Impact Area Review Team
Bourne Best Western
October 24, 2006
6:00 – 9:00 p.m.

Meeting Minutes

Members:	**Organization:**
Hap Gonser	IAGWSP
Ben Gregson	IAGWSP
Mike Minior	AFCEE/MMR
Lynne Jennings	US EPA
Len Pinaud	MassDEP
Tom Cambareri	IART/CCC
Peter Schlesinger	IART/Sandwich
Earl Lantery	IART/Sandwich
Richard Conron	IART/Bourne
Bob Mullennix	IART/Bourne
Facilitator:	**Organization:**
Jim Murphy	US EPA
Attendees:	**Organization:**
Paul Nixon	IAGWSP
Jon McDonagh	IAGWSP

Attendees (cont'd):	**Organization:**
Lori Boghdan	IAGWSP
Pam Richardson	IAGWSP
Kris Curley	IAGWSP
Bill Gallagher	IAGWSP
COL Bill FitzPatrick	E&RC
Shawn Cody	MAARNG
Will Tyminski	Camp Edwards
Carol Keating	US EPA
Jane Dolan	US EPA
Desiree Moyer	US EPA
Mark Panni	MassDEP
Mark Begley	EMC
Kevin Hood	UCONN/TOSC
David Dow	Sierra Club
Shouvik Gangopadhyay	ECC
Mike Goydas	ECC
Robert Paine	ECC
Jim Quin	Ellis Environmental
Amanda Lehmert	Cape Cod Times
Jane Shea Moran	e^2M

Agenda Item #1. Welcome, Agenda Review, Approval of 9/26/06 IART Meeting Minutes

Mr. Murphy convened the meeting at 6:04 p.m., the Impact Area Review Team (IART) members introduced themselves, and Mr. Murphy reviewed the agenda. He also asked if there were any changes to the September 26, 2006 IART meeting minutes. No changes were offered and the minutes were approved as written.

Agenda Item #2. Late-Breaking News, Responses to Action Items from 9/26/06 IART

Mr. Murphy confirmed that there was no late-breaking news to report at this time. He then asked if there were any questions or comments on the responses to action items from the September 26, 2006 IART meeting.

Mr. Schlesinger inquired about the Chemical Spill 19 (CS-19) modeling information that the Air Force Center for Environmental Excellence (AFCEE) had agreed to provide. The Impact Area Groundwater Study Program (IAGWSP) noted that the video file showing dissipation of the CS-19 plume after removal of the source area was available for him this evening.

Mr. Conron inquired about the status of the development of some kind of tool to measure the IAGWSP's progress. Mr. Gonser replied that methods for measuring progress of the cleanup program include the installation of remediation systems and the intermediate reports that are produced on the way to implementing response actions. He also noted that the IAGWSP is working on a plume booklet and a general fact sheet as communication tools for the public. Mr. Conron asked when the documents would be completed. Mr. Gonser said that he expects them to be completed in January 2007. Mr. Conron expressed concern that it would take so long to produce these items and questioned whether the IAGWSP has staff assigned specifically to

community involvement activities. Mr. Gonser explained that it does take a considerable amount of effort to produce such documents, and added that the community involvement staff also works on other tasks associated with the cleanup projects. Mr. Murphy recommended that at the next IART meeting the IAGWSP provide a schedule for producing the documents. He also said that he expects that the IART will have an opportunity to review and comment on the documents before they're released to the public.

Mr. Schlesinger noted that he doesn't fully understand the response to Action Item #2, his request for clarification on laboratories' ability to analyze for tungstate versus tungsten. Mr. Gregson explained that the labs measure the amount of tungsten (not tungstate, which is dissolved out) to provide an idea of how much tungstate is in a particular sample. Mr. Schlesinger asked if the concern at the Massachusetts Military Reservation (MMR) is tungstate or tungsten. Mr. Gonser replied that the U.S. Army Environmental Center (AEC) believes that the concern is tungsten in the form of tungstate. However, tungsten can be measured and provide an idea of the amount of tungstate in a sample.

Mr. Schlesinger also inquired about efforts toward determining standards for tungsten. Mr. Gonser said that he's heard that the 30-day rat study that was conducted by the U. S. Center for Health Promotion and Preventive Medicine (CHPPM) has been circulated and that additional studies are being considered. Mr. Schlesinger asked about the possibility of obtaining a copy of the CHPPM study. Mr. Gonser said that he asked whether a report had been written and if it was available and hadn't received any answers yet, but will inform the IART when he does. He also noted that part of the AEC study is to look at speciation and determine whether the kind of tungstate being detected at MMR is the same as that being tested on rats.

Mr. Schlesinger then asked if the rat study had indicated any harm. Mr. Gonser replied that it's his understanding that a range of dosages was tested, with higher dosages causing impact and low dosages not causing impact. He also said that he thinks that the purpose of follow-on studies will be to determine the line between a no-effect level and an effects level.

Mr. Schlesinger also asked about the expected travel time for the tungsten detected on base to reach the town of Bourne. Mr. Gonser replied that based on the speed of groundwater and that tungsten-nylon bullets came into use at MMR in 1999, he would estimate that the contamination is about 10 to 20 years travel time away from Bourne.

Mr. Lantery remarked that he would like to "see the agenda move along" and would have preferred that the tungsten conversation had transpired by phone call or during the break.

