-626-1134	dale.young@state.ma.us
Scott DeHainaut	CH2M Hill	508-968-4670	sdehaina@ch2m.com
Carter Hunt	M DFA	508-563-2785	chunt@massdevelopment.com
Bob Mullennix	Bourne resident	508-759-8319	Robert.mullennix@verizon.net
Rick Carr	TA	781-455-0653	rick.carr@testamericainc.com
Jim Quin	Aerostar Env.	720-937-9123	jpg9123@msn.com
Philip Elson	Aerostar Env.	904-565-2820	pelson@aerostar.net
Jane Gasper	Innovar	508-759-9114	jgasper@innovar-env.com

Action Items:

1. Approximately one week prior to the end of the public comment period on the NWC/DA2/WB RSP (October 15, 2009), Pat Field will email MMRCT members regarding their comments on the document.
2. The IAGWSP will provide the team with information on lime breakdown products.

Handouts Distributed at Meeting:

1. Responses to Action Items from the July 9, 2009 MMRCT Meeting
2. Presentation handout: Land-Use Controls
3. Presentation handout: ROD/Construction Update for Ashumet Valley, CS-10 and CS-19
4. Presentation handout: CS-18 Operable Unit Decision Document
5. Presentation handout: Remedy Selection Plan – Western Boundary, Demolition Area 2, Northwest Corner
6. Fact sheet: Remedy Selection Plan for Western Boundary, Demolition Area 2 and Northwest Corner
7. Info sheet: 30-Day Public Comment Period on Remedy Selection Plan for the Western Boundary, Demolition Area 2 and the Northwest Corner
8. Presentation handout: Pyrotechnics: Grenade and Ground Burst (Artillery) Simulators
9. Presentation handout: Former K Range Update
10. Presentation handout: Soil Removal and Treatment Update
11. Info sheet: Contaminants of Concern
12. Map: MMR Groundwater Findings
13. MMRCT Cleanup Team Meeting Evaluation form

Agenda Item #1. Introduction and Agenda Review

Mr. Field convened the meeting at 6:05 p.m. and the Massachusetts Military Reservation Cleanup Team (MMRCT) and Senior Management Board (SMB) members introduced themselves. Mr. Field reviewed the agenda and then asked if there were any changes or additions to the July 8, 2009 MMRCT meeting minutes. No changes were offered and the minutes were approved as written. Mr. Field also asked if there were any changes or additions to the May 27, 2009 SMB meeting minutes. Mr. Davis referred to the last sentence in the first full paragraph on page four and said that it should be reworded to reflect that the land-use control (LUC) that prohibits wells from being installed

hydraulically upgradient of the Bourne landfill is part of the on-base LUCs. The May SMB minutes were approved with this change.

Agenda Item #2. Textron Natural Resource Damages Settlement at MMR

Ms. Young of the Executive Office of Energy & Environmental Affairs (EEA) noted that she represents the Secretary of EEA, Ian Bowles, in issues relating to Natural Resource Damages (NRD). She then reported that state and federal trustees had reached a settlement on NRD with Textron, a defense contractor that had conducted operations at the J Ranges on the MMR. She also mentioned that EEA is the state trustee and that the U.S. Army, U.S. Air Force, Department of Veterans Affairs, and the U.S. Fish & Wildlife Service are the federal trustees.

Ms. Young stated that in the Textron case, \$1.3 million was recovered in damages due to injury to natural resources (groundwater) at the base resulting from releases of oil or hazardous materials. She also said that the trustees are required to use the money to restore injured resources, while a portion of the money goes toward reimbursing the trustees for their assessment costs. She further noted that the entire process culminated in a consent decree that was filed in U.S. District Court in February 2008.

Ms. Young reported that \$1 million went to the state - \$960,000 for restoration, and \$40,000 for EEA assessment costs. And, according to the specific terms set forth in the consent decree, spending of \$460,000 of the \$960,000 could be approved by the state solely, without having to undergo a restoration planning process, while the state is required to publish a draft restoration plan, provide notice to the other trustees, and hold a public comment period before making a final decision on how the remaining \$500,000 should be spent. Regarding the \$300,000 that was paid to the federal trustees, Ms. Young reported that \$175,000 was for restoration and the remainder for assessment costs. She also noted that the federal trustees must publish a draft restoration plan and provide notice to the other trustees before the money can be spent.

Ms. Young then reviewed a slide entitled "EEA RFR: Timeline," which noted the following: in January 2009, EEA issued a Request for Responses (RFR) in order to identify projects on which to spend restoration money; in March 2009, which was the deadline for submittal of proposals, EEA had received 12 responses, with proposed projects totaling \$4.6 million; and in September 2009, EEA announced the two projects it approved for funding, the two projects it is recommending for funding, and the projects it is not recommending for funding. She also noted that the two projects recommended for funding include the \$175,000 recovered by the DoD.

Ms. Young then took a moment to clarify that her presentation tonight is intended to provide the MMRCT and SMB with just a very general overview. She noted that the trustees will be holding a public meeting this fall specifically to discuss the entire process and take formal public comments on recommendations for projects, as required by federal law.

Ms. Young reported that one of the two proposals that the state has approved for funding (which do not require any additional consultation or review) is a \$259,200 project, the applicant for which was the Orenda Wildlife Land Trust, for the acquisition of 13.7 acres (Lovells Lane) within a Zone 2 in the town of Mashpee, an area that is also a sensitive lands/critical habitat. She noted that the benefits of this project are that it protects a Zone 2 aquifer recharge area and it protects an ecologically sensitive habitat. The other approved proposal is a \$61,200 project for land acquisition (the Thicket Run property) in the town of Sandwich, the applicant for which was the Sandwich Water District. Ms. Young noted that this project also provides aquifer protection as well as the protection of environmentally sensitive lands/critical habitat. She reported that EEA will be executing a contract with the applicants for these two projects and making a transfer of funds to finance them.

Ms. Young also reviewed the first of two proposals that EEA is recommending, which, she noted again, are subject to a draft restoration plan and public comment: a \$371,800 project, with funding to

go to the Upper Cape Regional Water Supply Collaborative for analysis of sustainable management and use of the Sagamore Lens, and benefits being aquifer protection and recharge. She also noted that EEA recommending partial funding for this project, as the request was for \$395,000, and that EEA is proposing some changes to the scope of the project, which will be seen in the draft restoration plan. The second proposal EEA is recommending is a \$400,000 project for the Town of Sandwich to develop a Comprehensive Water Resources Management Plan, the benefits of which, again, would be aquifer protection and recharge. In this case as well the EEA is recommending partial funding, as the request was for \$600,000.

Ms. Young then briefly reviewed the eight proposals not recommended for funding: a \$154, 000 proposal from the Town of Falmouth for developing a wastewater treatment facility at MMR; a \$425,000 proposal from the Town of Falmouth for developing nitrogen total method detection limits (MDLs) at seven estuaries; a \$32,000 proposal from the Town of Mashpee for developing a guide to protect Cape waters; a \$58,000 proposal from the Town of Mashpee for a Santuit Pond diagnostic study; a \$1,073,000 proposal from the Sandwich Water District for a water supply transfer station; a \$839,000 proposal from the Town of Sandwich for a PCE bleeder reduction for existing water mains in the town; a \$50,000 proposal from the Cape Cod Commission for a regional wastewater management plan and public participation project for Upper Cape Cod; and a \$665,000 proposal from John Todd Ecological Design for an eco-station to restore groundwater at MMR.