Mr. Pinaud recommended that Mr. Gonser provide the IART with updates on the CHPPM toxicology studies as they become available.

Agenda Item #3. J-2 Range Study Area 2 – Data Assessment

Mr. Gregson stated that the "J-2 Range Study Area 2" presentation will be given by technical staff at Environmental Chemical Corporation (ECC) who presented the same material to the IAGWSP, the U.S. Environmental Protection Agency (EPA), and the Massachusetts Department of Environmental Protection (MassDEP) in order to demonstrate the completeness of the investigation of that study area and ultimately determine whether it's appropriate to move forward with the evaluation of cleanup alternatives for the J-2 Range. He noted that the presentation will focus on the central portion of the J-2 Range, which has been undergoing detailed investigation for about six years. Ms. Jennings added that it's been difficult to determine the best way to present this information to the IART and she'd be interested in the team's feedback at the end of the presentation. She also said that if the team likes this approach, in the future ECC could provide presentations on the other two study areas at the J-2 Range as well as the study areas at the J-1 Range.

Mr. Gangopadhyay of ECC showed an aerial figure of the J-2 Range and pointed out the three study areas, which he noted were identified based on a 1977 aerial photograph. He also said that the remainder of the J-2 Range will also be examined as part of the remedial investigation (RI). He then stated that approximately six J-2 Range workplans, including the one for the soil Rapid Response Action (RRA), have been executed, and all of the information and data from them have been put together to develop a conceptual model for how the range was used and what caused the contamination. In addition, the soil data have been linked with the current J-2 Range groundwater sampling results.

Mr. Gangopadhyay then reported that the J-2 Range was used as a training range in the 1940s and then as a contractor testing range from the 1950s to 1980s. He also noted that several witness accounts have referred to disposal at all three study areas at the range, but mostly at Study Area 1. Mr. Gangopadhyay showed a slide listing the Study Area 2 features that were investigated (fixed firing points, twin berms, mortar position, berms 2/3, disposal area 1, Sherman Tank area, brick-lined pit 1, and Range Road burn area) and noted that based on geophysical surveys or sampling results that showed detections, some of them had warranted further investigation.

Mr. Gangopadhyay noted that items found at the ranges are classified as either munitions/explosives of concern (MEC) or munitions debris/range-related debris (MD/RRD). MEC items, which can be of large, medium, or small caliber, can be inert but with a live fuze or could potentially have an explosive filler that cannot be confirmed. MD/RRD is essentially scrap, which is separated out from MEC items. Mr. Gangopadhyay reported that MEC clearance at Study Area 2 was conducted: during the polygon investigations associated with the Munitions Survey Program (MSP); when well pads were installed and the roads to them were built; at areas excavated as part of the soil RRA and in support zones associated with that work; as part of supplemental work at priority grids identified through geophysical investigations; and at additional targets that were selected based on their potential to be sources. At Study Area 2 MEC was cleared from approximately 114,000 square feet, while the remaining 80,000 square foot area with signal response was not cleared of MEC either because the signal was due to terrain features (such as a concrete wall) or because the surface had been cleared by UXO personnel.

Mr. Gangopadhyay displayed a figure showing the distribution of MEC items in Study Area 2 and pointed out firing points and berms where clusters of MEC items were found, as expected. He also pointed out a disposal area and a tank, which could have been a used as a target and which witnesses say had been moved over time. He also noted the location where a single item was found. He also displayed a figure that showed the additional targets that were investigated as well as those that, based on lines of evidence, were determined not to warrant more investigation.

Mr. Gangopadhyay reported that about 2,600 MEC items were discovered, of which about 1,800 were 30mm items (medium caliber projectiles containing about 0.76 ounce of filler). He also noted that about 1,565 of those 30mm items were found in a burial pit while the remaining ones were scattered in the same general area. He further noted that less 4% of the all the items found were cracked and/or leaking, and that approximately 1% of the burial pit items were cracked and/or leaking. Mr. Gangopadhyay also mentioned that there seem to be many relic sources at the site and that many sources have been removed from the site. Mr. Gangopadhyay also showed a slide illustrating MEC distribution in a tabular/grid format and pointed out the clusters.

Mr. Gangopadhyay then reviewed the following conclusions with respect to the MEC discoveries: geophysical coverage of Study Area 2 has been completed; MEC clearance was targeted at locations identified through background information and witness interviews, site recon, geophysical signals, modeling, and previous investigations; MEC items were primarily located within two areas – the first representing a mix of testing/firing and disposal of testing items and the second representing testing as related to known targets; unlike the northern J-2

Range study area, there was no indication of non-range related disposal activities at Study Area 2 – all items discovered related to testing activities conducted in the J-2 Range; and cracked/leaking items in localized areas appear to contribute to soil contamination that affected groundwater. Mr. Gangopadhyay noted that the last conclusion indicates that the deposition was not wide-spread within the study area and therefore attention could be focused on the two clusters that were identified.

Mr. Gangopadhyay referred to the analytical data summary table and noted that all of the sample results from the various workplans were broken up into depth strata of 0 to 1 foot and greater than 1 foot. He also noted that while data pertaining to all the analytes were evaluated, the focus of tonight's presentation is on RDX and perchlorate. Mr. Gangopadhyay further noted that the summary slide lists the maximum concentrations and depths pertaining to RDX and perchlorate detections, but added that because work is still in progress at the study area those numbers will have to be updated for the final RI.

Mr. Gangopadhyay continued by showing a figure depicting soil samples at the study area and pointed out the symbols representing MEC items, surface soil samples, and subsurface soil samples. He also noted that the figure pertains to a specific targeted sampling effort to try to find the sources of potentially impacted portions of the range. He then ran a 3-D computer animation showing all the soil sampling for RDX over several investigations, noted that not much contamination was detected at depth, and pointed out how the detections coincide with the two MEC item clusters. He also ran another 3-D computer animation of RDX detections, but one that also showed the various removal actions that have been conducted, and then the remaining RDX detections, which he noted will be assessed in terms of future impacts to groundwater, if any. Mr. Gangopadhyay also showed similar animations for perchlorate contamination in soil.

Mr. Gangopadhyay then stated that the work in progress that he'd mentioned has to do with the blow-in-place (BIP) excavation program. He showed a figure depicting the location of that ongoing work and noted again that the RI report would be updated to include it. He also showed another analytical data summary table, but one that showed what's currently left at the site following the various removal actions. He noted that this information will be used for the leaching assessment and future groundwater risk assessment, and further noted that it is not a stand-alone data set, but will be evaluated along with data pertaining to the entire J-2 Range. Mr. Gangopadhyay also showed a table entitled "Analytical Data Summary Preliminary Screening Results" and noted that the RI will involve a much more detailed assessment to determine cleanup standards. He then showed RDX figures and perchlorate figures depicting soil detections, in-situ detections, and potential source areas for those contaminants.

Mr. Gangopadhyay then reviewed the slide that listed the analytical data conclusions as follows: sample locations are co-located with areas of interest defined by witness interview, site recon, geophysical signals, MEC discoveries, and site features; sample collection in these areas is adequate to describe nature and extent, define the source areas, and initiate the RI; analytical results define the vertical extent of contamination, the majority of which is found within the first foot of ground surface, and will be further defined by the ongoing BIP program; the quantity of samples and suite of analytes are sufficient to support risk and leaching assessments; the highest concentrations detected are associated with impacted or cracked/leaking items; and RDX is associated with many Study Area 2 features, while perchlorate is more located in the grid M19/20 area and near the firing points. Mr. Gangopadhyay then turned to Mr. Goydas of ECC for the second half of the presentation, dealing with groundwater.

Mr. Goydas explained that he'd be discussing groundwater as part of a soil presentation because it can provide information about the evolution of the plume and the various source areas. He showed a figure of the J-2 East RDX and perchlorate plume shells and pointed out the J-2 Range

Study Area 2. He also noted that the J-2 East plume is approximately 5,800 feet long, a little more than 2,000 feet wide, and up to 70 feet thick, and slightly more heterogeneous than a normal teardrop-shaped plume. He pointed out the various zones of the plumes and noted that there are likely a couple of source areas. He also mentioned that the eastern plume lobe tracks back to Study Area 3, but that he'd be focusing on groundwater data from the main body of the plume.

Mr. Goydas then showed an animation of the perchlorate plume and pointed out the different zones of contamination, which indicate multiple sources rather than one centralized release. He also pointed out the different elevations of contamination, which also indicates different sources. Mr. Schlesinger inquired about any difference between the round and rectangular objects used in the animation. Mr. Goydas replied that the vertical columns represent screening profiles while some of the other shapes represent either real or migrated data. He then showed an animation of the RDX plume and pointed out the relatively specific zone that impact the aquifer. He also mentioned that perchlorate is definitely a stronger source than RDX, but the ages of the plumes appear to be similar, about 40 years. He further noted that the western plume lobe seems to be a little younger.

Mr. Goydas also said that ECC looked at the evolution of the plume from the standpoint of timing in order to determine whether the understanding of range use and activities fit with the groundwater data. The required pieces of information were the speed of unsaturated transport through soil and the saturated transport in groundwater. The groundwater flow model and a fate & transport model were used to determine that the timing is around 40 years in terms of the plume's transport through the aquifer. Mr. Goydas also explained that the transit time through the vadose zone is very specific to contaminant type and the evaluation suggests that it takes two to three years for the peak arrival of perchlorate through the vadose zone, which is about 80 to 100 feet thick. RDX however, takes longer, up to about six years, with arrival of the trailing edge taking up to 14 years. Mr. Goydas then noted that aerial photographs and site records indicate that the source could have existed about 45 years ago, and modeling suggests 40 years of transport plus two years of transport through the vadose zone, which points to an active source around 42 years ago, and perhaps as recently as 10 years ago regarding the trailing edge. He also mentioned that one well indicates some low-level contamination that's continuing to bleed into the aquifer.

Mr. Goydas mentioned that an estimated 9 kilograms of J-2 Range perchlorate contaminant mass and 4 kilograms of RDX contaminant mass exist in the aquifer at this time. He also noted that a variety of modeling simulations were done in an effort to determine whether the groundwater data help in understanding the history of the source, and whether that information could be used to determine if the soil is going to be a problem in the future. He then showed a two-year old animation that was used as a tool to help determine drilling locations for the J-2 East investigation and explained that the model released contaminants into the ground to try to match the amount of mass in the aquifer based on data available at that time. The suggestion was that the plume might be more contiguous than originally thought and this led to the installation of monitoring well 368 (MW-368), results from which actually brought about mapping that area of the plume as one contiguous zone rather than separate lobes. Mr. Goydas then showed an animation that took the RDX plume data from two years ago and applied it to the footprints mapped in the most recent investigation, and noted that it ends up with "a pretty good match." He also showed the same for perchlorate and noted the lack of a footprint because the perchlorate is flushed out. He further noted that the groundwater data support that that area is detached from the source and has already moved downgradient. He also said that while this was obviously not a perfect match, the idea was to simply take the old data and try to develop the general footprint of the plume.