Ms. Young concluded her presentation by reviewing next steps: EEA will execute contracts for the two approved land-acquisition projects; EEA, in conjunction with federal trustees, will develop and issue a draft restoration plan, as required by federal law; the restoration plan will be advertised as available, and a public meeting and a 30-day public comment period on the plan will be held; public comments will be considered and the final restoration plan will be issued; and EEA will execute contracts to kick off the approved projects.

Mr. Dinardo asked if there's a timeframe during which the entire funds must be utilized. Ms. Young replied that there is not. Mr. Dinardo then inquired about the length of time anticipated before the \$4.6 million is absorbed. Ms. Young clarified that \$4.6 million was the total amount requested, while the state trustees actually recovered \$1 million and the federal trustees \$175,000. Mr. Dinardo then inquired about the length of time before the \$1.3 million is actually utilized for construction purposes. Ms. Young replied that contracts will be executed for the two land acquisitions proposals within the next month, and once the final restoration plan is issued, contracts will be executed with those applicants. She also noted that some of the proposals are multi-year proposals, and therefore the money will be paid out on a reimbursement basis when certain milestones and performance standards of the contract are met.

Ms. Crocker inquired about the plan to advertise for public comment on the draft restoration plan. Ms. Young replied that the Consensus Building Institute (CBI) is available to the Natural Resource Trustee Council (NRTC) to help in that regard. She also said that she expects that a news release will be issued and that email distribution lists for the MMRCT and SMB could be utilized. She further noted that she expects that the state will consult with its co-trustees, the Air Force and Army, on how best to spread the word to the Upper Cape communities about the public meeting and the availability of the draft restoration plan. Mr. Field added that the Massachusetts Department of Environmental Protection (MassDEP), which has good connections and relationships at MMR, would likely support EEA's outreach efforts.

Ms. Valiela asked Ms. Young to provide a best estimate on a timeframe for issuing the restoration plan and executing contracts. Ms. Young said that she expects the draft restoration plan will be issued this fall, probably in November, after which there will be a 30-day public comment period, consideration of comments, a rewrite of the plan, if necessary, and obtaining concurrence from all of the trustees (a process that could take several months). She then said that she expects that the final restoration plan

will be issued in early 2010. Mr. Field said that he thinks it's worth noting that the trustees have been working closely with each other, trying to move forward on the projects rapidly, in a cooperative manner.

Mr. Goddard said that he applauds the state "for a great job" in the Textron settlement, which he believes will provide some immediate benefit to the community, and which he hopes will serve as a template for a larger settlement in the future. He also mentioned that he's been pursuing the NRD issue on an MMR-wide basis for quite some time, and he thinks that the idea of a settlement allows "more creative thinking about ways to get some money and funds into projects, instead of tying it up." Mr. Goddard also said that he's been very concerned that the NRTC process would "fade away," but is now hopeful about building on the Textron settlement, which he considers to be a great template. In addition he encouraged anyone with ideas about sustainability and protecting the water on the base to share those ideas with him.

Agenda Item #3. Land-Use Controls Update

Mr. Karson stated that land-use controls (LUCs), which are restrictions or controls needed to protect human health and the environment, limit the use of and/or exposure to contaminated soil and groundwater associated with MMR, and they prevent interference with a remedy. He also noted that LUCs are also known as institutional controls.

Mr. Karson reviewed the different types of LUCs: fences/signs around a landfill (such as Landfill 1 [LF-1] at MMR); well drilling prohibitions at MMR for potable water supplies; town well drilling prohibitions and testing requirements for potable water supplies (in Bourne, Falmouth, Mashpee, and Sandwich), which are verified annually during Installation Restoration Program (IRP) updates to the Boards of Health; monitoring of daily Dig-Safe notices to look for well drilling and digging activity near IRP wells/systems; and verification of the status of existing private and irrigation wells located on parcels in the footprint or in the future path of groundwater plumes associated with the IRP. Mr. Karson stated that the last LUC he mentioned is intended to answer the question, "Is anyone in IRP plume areas being exposed to unacceptable levels of plume contaminants through operation of a private well?"

Mr. Karson noted that the goal of the well verification program is to verify all private and irrigation wells located in the current plume boundaries. This verification is required for all Records of Decisions (RODs) for plumes associated with the Air Force Center for Engineering and the Environment (AFCEE) cleanup program, including the recently-signed Ashumet Valley plume and Chemical Spill 10 (CS-10) RODs. The steps in the process, which are to identify, to test, to prepare a risk assessment (if necessary), and to offer free decommissioning of wells, must occur within three years of signing a ROD, beginning with the LF-1 and CS-23 RODs, which were signed in September 2007.

Mr. Karson stated that the IRP, in consultation with the regulatory agencies, developed a rather extensive protocol for the well verification program. He then showed a map of the Cataumet area of Bourne and pointed out the off-base component of the LF-1 plume, which is based on the maximum contaminant level (MCL) for contaminants of concern (COCs) in the plume – solvents TCE and PCE. He also pointed out the 500-foot buffer zone around the extent of the plume, which, he explained, provides an extra level of comfort in terms of protectiveness. Mr. Karson further explained that a well verification program database is used to generate information on all the parcels contained within the buffer zone and plume outline – to generate mailing lists, phone numbers, and to develop maps for quickly visualizing research and outreach progress. He noted, for example, that the LF-1 map has different-colored areas that indicate parcels whose owners have been responded to AFCEE's well survey, parcels whose owners have not yet responded, and parcels where private wells have been identified.

Mr. Karson reported that in order to determine whether private or irrigation wells exist on a parcel, AFCEE contacts the property owners: by an initial mailing asking them to fill out a form, then potentially by second and third mailings to non-respondents, then by telephone, then by visual drive-bys to verify vacant lots, and then, as a final step (which has not yet been undertaken) by door-to-door canvassing to obtain information from non-respondents. Mr. Karson also mentioned that local law enforcement agencies would be notified before AFCEE pursues any door-to-door canvassing. He further noted that AFCEE is coordinating its LUC efforts (by reviewing town drilling logs and attending annual meetings) with the local Boards of Health, which regulate private wells.

Mr. Karson also discussed what occurs once a private or irrigation well has been identified: AFCEE offers free decommissioning of existing wells; property owners who want to keep and use their wells will be offered well testing and an evaluation of the well's safety (a risk assessment); and if a well is found to pose an unacceptable risk and the property owner does not accept decommissioning, AFCEE will pursue all legal options through the town, and in the interim may offer bottled water or treatment. Mr. Karson noted that all of this information is shared with the regulatory agencies and public health officials, including the local Boards of Health. He also mentioned that re-evaluation will occur with future Five-Year Reviews, which are conducted as part of the Superfund program.

Mr. Karson then showed a table entitled "AFCEE Land Use Controls – Outreach Summary" and explained that the decision was made (about 1.5 years ago) to begin the well verification program with the Ashumet Valley plume because it has the greatest number of parcels associated with it. He noted that three mailings have been sent to property owners in the Ashumet Valley plume area and several rounds of phone calls have been made, but no door-to-door canvassing has been done yet. He reported that 80% of the property owners have been contacted – "a pretty good return so far." Mr. Karson then noted that the current focus is on LF-1, where the outreach success rate is presently about 70%, including some recent reconnaissance work to identify vacant lots in the Cataumet area. He further noted that the overall program (including all of the IRP plumes) involves a total of 2,083 parcels, and the successful outreach completion rate at this time is 56%.

Mr. Karson reported that of the 331 wells that have been identified through the program so far, only one is being used for drinking water purposes. The well, which is located outside the plume footprint but within the buffer zone, was tested, and test results confirmed that no plume-related contaminants were present.

Mr. Reif noted that Mr. Karson had mentioned offering bottled water or treatment. He then inquired about the type of treatment that would be offered, and also asked if there's an option to supply town water to residents. Mr. Karson replied that in the past AFCEE has provided whole-house filters that filter all the water in the house rather than just at the faucet, and he noted that bottled water could also be provided. And in terms of conversions to municipal water, Mr. Karson noted that that is a distinct possibility since AFCEE already has funded more than 1,200 conversions in the four towns that surround MMR. He noted that conversion to municipal water wells "is probably the safest way to go." Mr. Reif suggested that maintaining a whole-house filter could be more expensive, and perhaps less protective, than connecting to town water. Mr. Karson explained that such measures would be taken strictly on an interim basis, until a funding contract can be put in place for the town or water district to have the conversions done. He further noted that interim treatment and eventual conversion to a municipal system would be provided to the homeowner at no cost.

Ms. Valiela asked if wells identified in a buffer zone, rather than within the footprint of a plume, would be of lesser concern. Mr. Karson clarified that there's no difference in how AFCEE looks at a property inside the plume footprint and one outside the plume footprint but within the buffer zone. He also noted that quite a few owners of properties where wells were identified have indicated a desire to have their wells decommissioned, and that work is expected to begin this fall. Ms. Valiela also asked if the 500-foot buffer zone around plume footprints is something initiated specifically for the well verification

program. Mr. Karson replied that in fact the buffer zone idea was initiated years ago, when Robert Gill was the IRP program manager, and the decision was made to expand the residential well sampling program beyond plume footprints.

Mr. Green asked what would occur in the event that a homeowner wants to keep his well just for irrigation purposes. Mr. Karson replied that a risk assessment would still be conducted for an irrigation-only well, and decommissioning would be pursued through the local Board of Health if risk is determined to exist, the same as with drinking-water wells. Mr. Davis added that this kind of action is quite unlikely, since contaminant concentrations up to 20 parts per billion (ppb) are acceptable in an irrigation scenario, and plume extraction wells off base do not even see such high concentrations.

At this time Mr. Karson turned the presentation over to Mr. DeHainaut, to discuss the database management system used for the well verification program. Mr. DeHainaut began by showing the LUC system main introduction screen and explaining that, using a Geographical Information System (GIS), the plume footprints/buffer zones are intersected against parcels, which are loaded into the system. He also pointed out boxes for information on the parcels, including the address of the parcel itself, the mailing address for the property owner, and notes about the contact, irrigation wells, and so forth. He further noted that there's a place in the system for information about outreach efforts such as the initial mailing, subsequent mailings, phone calls, email contact, and drive-bys. Also, there's a place for information on the date a letter was sent, the date it was returned or a response received, etc. as well as a place for information on each of the wells identified through responses.

Mr. DeHainaut showed the screen used for entering information from survey responses and explained that after the data have been interpreted and stored in a table they are available for analysis, query, reporting, and decision-making. He also noted, however, that it's sometimes helpful to be able to review the original survey, and therefore the survey documents are scanned and available for viewing through the system, and are tied to their respective parcel. Mr. DeHainaut further noted that the system has performed very well as a single source for information on outreach status.

Mr. DeHainaut then stated that the system, which uses Access 2007, can easily develop and print out standardized reports, which are based on queries that tap into the data tables. He showed a slide of a sample report, and described the entire system as very flexible, "pretty powerful and pretty easy to work with." He also spoke about the research tools in the system, which allow the user to link with the GIS and determine where a particular parcel is located in order to help try to answer questions such as why a response hasn't been received, why a response is similar to one next door, and so on.

Mr. Goddard asked if the system is used by AFCEE or the Department of Defense (DoD) on a national level. Mr. DeHainaut replied that it is not. Mr. Goddard recommended that the system should be shared with other programs in order to save taxpayer dollars. Mr. DeHainaut remarked that it is a very sharable system and was "kind of designed with that in mind." He noted that the system can basically be burned onto a CD.

Mr. Goddard then asked if the system includes a place to track other LUCs, such as fencing and signage. Mr. Davis replied that this database management system is specifically used for the well verification program, and he noted that the other LUCs, for which there is a separate tracking tool, are so limited in number that they don't really lend themselves to this database. Mr. Goddard said that he thinks it might be helpful to have all the LUCs information in one database, perhaps with photos attached as well.

Mr. Foster asked if dealing with survey non-responses has been a significant factor to date. Mr. DeHainaut pointed out that the system has check-boxes for identifying that a mailing was sent, and when a mailing was sent. He said that periodically reports are run to determine who hasn't responded and how many parcels have been sent a second mailing and not responded to that, for example, so that it can be decided when and if a third mailing should be done, whether phone calls should be made, or

some other measure taken. He added that the system makes it very easy to formulate these kinds of decisions.

In response to Mr. Goddard's suggestion about using this system nationwide, Mr. Davis noted that he had looked into whether other bases were dealing with similar problems and heard of one base in the South that was dealing with only 14 off-base parcels, indicating that the situation at MMR is quite unique.

Agenda Item #4. ROD/Construction Update for Ashumet Valley, CS-10, and CS-19; Confirmation of Date for Remedies-in-Place/Wind Turbine Ribbon-Cutting Ceremony

Mr. Davis showed a figure of the leading edge of the Ashumet Valley plume and pointed out the new extraction well, the pipeline, the mobile treatment unit (MTU), and the discharge bubbler in the Backus River. He also mentioned that the MTU and discharge bubbler are located in privately-owned cranberry bogs. Mr. Davis noted that the Ashumet Valley ROD was signed on June 10, 2009 and the leading edge system began operating on August 24, 2009, and therefore Ashumet Valley is now "remedy-in-place."

Mr. Davis then showed a figure of the CS-10 plume and pointed out the locations of the new extraction well and new reinjection well. He also said that all the other system components were part of interim CS-10 remedies that were already installed and operating. Mr. Davis reported that the CS-10 ROD was signed on August 19, 2009, although the new system was actually built and operating before then. He added that CS-10 is now also "remedy-in-place."

Mr. Davis also showed a figure of CS-19, an RDX plume emanating from a disposal area located in the Impact Area (in the northern part of the base). He reported that agreement has been reached on language for the CS-19 ROD, which is monitored natural attenuation (MNA) with LUCs, and no active treatment. He added that the CS-19 ROD will be signed at a ceremony later this month, and he also noted that the Removal Action Report associated with the CS-19 source area is currently being reviewed by the regulators. Mr. Davis also mentioned that the cost for the CS-19 removal action was somewhere between \$4 and \$5 million.

Mr. Davis further noted that Mr. Minior would be discussing the fourth site and final IRP site to become "remedy-in-place" – CS-18. He then stated that a ceremony to celebrate all remedies-in-place, to which all MMRCT and SMB members will be invited, is planned for September 28, 2009. The event will commence at the Hunter Avenue treatment plant, from which attendees will walk or take a shuttle-bus to the wind turbine site at the LF-1 treatment plant. He also said that while it was believed that the wind turbine would be fully constructed by September 28, that prospect seems a little uncertain at this time. Nevertheless, the ceremony will be adapted to whatever scene is on hand on Monday, September 28.