Mr. Goydas said that the next step was to create "a mass in that particular soil column," run it through the vadose zone model, and then put that information into the saturated model, which simulates groundwater movement. He then showed this animation and noted that it takes about

six years for the RDX to make it through the vadose zone. He also said that the animation shows that "these areas" of contamination are not equal to the existing plume and would not create or maintain a plume for very long. He further noted that the indication is that the source of the plume was much greater in the past because the highest concentrations are "way down here." Mr. Goydas also said that the animation looks at the amount of mass based on soils data and explained that that is reflective of all the soils, including the soil that's already been removed. For the RI, however, the evaluation will look only at that soil which remains.

Mr. Goydas showed another animation, but for perchlorate, and noted that it takes about two years for the perchlorate to migrate through the vadose zone. He also pointed out that all of the trailing edges, with the exception of "this small area" indicate that there really isn't much perchlorate remaining in the groundwater. He further noted that that is the part of the plume still attached to the source area, and added that 0.4 kilograms of mass is a relatively small fraction of the 9 kilograms, but is still a threat, albeit a very small threat, to groundwater, and "certainly a relic of what the original source was that created the plume."

Mr. Goydas then referred to the western lobe of perchlorate contamination, for which there hadn't been a perfect match, and displayed a graphic that showed the following: a 3-D representation of the current plume, RDX and perchlorate iso-contours that reflect the transport model, and forward particle tracks from the soil contaminant footprints and from burial and burn pits. He then explained that this is important because in a sense it's another line of evidence that "this lobe with a little bit of perchlorate out in front" is co-located with "this lobe of RDX," although it couldn't really be matched in the transport model. Mr. Goydas further noted that this is probably because the perchlorate source that existed in the past has since "wicked out" as perchlorate dissolves relatively rapidly on the ground surface. He also said that by taking "that little blip," which is a source for the RDX plume and putting in contamination for perchlorate, it was possible to do "a little better job of matching" and develop the western lobe of the plume.

Mr. Goydas then reviewed a slide entitled "Soil Source Loading Observations" which read as follows: plume calibration simulations suggest minor ongoing source loading (groundwater data support this finding); current contaminated soil mass is not sufficient to maintain plume; soil contaminant footprint results in good match with observed plume (model suggest soil footprints are primary sources – however, can't confirm that these were/are the only sources); and particle tracks and transport from burial pits indicate potential contribution to plume evolution (no way to quantify historic significance).

Mr. Goydas also said that a next step is to evaluate the density/mass loading of MEC items in order to help understand the evolution of the plume and look at potential long-term impacts on groundwater. He then reviewed the slide that listed RI tasks as follows: assess leaching potential of existing soil contamination; predict mass density from MEC items and evaluate potential impact on groundwater; conduct risk assessment to assess site conditions; identify potential data gaps based on available data (e.g. review of aerial photographs); and assess aerial photographs from 1943, 1955, 1966, 1986, and 1991. Mr. Goydas then concluded his presentation by noting that the immediate next steps are to complete the assessment of Study Area 2 and then proceed with preparation of the RI report.

Mr. Schlesinger asked if it's possible that the amount of mass inside the 4% of MEC that was found cracked/leaking was enough to have produced the mass that's left in the plume. Mr. Goydas replied that certainly the cracked/leaking MEC items contribute to soil contamination which ultimately contributes to groundwater contamination. He also said, however, that "it really boils down to mass per unit area" and as part of the RI the next step will be to determine whether there's sufficient MEC density and the right type of MEC (the smaller the round, the less mass to impact the groundwater).

Mr. Schlesinger then noted that Mr. Goydas had mentioned a plume timeline of 40 to 45 years and asked if the MEC items that were found were used 40 to 45 years ago, and if they had been age-dated. Mr. Goydas replied that direct age-dating was not done. Rather, the found items were compared with range use records and aerial photograph interpretation that indicated when particular areas were used. Then the round type was evaluated with respect to when it might have been developed, used, and tested, and in terms of its primary components (HMX, perchlorate, and so forth). Mr. Goydas said that this exercise was part of the development of the conceptual model.

Mr. Mullennix noted that the "Analytical Data Summary Preliminary Screening Results" slide showed that in addition to perchlorate and RDX, some other contaminants such as metals, pesticides, and volatile organic compounds (VOCs) had exceeded screening criteria. He then asked if those contaminants had also been looked at in groundwater. Mr. Goydas replied that a more full suite of analytes was tested in the earlier stages of the investigation; however the number of analytes was thinned down over time once it was determined that the primary drivers in groundwater were explosives and perchlorate. He further noted that a lot of the other contaminants are not seen in J-2 Range and J-3 Range groundwater because of their affinity to soils. He also mentioned that all of those contaminants will be evaluated in both the groundwater and soil RIs in terms of potential risk.

Ms. Jennings referred to the "J-2 Range Area Overview" figure and the grids M-19/20 area, which seems to be a significant source of contamination, and noted that EPA had noted a need to gather additional information to fill a data gap to the left of there, given some geophysical signals that EPA thinks should be investigated.

Mr. Dow questioned why past source removals had gone to much greater depth than where current perchlorate and RDX contamination is being identified. Mr. Gangopadhyay explained that the source removal RRAs were based on detections of any PEP (propellants, explosives, and pyrotechnics) compound. Mr. Goydas added that everything will be evaluated and presented in the RI, while this presentation focused on the primary drivers, RDX and perchlorate.

Mr. Dow also inquired about the approach taken to determine the depth of excavation, given the lack of standards for some of the contaminants detected in soil. Mr. Goydas replied that the approach will be two-fold: a risk-based approach pertaining to potential human or ecological risk, and an assessment of leaching potential pertaining to impact to groundwater, both of which will be evaluated to determine an appropriate cleanup number. Ms. Jennings added that past soil removal depths were based on digging until samples came back nondetect, which she believes better answers the question Mr. Dow was asking. Mr. Dow confirmed that it did.

Mr. Schlesinger asked how it's known that all of the contaminant was removed, since it moves through the soil and could exist below areas that tested nondetect. Mr. Goydas replied that the only way to really see contamination at depths deeper than nondetect is through long-term groundwater monitoring. He also said, "The hope is that if we've removed the contaminated soil it won't become re-contaminated."

Mr. Schlesinger then said that he's not confident that the conclusions made thus far are reflective of the total conditions, given that the focus is on cracked/leaking MEC items, which he doesn't think is the best strategy. He then mentioned low-order rounds, which have been discussed in relation to the Central Impact Area investigation, and suggested that the J-2 Range source areas might be more wide-spread and not necessarily just where there's cracked/leaking MEC. Mr. Goydas clarified that it wasn't initially assumed that cracked/leaking items were the primary source, although in certain instances that was determined after multiple lines of evidence were examined. He also noted that sampling results from areas where the conceptual model indicated bombardment or direct impact didn't suggest wide-spread contamination in most cases. He further noted that the groundwater data indicate that the sources are not non-point sources, and

this is due to the very steep concentration gradients that point to a relatively compact footprint. Mr. Goydas reiterated that it was not initially assumed that cracked/leaking items were the primary source and it's not being suggested that they're the only source. Other munition types and propellants are also believed to be sources as well.

Mr. Schlesinger then stated that there seems to be a mismatch between the detections in soil and detections in groundwater. Mr. Goydas explained that like many other investigations at MMR and elsewhere, not everything seen in soil is seen or should be expected to be seen in groundwater. This is due primarily to contaminant type – for example, perchlorate and ethylene dibromide (EDB) are very good tracers while other contaminants don't leach quickly through the vadose zone and move relatively rapidly with groundwater. Detections of those other contaminants (such as metals, semi-volatile organic compounds [SVOCs], and pesticides) that have occurred, however, will be evaluated as part of the ongoing risk assessment.

Mr. Schlesinger asked why then, for example, validated perchlorate detections in soil shown along the northeastern edge of J-2 in the map provided with the monthly report don't seem to coincide with the perchlorate plume. Mr. Goydas referred to the 2-part per billion (ppb) contour line and the nondetect "halo," which isn't shown on the map, but is a much larger footprint. Mr. Schlesinger then referred to a particular data point that didn't appear to him to be included in the plume, but Mr. Goydas clarified that it's "right on the edge." Mr. Schlesinger explained that he's concerned that the treatment system doesn't miss anything. Mr. Goydas noted that at this point a system has not been installed, and groundwater data are being presented tonight just to help understand what's happening with the source.

Ms. Jennings asked for feedback on the level of detail included in the presentation. Mr. Cambareri said that he thought Mr. Goydas and Mr. Gangopadhyay did an excellent job; he was pleased with the level of effort and found the presentation to be interesting.

Mr. Cambareri then asked how perchlorate and RDX travel times through the vadose zone were determined. Mr. Goydas replied that two tools were used to make those determinations – a HELP model to assess water movement through the vadose zone and a SESOIL model to evaluate contaminant transit through the vadose zone. He also noted that it's quite difficult to calibrate the vadose zone tools; however, some work was done at the Central Impact Area and elsewhere to look at wetting fronts and pore moisture concentrations as a way of getting at calibration. Mr. Cambareri referred to density of mass loading source term and asked if the plan is to fine-tune that by trying to attach density mass observations to the vadose zone transport times that have been determined. Mr. Goydas responded affirmatively and added that the human health risk assessment is "assessing the mass density and then the transport through the vadose zone using a host of different methods" and "how that impacts groundwater throughout in the mixing calculation or saturated model" – and as part of those inputs the time in the groundwater has to be evaluated. He also mentioned that in some cases the rounds have relatively "long pitting or perforation."

Mr. Cambareri asked if this is recalling the work Kip Solomon did at Fuel Spill 12 (FS-12). Mr. Goydas replied that the IAGWSP has good information about the wetting front of water based on isotope work, Mr. Solomon's work, and the work AFCEE did on the CS-10 and Landfill 1 (LF-1) infiltration trenches. However, the issue is trying to figure out how the Bell curve of water that's arriving at the water table affects and drags down a contaminant.