Agenda Item #5. CS-18 Update

Mr. Minior showed a map of MMR and pointed out CS-18, which, he noted, is also known as Gun Position 9 (GP-9), a location from which artillery shells were fired into the Impact Area. He also noted that GP-9 was one of the most frequently used gun positions for more than 40 years, and that excess propellant bags were burned at the site.

Mr. Minior then reported that a great deal of CS-18 soil analysis has been conducted over the past 12 to 14 years, and results yielded sporadic, low-level detections (ranging from nondetect to below regulatory standards) for compounds such as aluminum, Dieldrin (a pesticide) and di-n-butyl-phthalate (a semi-volatile organic compound [SVOC]). When perchlorate sampling began in 2002, no perchlorate was detected in the soil. However, in 2009, using a new analytical method (multi-increment sampling), some perchlorate was detected, but at levels of less than 1 microgram per kilogram (mg/kg)

or ppb, well below the state's number of 100 mg/kg. Mr. Minior noted that the only COC identified at the site was 2,4-DNT, an explosive compound, which was considered to pose a leaching threat to groundwater. Therefore, a soil removal action was undertaken to excavate soil with 2,4-DNT concentrations of 700 ppb or more, as 700 ppb is the state's leaching-based soil standard for 2,4-DNT. More than 3,500 cubic yards of soil were removed and transported to an off-base licensed facility for disposal, at a cost of about \$1.5 million.

Mr. Minior then showed a figure entitled "CS-18 Excavation Depths," which depicted the 50'x50' squares or excavation grids, with those shown in pink representing excavation to a depth of one foot, and those shown in orange representing excavation to a depth of two feet. He also showed a figure entitled "CS-18 Post-Excavation Analytical Results" and noted that the grids shown in green were areas that were not excavated as part of the soil removal activity, and that those shown in red are areas now predominantly clean of 2,4-DNT. He also noted that the sidewalls of the exterior of the red grids were sampled and that remaining detections in the soil are indicated on the figure.

Mr. Minior went on to discuss CS-18 groundwater, for which the IRP has about ten years worth of data. He reported that for the most part sampling results were nondetect, although there were some sporadic detections that didn't exceed regulatory standards, and were not found to pose a threat to human health or the environment. He noted that no explosives were detected in groundwater, and that in 2002 perchlorate was detected at 4.3 micrograms per liter (μ/L). He added that perchlorate detections have since dropped to less than 1 μ/L , and he noted that the state standard for perchlorate in groundwater is 2 μ/L . Mr. Minior then showed a figure entitled "CS-18 Wells and Groundwater Elevation Contours (2009)" and pointed out the direction of groundwater flow.

Mr. Minior also reviewed a "Conclusions" slide: all 2,4-DNT-contaminated soil above 700 ppb has been removed from the site, with the maximum remaining being 470 ppb; perchlorate in groundwater has declined to below the Massachusetts MCL (MMCL) of 2 μ/L , with the maximum remaining being 0.77 μ/L ; and it's been determined that no further action is required and the site can be closed out. Mr. Minior also noted that the public comment period on the Decision Document (DD) for the CS-18 Operable Unit (soil and groundwater) runs from September 11 through September 24, 2009, and it's expected that the CS-18 Operable Unit DD will be issued by the end of September.

Mr. Pinaud noted that one of Mr. Minior's presentation slides showed soil units as "micrograms per liter," which should be "micrograms per kilogram" or "parts per billion."

Mr. Guerino asked how the IRP informs the public of the availability of the DD in the local libraries. Mr. Minior replied that this is accomplished by issuing a news release, by running a notice in the local newspapers, by discussing the document at a community meeting, and by posting the information on the IRP's website.

Mr. Reif referred to the composite sampling that Mr. Minior had mentioned and said that the dilution factor goes up significantly with an increased degree of compositing. He then inquired about the size of the composites and the size of the areas being composited. Mr. Minior replied that basically a 100-point composite is taken from a 10,000 square foot area, which amounts to a couple pounds of soil. He further noted that the composite soil sample is then ground – pulverized to a powder – and a sample is taken from that for analysis. Ms. Jennings added that it's absolutely correct that in general, compositing can dilute the sample when sampling for volatile organic compounds (VOCs); however, it's different when working with explosives because the goal is to find the particle that will cause contamination. And unless a great deal of soil is taken, composited, and ground, the tendency is to miss the contaminant. She said that if success is measured by finding contamination, there has been more success using the new sampling method than there has been using typical grab samples or even five-point composite samples, when many times "that one chunk of explosive that is really acting as a

source” was missed. She assured Mr. Reif that a number of studies have demonstrated that the multi-increment/grinding method is really the best method for dealing with explosives and propellants.

Mr. Reif then said that it appears that the sampling would guide the excavation, and asked if sampling was conducted both before and after the excavation to confirm that the depth of excavation was adequate. Mr. Minior replied that it was. He also said that grids that were excavated were based on some older soil sampling and on some more recent sampling that used the new method of analysis, which indicated several more areas that required excavation. He further noted that confirmatory sampling was conducted – both at the bottom of the excavation and at the sidewalls of the exterior of the grids.

Ms. Rielinger referred to the map that showed sidewall sampling results and asked if “RL” stands for reporting limit or regulatory level. Mr. Minior confirmed that RL refers to the reporting limit for the analytical method.

Agenda Item #6. Western Boundary/Demolition Area 2/Northwest Corner RSP

Mr. Gregson displayed a map of MMR and pointed out the Western Boundary, Demolition Area 2 (Demo 2), and Northwest Corner sites, which, because of their similarities, are being combined into one Remedy Selection Plan (RSP) and Decision Document (DD). He also explained that in the IRP, an RSP is known as a Proposed Plan, and a DD is known as a ROD. Mr. Gregson then reviewed the sites’ similar features: no continuing source (having either been removed or attenuated naturally); same types of contaminants (RDX in the Northwest Corner and Demo 2, perchlorate in the Western Boundary and the Northwest Corner); relatively low levels of contamination (right near risk-based concentrations, and expected to reach risk-based concentrations relatively quickly); and a similar range of alternatives, given the similarity of the sites.

Mr. Gregson then reviewed the cleanup objectives for the sites: to restore the usable groundwater to its beneficial use, wherever practicable, within a timeframe that is reasonable given the particular circumstances of the site; to provide a level of protection in the aquifer that takes into account that the Cape Cod aquifer is a sole-source aquifer that is susceptible to contamination; and to prevent ingestion and inhalation of groundwater containing COCs in excess of federal MCLs, health advisories, drinking water equivalent levels, applicable state standards, or an unacceptable excess lifetime cancer risk or non-cancer Hazard index.

Mr. Gregson noted the following regarding the Western Boundary site: groundwater monitoring of the site began in 1999; perchlorate has been detected at concentrations ranging from less than 1 ppb to 2.89 ppb (detections occurred upgradient of the Monument Beach wellfield in Bourne, and therefore led to a flurry of investigation activity in that area); current perchlorate concentrations are less than 2 ppb; the U.S. Environmental Protection Agency’s (EPA’s) interim health advisory for perchlorate is 15 ppb and the MMCL is 2 ppb; and there might be a small perchlorate plume that has moved beyond monitoring well 233 (MW-233) but not yet reached MW-268, downgradient. Mr. Gregson also showed a map of the Western Boundary and pointed out the monitoring wells and the small area of perchlorate contamination in the northern part of the study area.