Mr. Cambareri noted that one of the conclusions is that minimal additional mass loading is occurring at the site. Mr. Goydas pointed out the exception of the area around one well where perchlorate concentrations remain at about 10 ppb. He also noted, however, that all the other "trailing" wells are either nondetect or at the sub-ppb level. Mr. Goydas also noted that the 10-

ppb detections correspond to an area with a great deal of MEC density, and added that additional excavations are being done as part of the BIP program.

Mr. Lantery said that he thought the level of technology in the presentation was well placed and put in simple layman's terms. He also noted that he was pleased with the format and continuity of the presentation, having been given without the interruption of questions.

Mr. Mullennix said that the presentation showed the level of detail involved in the investigations and the capability of the team working on the cleanup program, and he thought that the presenters "defined it very well."

Mr. Conron noted that the presentation clarified a great deal for him in terms of his level of understanding and he appreciates the time that went into it. He also said that he liked the graphics and the way they showed how the soil interrelates with the water. Mr. Conron then said that he's interested in being provided with a timeline for the RI.

Mr. Schlesinger said that he thought the presentation was very good. He also noted, however, that he didn't find the 3-D animations showing the soil data to be very useful, but prefers cross-sections. Mr. Cambareri remarked that as someone who grew up watching cartoons he thought the animations were "perfect." Ms. Jennings said that she would recommend against eliminating the 3-D animations from future presentations as some individuals find it easier to conceptualize something in three dimensions rather than two.

Mr. Dow mentioned that a slide listing the definitions of acronyms and abbreviations, such as BIP and PEP, would be helpful in future presentations. Ms. Jennings asked if the team would like to see similar presentations about individual study areas at future IART meetings and there was general agreement among the members that they would.

Agenda Item #4. Western Boundary Remedial Investigation Report

Mr. Gallagher reminded the group that perchlorate was first detected in a monitoring well located at the western base boundary in August 2001 at a concentration of 1.7 ppb, after which routine sampling for perchlorate in and downgradient of that area was implemented. The IAGWSP also initiated an investigation to characterize the extent of perchlorate in groundwater at the Western Boundary and determine probable source areas for the detections. He also noted that the purpose of the Western Boundary RI report, which was issued in July 2006, was to summarize the actions taken to the perchlorate detections, report all analytical results, characterize the nature and extent of contamination, and assess any risk associated with the detections.

Mr. Gallagher reported that investigation activities included the following: the installation of 86 monitoring well screens at 31 locations; sampling of 55 additional existing wells; the collection of approximately 150 soil samples (from the Impact Area to the base boundary, at gun & mortar positions, at other features near Camp Edwards Range Control); and comprehensive monitoring of groundwater in and upgradient of the Monument Beach wellfield (including production wells, sentinel wells, and newly-installed monitoring wells) for perchlorate, VOCs, and explosives. Mr. Gallagher also noted that sampling frequencies and parameters were refined as the investigation progressed, and that samples were also collected for other analytes in the area at select monitoring wells as part of the site-wide long-term monitoring program.

Mr. Gallagher showed a map of the Western Boundary area and noted that there have been sporadic detections of perchlorate in off-base monitoring wells, none of which exceeded the 2 ppb state maximum contaminant level (MCL), but were in fact all below 1 ppb. He also said that perchlorate has been detected in some of the on-base wells, with the highest concentration there being 2.9 ppb.

Mr. Gallagher noted that the map is based on wells that have had consistent detections as of May 2006, the closeout date for the RI report database. He also pointed out that the entire highlighted area is below 2 ppb, but there was a more recent detection of 2.8 ppb in MW-233 (to the north). Perchlorate was also detected in May 2006 in production well #6, at 0.53 ppb, but that information was not available when the RI report was generated. Mr. Gallagher further noted that that well tested nondetect for perchlorate when it was sampled again in July 2006.

Mr. Gallagher then showed a Western Boundary map depicting perchlorate detections in soil. He reported that perchlorate was detected in seven of the approximately 150 samples collected, with concentrations ranging from 1.8 to 5.87 ppb. The detections occurred at Mortar Position 4, Mortar Position 5, High Use Target Area (HUTA) Transect 5, the 97-5 particle track, and at a location beneath an expended smoke grenade.

Mr. Gallagher informed the group that while the maximum perchlorate concentration in soil was about 5.8 ppb, the new state cleanup standard is 100 ppb. He also noted that the perchlorate in soil at the Western Boundary area is heterogeneously distributed and no clear source of the detections has been identified. He further noted that the perchlorate may have been released as unburned particulate from the normal functioning of many small widely-distributed pyrotechnic devices used during troop training. He also said that the presence of perchlorate on the surface soils is difficult to measure due to its high solubility, which leaves relatively low concentrations shortly after deposition. Mr. Gallagher then said that the investigation results indicate that the perchlorate source generally appears to be depleted and that, with the exception of MW-233, perchlorate concentrations in groundwater are declining. He also mentioned that other specific sites located in the western portion of the base will continue to be investigated under the Gun & Mortar and Small Arms Ranges operable units.

Mr. Gallagher then reported that the next steps are: to continue groundwater monitoring; incorporate recent data and finalize the RI report (December 2006), and prepare a decision document that will include an updated groundwater monitoring plan to be developed with the regulatory agencies.

Mr. Mullennix asked if it's correct that the map showing perchlorate detections in groundwater was based on repeated detections. Mr. Gallagher confirmed that the map was drawn based on wells that have had three consistent detections in a row. He also made a point of noting that those concentrations are quite low – for the most part 0.5 ppb or less.

Mr. Conron inquired about the rate at which perchlorate concentrations in groundwater are declining. Mr. Gallagher replied that while the decline is noticeable, he doesn't have any statistical evaluation that quantifies that decline. Mr. Gonser added that because the concentrations are not much above the detection limit, small changes – such as 1.5 ppb to 1.4 or 1.3 ppb – are being seen. Mr. Conron then asked if the declining concentrations indicate that the perchlorate contamination is shrinking or that it's migrating. Mr. Gallagher replied that the thought is that the contamination is being diluted.

Mr. Gregson noted that the RI report includes several figures that graph the decline in concentrations over time on a well-by-well basis. He also asked Mr. Gallagher to point out water supply well #4 on the map, which he did. Mr. Gregson then noted that the Town of Bourne is in the process of developing and permitting that well, the status of which is available from MassDEP Water Supply. Mr. Gallagher added that the IAGWSP has been working with the Bourne Water District, providing data and forward particle tracking information, to help get that well permitted.

Mr. Minior expressed some concern that the low-level perchlorate concentrations at the Western Boundary were depicted as an area of groundwater contamination. He noted that that would not

be the case in the AFCEE program and also said that he thinks that the regulatory standard should be reflected – "not some made-up depiction of where nondetect might be." Mr. Gallagher noted that the depiction predates the standard, and there is one small area above the 2 ppb level.

Mr. Schlesinger disagreed with Mr. Minior's remarks and noted that this is the first time he's seen graphics at an IART meeting where the contamination outline is shown on both side of the base boundary. He added that he thinks it's important to let the public see what the IART has seen tonight and he hopes that the IAGWSP fact sheet will also include this information.

Mr. Schlesinger then inquired about the feature at the eastern end of the perchlorate contamination outline. Mr. Gallagher replied that he believes that is an old airstrip, and also the location of the soil-washing facility used during RRA activities. Mr. Schlesinger then said that there is still disagreement about whether the current perchlorate standard is adequate to protect babies and pregnant women; therefore, he thinks it would be an injustice to those populations not to present information like that which was presented this evening.

Mr. Mullennix said that he disagrees with Mr. Schlesinger. He then noted he recalls that when perchlorate was first discovered in this area the media covered it and a tremendous amount of fear was instilled in the residents of Bourne. And now, years later, the state has set the most stringent perchlorate standard in the country, and the IAGWSP is showing a very conservative outline around detections in groundwater that might go up to 2 ppb at the maximum. Mr. Mullennix also said that he's very encouraged to see that the perchlorate levels in soil are well below the state's cleanup standard. He also said that he now feels confident in telling the citizens of Bourne that any perchlorate detections are well below the most stringent level in the country and their water is of extremely high quality.

Mr. Cambareri mentioned the 0.53 ppb detection in production well #6 (which later tested nondetect) and noted that Ralph Marks of the Bourne Water District had stated at a past IART meeting that he was okay with detections less than 1 ppb. Mr. Cambareri also said that he thinks the situation would have been handled differently if what is known now was known then, but at the time very little was known about perchlorate and it did cause a high level of concern. He further noted that he thinks that showing all the perchlorate data, as the IAGWSP has done, is in keeping with the very transparent process that the Army and the Army National Guard have adopted, and which he thinks is appropriate. Mr. Minior noted that at that time MassDEP had issued an advice level of 1 ppb for perchlorate, but he still thinks that Bourne had taken an overly conservative view, which he believes would be different today.

Western Boundary Groundwater Monitoring Plan

Mr. Gallagher reminded the group that the IAGWSP has gone from a base-wide long-term groundwater monitoring plan to site-specific plans. He also noted that the sampling schedule for groundwater at the Western Boundary will be adjusted once consensus on the RI report is reached. He further stated that currently the plan is designed to monitor trends in perchlorate contamination, and at EPA's request select wells will also be monitored for explosives compounds.

Mr. Gallagher then displayed a slide that showed the current groundwater monitoring plan: quarterly monitoring (explosives/perchlorate) – four Bourne Water District wells; semiannual monitoring (perchlorate) – 43 well screens; annual monitoring (perchlorate) – 14 well screens; annual monitoring (explosives/perchlorate) – 10 well screens; and annual monitoring (explosives) – 11 well screens. He also showed a map with color-coded symbols depicting monitoring wells and their sampling frequency.

Mr. Conron asked who receives monitoring well results. Mr. Gallagher replied that the regulators receive results, and periodic updates are provided to the Bourne Water District. Mr. Conron

inquired about the frequency of the periodic updates. Mr. Gallagher replied that monthly updates were provided in the past, but more recently the IAGWSP has been working with the Bourne Water District's consultant, Haley & Ward, which makes specific requests for data. Mr. Gallagher also noted that tables showing a cumulative running total of the perchlorate and explosives analysis have generally been provided to the Bourne Water District about once a quarter. Mr. Conron said that he thinks the IAGWSP should have a formal plan for providing data reports to the Bourne Water District, Board of Health, and Board of Selectmen on a quarterly basis.