Mr. Gregson then reported that the two Western Boundary response action alternatives are: Alternative 1 – no action/no further action; and Alternative 2 – MNA with LUCs. Under Alternative 1, monitoring would be discontinued, no institutional or access restrictions would be implemented, and groundwater contamination would be reduced through natural processes. Mr. Gregson noted that modeling indicates that the perchlorate should already be below 2 ppb, and he mentioned that the cost of Alternative 1 is approximately \$278,000 for well abandonment and site closeout. He further reported that under Alternative 2: groundwater monitoring would continue; LUCs would be in place to prevent access to the groundwater until it reaches risk-based levels; groundwater contamination would be reduced

through natural processes; and the cost would be about \$343,000, for additional monitoring, operation & maintenance (O&M), and site closeout.

Mr. Goddard asked if Western Boundary is the site that led to the Bourne Water District's connection to the Upper Cape Water Supply Cooperative pipeline. Mr. Gregson confirmed that it is. Mr. Goddard also inquired about the source area. Mr. Gregson replied that a source areas was never well defined, although it's believes that the source of perchlorate contamination is most likely related to the historic use of smokes, flares, and pyrotechnics, over a large area. Mr. Goddard asked if no further action on the source area would be part of the decision. Mr. Gregson confirmed that it would.

Ms. Garcia-Serrano inquired about the types of natural processes expected to reduce the perchlorate. Mr. Gregson replied that the natural processes would be dilution and dispersion; it isn't anticipated that any biological processes to break down the perchlorate would occur.

Ms. Crocker noted that the cleanup objectives mention that the Cape Cod aquifer is "susceptible to contamination," and she wonders why more isn't said about the uniqueness of the aquifer because of its sandy soil, rather than just because it's a sole-source aquifer. Mr. Gregson agreed that the soil on Cape Cod is very sandy. He also said that a compound like perchlorate dissolves ready and migrates fairly rapidly through the soil to groundwater – hence, the reference to the Cape Cod aquifer's susceptibility to contamination. Ms. Crocker said that she thinks it would helpful if this concept was clearly articulated for the public.

Mr. Reif noted that Alternative 2 costs \$65,000 more than Alternative 1, and then asked for examples of the LUCs that would be implemented. Mr. Gonser mentioned the base-wide prohibition against drilling wells, the MassDEP permitting process (which prevents the installation of wells without a MassDEP permit), and the Dig-Safe program. He noted that all of these LUCs would be in place and that there would also be periodic briefings to the health departments to ensure that everyone is aware of plume locations. Mr. Reif noted that the \$65,000 would apply to the monitoring then, rather than to the LUCs. Mr. Gonser confirmed that that is correct.

Mr. Goddard inquired about any Impact Area Groundwater Study Program (IAGWSP) effort to coordinate with AFCEE and its well verification program database. Mr. Gregson replied that that certainly can be done, and added that in the case of the Western Boundary and Northwest Corner, the IAGWSP has checked extensively to ensure that all residences are on town water and not on private wells. Mr. Gonser added that over the next year the IAGWSP will be looking to develop a LUC program similar to AFCEE's, especially in light of the J-1 Range plumes that are being addressed – although the IAGWSP is dealing with far fewer number of parcels. He also said that he's been discussing whether the two programs' systems could somehow be integrated, or whether the IAGWSP could rely on AFCEE's very comprehensive system to track IAGWSP-related parcels as well.

Mr. Gregson continued his presentation by discussing Demo 2, a demolition training site where explosives were used, and where groundwater monitoring has been occurring since 2002. He noted that Demo 2 differs from the Western Boundary and Northwest Corner sites in that the source area has been identified and physically removed as part of a Rapid Response Action (RRA) conducted in 2004, when the thermal treatment unit was on base. He also mentioned that the successful removal of the Demo 2 source area is documented in a Completion of Work report. Mr. Gregson further noted that RDX is the only COC in the Demo 2 plume, and that concentrations have ranged from 0.25 ppb to 6.7 ppb, while the current maximum RDX concentration is 1.7 ppb. He also said that the EPA lifetime health advisory for RDX is 2 ppb, the MassDEP GW-1 standard is 1 ppb, and the level resulting in an increased cancer risk of one-in-a-million is 0.6 ppb. Mr. Gregson then noted that the plume has been dissipating on its own over time, and he showed a three-panel slide with plume depictions from 2006, 2007, and 2008 that illustrated that phenomenon. He also displayed time series plots for RDX for Demo 2 Alternative 1

(no action/no further action) and Alternative 2 (MNA with LUCs), noting that the figures show how the plume is expected to attenuate to below the 0.6 ppb level over time.

Mr. Gregson reported that under Alternative 1 – no action/no further action: monitoring would be discontinued; no institutional or access restrictions would be implemented; groundwater contamination would be reduced through natural processes; it's predicted that RDX would dissipate to below 2 ppb by 2011 and to below 0.6 ppb by 2013; and the cost would be about \$140,000, for well abandonment and site closeout. Under Alternative 2 – MNA with LUCs: groundwater monitoring would continue; LUCs would protect against use of the groundwater until it reaches risk-based levels; groundwater contamination would be reduced through natural processes; RDX would dissipate to below 2 ppb by 2011 and below 0.6 ppb by 2013; and the cost would be about \$790,000, for additional monitoring and the installation of a couple more monitoring wells, O&M, and site closeout.

Mr. Gregson then discussed Alternative 3, the active treatment alternative for Demo 2. He noted that under Alternative 3 – focused extraction: groundwater monitoring would continue; LUCs would protect against the use of groundwater until it reaches risk-based levels; a one-well, 100 gallon per minute (gpm) extraction-and-treatment system (including an MTU) using granular activated carbon (GAC) would be constructed; RDX would be reduced to below 2 ppb by 2010 and to below 0.6 ppb by 2012; groundwater would reach risk-based levels one year sooner than with Alternatives 1 or 2; and the cost would be about \$3,720,000, for capital costs, O&M, and site closeout. He also displayed a two-panel figure representing 2011 conditions under Alternatives 1 and 2 and under Alternative 3 and noted how the plume collapses a bit around the extraction well.

Mr. Dinardo asked if test results parallel the modeling that's being shown. Mr. Gregson replied yes, they track pretty closely. Mr. Dinardo then asked if it's correct that an extraction well would accelerate cleanup by one year, at a cost of about \$3 million. Mr. Gregson confirmed that that's correct.

Ms. Garcia-Serrano noted that the same language is used for both Western Boundary and Demo 2, but it's her understanding that there's a distinction between the lines of evidence associated with perchlorate versus RDX in that there is a daughter product element associated with the breakdown of RDX. Mr. Gregson replied that an anaerobic environment is necessary for the biodegradation of RDX to occur, and it isn't anticipated that that would be a large factor in the natural attenuation of RDX in this case. Ms. Garcia-Serrano asked if it's correct then that dilution and dispersion are the natural processes associated with the attenuation of both constituents. Mr. Gregson confirmed that that's correct.

Mr. Gregson continued his presentation by discussing the Northwest Corner, an area that's been monitored since 2002, and involves both a perchlorate and an RDX plume. He noted that perchlorate concentrations have ranged from 0.28 ppb to 26.3 ppb, with the current maximum perchlorate detection being 12.3 ppb. He also reminded the group that the EPA interim health advisory for perchlorate is 15 ppb and the MMCL is 2 ppb. He then reported that RDX concentrations have ranged from 0.25 ppb to 15 ppb, with the current maximum RDX detection being 9.4 ppb. He also noted that the EPA lifetime health advisory for RDX is 2 ppb, the MassDEP GW-1 standard is 1 ppb, and the level resulting in an increased cancer risk of one-in-a-million is 0.6 ppb. Mr. Gregson further noted that while in map view the RDX and perchlorate plumes appear to be co-located, in cross-section it's evident that the RDX plume is deeper in the aquifer.

Mr. Gregson showed a map of the Northwest Corner plumes and said that it's believed that some geologic feature is causing the RDX plume to be such a long and narrow plume in the deeper part of the aquifer, and given the plume's dimensions, it's estimated to contain just over a pound of RDX. The perchlorate plume, however, is a relatively large and disperse plume, believed to be the result, at least in part, of the fireworks displays that were launched in the town of Bourne, as well as perhaps the use of smokes and flares on the base. Mr. Gregson also noted that groundwater in the Northwest Corner

area flows very rapidly toward the Cape Cod Canal, where it discharges. He showed a figure of time series plots for the perchlorate plume and pointed out how quickly the perchlorate plume is predicted to dissipate over the next few years, as it discharges into the canal.

Mr. Gregson reviewed the Northwest Corner response action alternatives, beginning with Alternative 1 – no action/no further action: monitoring would be discontinued; no institutional or access restrictions would be implemented; groundwater contamination would be reduced through natural processes; perchlorate would dissipate to below 2 ppb by 2012; RDX would dissipate to below 2 ppb by 2012 and below 0.6 ppb by 2022; and the cost would be about \$150,000, for well abandonment and site closeout. Under Alternative 2 – MNA with LUCs: groundwater monitoring would continue; LUCs would protect against the use of groundwater until it reaches risk-based levels; groundwater contamination would be reduced through natural processes; perchlorate would dissipate to below 2 ppb by 2012; RDX would dissipate to below 2 ppb by 2012 and to below 0.6 ppb by 2022; and the cost would be about \$1,198,000, for additional monitoring, O&M, and site closeout.

Mr. Gregson then reviewed Alternative 3 – focused extraction, for which the goal is to clean up the plume within ten years, an alternative required by EPA’s Administrative Order (AO). He noted that under Alternative 3: groundwater monitoring would continue; LUCs would protect against the use of groundwater until it reaches risk-based levels; a three-well, 300-gpm extraction-and-treatment system using ion exchange resin for perchlorate and GAC for RDX would be constructed; perchlorate would be reduced to below 2 ppb by 2012; RDX would be reduced to below 2 ppb by 2012 and below 0.6 ppb by 2020; groundwater would reach risk-based concentrations in the narrow RDX plume two years sooner than with Alternatives 1 or 2; and the cost would be about \$9,789,000, for capital costs, O&M, and site closeout. Mr. Gregson then showed a map, noted that the system would be focused on extracting the RDX plume, and pointed out well locations near the Bourne skating rink, in a residential neighborhood, and on the base boundary.

Ms. Crocker inquired about possibilities as to why the RDX plume is “so very, very straight.” Mr. Gregson replied that he thinks glacial deposits are a possible geologic explanation, given the coarser-gravel stream channels that existed when the glacier was here. He said that it might be that the contamination is traveling along a coarser-grained gravel deposit. He also mentioned that the source of the RDX is believed to be from either the Former A Range or the Central Impact Area.

Mr. Goddard asked if it’s correct that there’s an extraction well at the base boundary. Mr. Gregson clarified that the map showed hypothetical well locations for a three-well system, including one at the base boundary.

Ms. Grillo asked why the predicted cleanup time for perchlorate is the same for both the MNA and active treatment alternatives. Mr. Gregson replied that active treatment isn’t expected to accelerate the perchlorate plume cleanup time, although it may remove some perchlorate mass. He also pointed out that only one of the extraction wells would be located within the perchlorate plume.

Mr. LoGuidice asked if the Massachusetts Division of Fish & Wildlife (MDFW) has conducted any water sampling in the canal. Mr. Gregson replied that he doesn’t believe it has, and added that it’s highly unlikely that anything would be detected, given the low contaminant concentrations and the amount of water in the canal.

Mr. Field then turned over the remaining part of the presentation to Ms. Jennings of EPA. Ms. Jennings explained that although the IAGWSP has been conducting many of the studies related to the three sites, it is EPA that must take the information, make a cleanup decision, issue an RSP, solicit comments, and make a final decision. She then showed a slide listing the nine criteria used in the evaluation of alternatives: overall protection of human health and the environment; compliance with regulations; long-term effectiveness and permanence; reduction of toxicity, mobility, and volume through treatment; short-term effectiveness; implementability; cost; state acceptance; and community

acceptance. She noted that state and community acceptance are evaluated after the public comment period; that many of the criteria are very subjective; and that state acceptance usually comes after community acceptance has been expressed.

Ms. Jennings then reported that EPA's recommended alternative for the Western Boundary is Alternative 2 – MNA with LUCs, the reasons being: it's more protective than Alternative 1 because it includes monitoring and LUCs, and it's possible that the plume still exists between two monitoring wells; it achieves cleanup goals in a reasonable timeframe (2009, as predicted by the IAGWSP); and the slightly higher cost (\$343,000 versus \$278,000) is considered worthwhile because the alternative includes monitoring and the assurance that LUCs will be implemented.

Ms. Jennings also reviewed the reasons behind EPA's recommended Demo 2 alternative: Alternative 2 – MNA with LUCs. She noted that Alternative 2: is more protective than Alternative 1 because it includes MNA and LUCs; achieves cleanup goals in a reasonable timeframe (2013 versus 2012 for Alternative 3, the focused extraction alternative); and the cost of \$790,000 is reasonable considering the time savings and cost of Alternative 3, which is nearly \$4 million.

Ms. Jennings noted that EPA is also recommending Alternative 2 – MNA with LUCs, for the Northwest Corner. She then reviewed the reasons behind the recommendation: Alternative 2 is more protective than Alternative 1 because it includes MNA and LUCs; it achieves cleanup goals in a reasonable timeframe (2012 for perchlorate and 2022 for the narrow RDX plume, compared to 2012 and 2020 for Alternative 3, the focused extraction alternative); it's more easily implemented than Alternative 3, which would require construction in a residential neighborhood; and the cost of \$1,198,000 is reasonable considering the time savings and cost of Alternative 3 (\$9,789,000).

Ms. Jennings summarized that: the amount of mass in the three plumes is not great; they are expected to reach cleanup levels in a reasonable period of time (ten years at most); they are not predicted to migrate far, or into areas where people would be at risk; and they aren't expected to impact a large part of the aquifer. She explained that these are the types of things that are considered when deciding between an active remedy and a natural attenuation remedy. She also noted, however, that the J-1 Range and Central Impact Area plumes, for which decisions will be made next year, are different in that the contaminant mass is much greater, and therefore the time to restore using natural attenuation would be much greater. And because of the amount of mass in these plumes, they have a tendency to migrate farther and impact more of the environment. Ms. Jennings stated that it's highly unlikely that EPA would choose a natural attenuation remedy for the J-1 Range and Central Impact Area plumes, and in fact the agency is currently considering how many extraction wells will be needed. She added that the decision on the Western Boundary, Demo 2, and Northwest Corner plumes was easier because of the time-savings, where the plumes were traveling, and so forth. She also noted that only the Northwest Corner is off base at this time, and the residences in that neighborhood are all connected to town water; in addition, that plume is discharging to the canal, where levels aren't posing any environmental threat.

Ms. Jennings concluded her presentation by noting that the RSP was issued today, the public comment period will run from today through October 15, 2009, and a public hearing is scheduled for September 30, 2009 at the Quality Inn in Bourne. She noted that written comments can be submitted through email or regular mail, or verbal comments can be recorded at the public hearing. A response to comments will be developed and issued with the final DD, which, it is hoped, will be issued before the end of this calendar year.

Mr. Goddard inquired about the \$1 million monitoring cost for the Northwest Corner, and asked whether there might opportunities in the future, such as a Five-Year Review, to reduce the frequency of monitoring, and thereby reduce the cost. Ms. Jennings replied "yes, absolutely." She also explained that the difference between monitoring costs associated with the Northwest Corner and those

associated with the other two sites is due to the greater number of wells and the longer period of time during which they'll need to be monitored. Ms. Jennings further noted that monitoring plans will be optimized in order to focus on critical wells, eliminate certain wells from the monitoring program as the plume shrinks in size, and possibly to add wells to the program as the plume moves. Mr. Goddard suggested that the estimated cost for Alternative 2 for the Northwest Corner is very conservative then. Ms. Jennings replied that she thinks it's "probably realistic."

Ms. Grillo noted that the MMRCT doesn't meet again until October 14, just one day before the end of the public comment period. She then asked if Mr. Field plans to poll team members on their comments. Mr. Field said that he would be checking in with the team on that at then end of this discussion. Mr. Gregson encouraged anyone interested in commenting to review the final Western Boundary, Demo 2, and Northwest Corner Remedial Investigation/Feasibility Study (RI/FS) documents (to be posted on the IAGWSP website in a few days) and the RSP, copies of which were distributed this evening.

Ms. Jennings mentioned that the gun positions, including those upgradient of the Western Boundary and Northwest Corner plumes, which, although it seems unlikely, might be potential source areas for those plumes, are still being investigated – therefore some of the source decisions would come later, if it's found that those gun positions are a continuing source. Mr. Goddard asked if it's correct that that would be under a separate action. Ms. Jennings replied yes, under a separate DD.

Mr. LoGuidice acknowledged that he hasn't read the RSP yet, but is concerned that if MDFW isn't worried about the Northwest Corner plume discharging into the canal, it might be excessive to be spending so much money on monitoring. Ms. Jennings reminded the group that predictions based on groundwater computer models do not necessarily happen as expected, and so the monitoring will look at not only what's going into the canal, but also at whether the plume is cleaning up as it's supposed to, and not going somewhere else. Ms. Jennings also stated that monitoring is a critical component to verify the model itself.

Mr. Guerino remarked that it would be helpful if acronyms used throughout the presentations were explained for those who don't attend these meetings frequently. Ms. Sanderson referred Mr. Guerino to the "Glossary of Terms and Acronyms" page in the RSP document.

Mr. Dinardo asked what would happen if maximum allowable contaminant levels go down (as they're likely to do should they change) during the natural attenuation period. Ms. Jennings replied that this issue would be evaluated through the Five-Year Review process or sooner, and a remedy could be revised, if needed. She also noted that it's possible for a number to go up, such as that for RDX, which is currently under debate – in which case, a remedy decision could be revised as well. She added that if a new compound with a new standard came along, that too would have to be considered.

Mr. Field told the MMRCT members that his suggestion is to conduct a quick website-based survey about one week prior to the end of the public comment period, compile the results, bring them to the team at the October 14, 2009 MMRCT meeting for review, and be ready to submit them into the official record the next morning. In response to several questions posed by Mr. Goddard, Mr. Field confirmed that MMRCT members would be free to submit individual comments, and that any comment submitted on behalf of the team would become part of the official record and would include a list of team members who participated in the joint comment. Ms. Jennings added that it would be very helpful if opinions informally expressed at MMRCT meetings were submitted in writing. She also noted that a response to comments would be part of the DD. Ms. Crocker asked if it's correct that team members could still submit individual comments as well, and Mr. Field confirmed that it is.

Mr. Goddard said that he likes Mr. Field's recommended approach since it allows for a commenter to submit an individual comment in the event that there's disagreement with the majority opinion. Ms. Jennings stressed that official feedback from MMRCT members is very helpful, and there have been some cases when no comments were submitted. Mr. Reif said that he concurs with Mr. Field's

recommended approach, and he if he didn't agree with the majority of the team he would simply not take part in the process.

Mr. Field then asked if SMB members wanted to discuss how to proceed with their comment(s). Ms. Valiela said that in the past SMB members have submitted individual comments rather than a joint comment, and she thinks that is how the group should proceed in this instance as well. There were no objections from the other SMB members to this approach. Ms. Garcia-Serrano added that MassDEP will issue its comment letter after the public comment period has closed and the comments have been considered.

Agenda Item #7. Pyrotechnics Update

Dr. Ciaranca, the former Natural Resources Manager for Camp Edwards and the current Environmental & Readiness Center (E&RC) deputy director, informed the group that EPA AO#2 banned the use of pyrotechnics at MMR. He also noted, however, that the Army has since developed more environmentally-friendly pyrotechnics that it wants to use in order to have more realistic training.

Dr. Ciaranca stated that there's no difference in the explosive capacity of the two simulators the Army wants to use – one being a grenade simulator and the other being a ground-burst simulator, also called an artillery simulator. The artillery simulator, however, includes a whistle component, such that an incoming round can be heard overhead. The grenade simulator contains no perchlorate, while the artillery simulator contains just one gram of perchlorate (a 95% reduction from the amount of perchlorate in the original simulators) located within the ignition train that powers the whistle. Dr. Ciaranca also mentioned that perchlorate is an oxidizer that “sets off the rest of the ignition of the device.”

Dr. Ciaranca then reported that due to its perchlorate component, the artillery simulator was field tested on August 20, 2009, when 19 artillery simulators were thrown into a shipping container lined with an 18-inch bed of sand, after which testing was conducted for perchlorate and other COCs such as nitrites and metals. Test results, which have been provided to the regulatory agencies, are scheduled to be discussed at tomorrow's Small Arms Range Working Group meeting. He also said that next steps will be to petition EPA and the Environmental Management Commission (EMC) to use these simulators on base. He explained that EPA would be petitioned under the AOs and the EMC would be petitioned under Environmental Performance Standard 19 for inclusion on the lab munitions list in Chapter 47 of the Acts of 2002 Environmental Performance Standards.

Agenda Item #8. Soil Removal and Treatment Update

Mr. Gregson reported that the IAGWSP is currently excavating explosives-contaminated soils from L Range, which is a 40mm grenade range in the southeast part of the base. Soil has been excavated down to about six inches and post-excavation sampling is ongoing to determine if a greater depth is required. Mr. Gregson also noted that: there's an approved plan to excavate some additional contaminated soil at J-1 Range and J-2 Range, where soil samples have been collected and the IAGWSP is awaiting the results; some additional investigation was conducted at Former K Range, prior to a removal action there; and the IAGWSP is looking to remove soils contaminated by blow-in-place (BIP) activities that have occurred on the base. Mr. Gregson also noted that the robotics team from the Air Force Research Lab (AFRL) at Tyndall Air Force Base is back at MMR, using remote-controlled bulldozers and loaders to remove two source areas within the Central Impact Area. The robotics team has excavated a northern source area about two acres in size, down to a depth of about one foot, and is using remote-controlled equipment to screen unexploded ordnance (UXO) out of the contaminated soil.

Mr. Gregson noted that the IAGWSP has proposed to treat contaminated soil using the alkaline hydrolysis process, which basically involves mixing lime with the soil to drive the pH up to above 11.5 in order to break down the explosives. A project note regarding an initial test of the process at L Range

is in the process of being finalized. And if the method proves successful, it could be applied to other sites that have similar explosives contaminants, such as the Central Impact Area and Former A Range.

Ms. Grillo asked if the lime treatment involves a one-time application. Mr. Gregson clarified that it can be done in multiple steps. He explained that the soil would be treated *ex situ*, in a “treatment cell.” After the lime is applied to the soil, the soil will be allowed to sit for a three-week period, after which it would be sampled and analyzed, and then re-treated and allowed to sit longer, if needed.

Mr. Reif inquired about the byproducts of the chemical reaction, Mr. Gregson said that he cannot recall right now what they are, but he does know they are thought to be non-toxic. Mr. Field said that Mr. Reif’s request for this information would be noted as an action item. Mr. Reif also asked if results from testing of the efficiency of the process would be reported. Mr. Gregson confirmed that samples would be collected throughout the process, interim reports would be made to the agencies, and then a final Completion of Work report would be submitted.

Agenda Item #9. Former K Range Update

Mr. Gregson showed a map of MMR and pointed out the base boundary, Route 130, and the triangular-shaped Former K Range in the eastern part of the base. He noted that the range, which was originally constructed in 1960, was used as a 3.5-inch rocket range from 1960 to 1967 and as a grenade-launcher range from 1968 until the early 1970s. He also mentioned that it’s believed that the weapons systems used at the range utilized inert rounds, and therefore the IAGWSP doesn’t anticipate a big UXO problem there.

Mr. Gregson then reported that investigations at the Former K Range have included soil sampling at presumed target areas, as well as geophysical surveys involving aerial magnetometry, ground-based EM-61 magnetometry, and the use of handheld Schonstedt magnetometers. He noted that the geophysical surveys looked at: presumed target areas; transects and firebreaks (which the AFRL robotics team cut last year); meandering paths (a more random path to characterize an entire area without having to survey 100% of the ground); prescribed burn areas, which allowed a clear view of what’s on the ground as far as potential munitions items; and trenches, which were dug across areas of the range to see if there might be any munitions at depth. Mr. Gregson showed a figure entitled “Former K Range Proposed Reconnaissance Locations” and pointed out the presumed target areas, firebreaks, prescribed burn areas, and so forth. He also showed a figure entitled “Site Map Former K Proposed Drive-point Locations” and reported that investigations of groundwater downgradient of Former K Range haven’t detected any perchlorate or explosives contamination coming from the range.

Mr. Gregson reviewed soil investigations findings: no explosives compounds were detected in any samples from Areas A, B, D, and F; RDX was detected at concentrations above the state cleanup standard of 1,000 ppb (around 5,000 ppb and 7,000 ppb) in two five-point composite samples from Area E, and additional samples have been collected to characterize that contamination; perchlorate was detected at just below the state cleanup standard of 100 ppb in one multi-increment sample in Area F, and some additional sampling around that detection will be proposed; and nearly all of recovered items were inert 3.5-inch rockets and 40mm grenades, with no UXO identified. Mr. Gregson also reiterated that no explosives or perchlorate were detected in monitoring wells samples, or in shallow profiles from drive-points. And he reported that next steps are to delineate the perchlorate contamination in Area F, conduct any necessary soil removal, and prepare a final Investigation Report later this fall.

Mr. Foster asked why five-point composite sampling was conducted in Area E while multi-increment sampling was conducted in Area F. Mr. Gregson clarified that multi-increment sampling was conducting in both areas, while the five-point composite sampling was the method that was used previously.

Ms. Jennings stated that Former K Range is also one of the UXO Working Group's pilot sites for trying to determine how much UXO cleanup is enough when it comes to impacts to groundwater and to closing out the site for future uses. She then said that a "lot of looking" didn't lead to the discovery of any Munitions and Explosives of Concern (MEC) items, but it did lead to a lot of scrap metal and items that didn't contain explosives. She also noted, however, that it's rather difficult to investigate the entire range because of the vegetation is so dense, and so the question is whether it's necessary to clear the whole area. Ms. Jennings then explained that this is why the decision was made to conduct additional soil sampling using the multi-increment method, which was focused on areas where the highest use was believed to have occurred. She said that the theory is that if MEC items aren't being found visually or through EM-61 surveys, and a lot of explosives-contaminated soil isn't being found, then it's likely that those items aren't there. She added that it's an interesting exercise to try to use multiple lines of evidence to figure out if MEC items, which are difficult to find visually, exist on this range

Mr. Goddard inquired about the use of data from aerial magnetometry surveys conducted in the past. Mr. Gregson replied that those data are one of the lines of evidence.

Mr. Goddard then asked Dr. Ciaranca if the prescribed burn program at MMR is inhibited because of concern about exploding ordnance, at the Impact Area, for example. Dr. Ciaranca replied that while the Impact Area is "separate onto itself," UXO has not been a great concern at the small arms ranges. Nevertheless, when prescribed burns are conducted, only personnel familiar with UXO safety are allowed on the ignition teams, while other personnel are on standby for suppression and safety. Dr. Ciaranca added that aerial ignition would be needed in order to do a prescribed burn in the Impact Area. He also mentioned that the AFRL robotics group does have a remote-controlled helicopter that the new natural resource manager on base has been looking into using. Mr. Goddard asked if it's correct then that the UXO themselves are not a prohibiting factor. Dr. Ciaranca confirmed that that's correct. He also said that he had heard that no large-scale explosions occurred during prescribed burns conducted at the Impact Area years ago.

Mr. Gonser added that in fact prescribed burns are routinely used around the country to assist in UXO investigations – which benefits the natural resource programs and improves safety for UXO workers, who don't have to work blind in dense vegetation. He noted that the IAGWSP actually provides the funding to conduct some of the prescribed burns at MMR, thereby using cleanup money to assist both the natural resource effort and the UXO effort. He further noted that the IAGWSP is currently working some initiatives to obtain MassDEP approval to do prescribed burns throughout the year. Mr. Goddard said that at some point he'd like to hear more about the possibility of using the remote-controlled helicopter to conduct burns in the Impact Area.

Ms. Crocker asked who currently owns all the remote-controlled equipment. Mr. Gonser replied that it is owned by the Air Force Robotics Lab, which is located in Florida. He also explained that the IAGWSP has developed a relationship with the AFRL, which actually purchased some of its equipment for use at MMR and now is using that equipment at other sites around the country.

Agenda Item #10. Next Meeting Schedule and Adjourn

Mr. Goddard asked about the status of a Community Involvement Update, including information about the groundwater findings map and the like. Mr. Karson confirmed that this update is on the agenda for the October MMRCT meeting.

Mr. Field stated that the MMRCT would meet next on October 14, 2009, and then on November 18, 2009, rather than November 11, as that is Veterans Day. Ms. Sanderson noted that the next SMB meeting, which has not yet been scheduled, might occur in January if the timing coincides with the next group of IAGWSP decisions.

Mr. Field then inquired about the teams' response to tonight's combined MMRCT/SMB meeting. Mr. Goddard said that "it works fine" for him, and he found it useful to have other perspectives at the table. Mr. LoGuidice said that he concurs with Mr. Goddard's assessment.

Mr. Field adjourned the meeting at 8:46 p.m.