Mr. Mullennix asked if it would be accurate to say that the IAGWSP would inform Mr. Marks immediately in the event of a "hit." Mr. Gallagher replied that it would. He also noted, however, that there had been some problems in the past (due to changes in contractors) with Mr. Marks receiving data as quickly as he should have, and that has been resolved by having Ms. Boghdan of the IAGWSP responsible for providing him with data from production wells and sentinel wells as soon as they become available.

Mr. Schlesinger questioned what would constitute a hit. Mr. Gallagher replied that a hit would be considered any detection of perchlorate in a production well. Mr. Schlesinger noted that Mr. Conron was referring to a formal plan for providing data from all wells, not just the production wells. Mr. Gallagher acknowledged that at this time there is not necessarily a formal reporting structure for wells that are not production or sentinel wells. Mr. Schlesinger recommended that Mr. Conron's request for a formal plan include the definition of what constitutes a hit plus data from all the wells within the study area. Mr. Gallagher replied that these are issues that would have to be discussed and worked out internally.

Mr. Cambareri said that generally any kind of facility that's conducting monitoring (a wastewater treatment plant for example) has a protocol for informing the operator of an important detection, and it seems that the IAGWSP has that in place as well. He also said that quarterly sampling doesn't necessarily mean that a quarterly report is written, but an annual report may be provided. Mr. Cambareri also said that he would like the IAGWSP to continue to provide the IART with annual updates on the Western Boundary study area.

Mr. Pinaud said that he thinks that Mr. Marks is anxious to receive data from the IAGWSP as quickly as possible in order to fulfill the MassDEP Water Supply requirement for quarterly perchlorate sampling at the Western Boundary. Mr. Gallagher said that he believes that in addition to the IAGWSP's quarterly sampling, the Bourne Water District is conducting its own quarterly sampling of the production wells. Mr. Pinaud stated that the bottom line is that quarterly sampling is required, whether or not the Bourne Water District is using the data generated by the IAGWSP. He also said that he thinks a formal plan should be developed and it should include annual or semiannual reports. Mr. Gallagher indicated that the expectation is that some kind of formal plan will be created as part of the Western Boundary Decision Document.

Agenda Item #5. Remediation & Investigation Update

Mr. Gregson reported that the IAGWSP recently hooked up one of the Demolition Area 1 (Demo 1) plume extraction wells (EW-503) to the RRA system in order to reduce the overall cleanup time. Adding this well to the system increased the flow rate to about 600,000 gallons per day (gpd) or 430 gallons per minute (gpm). The overall production will be 1.3 million gpd when the entire Demo 1 final remedial system comes on line in mid 2007, and the interim system will continue to operate until then. Mr. Gregson also showed some photographs of Demo 1 construction activities.

Mr. Gregson then reported that most of the monitoring wells that were planned for the Small Arms Ranges investigation have been installed (two at Sierra East/Sierra West, one each at

Bravo, Charlie, Echo, and Tango Ranges, and three lysimeters at Bravo Range). He also mentioned a contingency well at Bravo Range that would be drilled based on test results, and two additional wells at Tango Range that the Massachusetts Army National Guard (Mass Guard) will be using as part of its Pollution Prevention Plan. Mr. Gregson also noted that wells have been installed at Golf, Kilo, and Julia Ranges, and at the old Bravo Range, and that a well already existed at the old Delta Range. In addition, the IAGWSP is looking at ranges on the eastern side of the base (November, Oscar, and Papa Ranges) to determine if groundwater information is needed there.

Mr. Gregson noted that preliminary test results from one of the laboratories are showing tungsten in many of the wells at concentrations from about 1.4 to 4 ppb, as is the case for some wells recently sampled at the J-1 Range, where it's suspected that tungsten penetrators were used. However, some of the samples were also sent to other labs that came back with nondetect results, and results that were positive were all around the same concentration. Therefore, it's thought that there might be a problem with false positives. Mr. Gregson said that the IAGWSP is working with chemists from its own contract lab, the EPA lab, MassDEP's Wall Experiment Station, and the Cold Regions Research & Engineering Laboratory (CRREL) to try to understand the tungsten detections. He also noted that forthcoming results from the well at the old Bravo Range, where tungsten has not been used, should provide some indication of whether the tungsten detection could be background or some lab-introduced false positive.

Mr. Schlesinger asked if the IAGWSP is splitting samples with the regulatory agencies. Mr. Gregson noted that MassDEP has collected some split samples. Mr. Pinaud said that in some cases MassDEP's lab has been able to duplicate the IAGWSP's tungsten results, and in some cases it hasn't. Mr. Schlesinger also asked if tungsten is expected to be found in the soil. Mr. Gregson replied that there is a chance that tungsten could be a naturally occurring metal and be detected at come concentration at MMR. However, he would tend to guess that the detections being seen are not background levels, but the result of something wrong with the lab methodology.

Mr. Mullennix inquired about sampling for lead. Mr. Gregson replied that lead sampling results, which are not yet validated, have been nondetect so far. He also said that the IAGWSP would provide additional information as more results become available.

Agenda Item #6. Mass Guard Small Arms Range Training Improvement Process

COL FitzPatrick stated that because it's been determined that tungsten is mobile in the environment, and because so little is currently known about its toxicity, the Mass Guard has decided that tungsten-nylon ammunition is no longer a viable option for training. He also noted that lead ammunition is available for all of the Mass Guard's weapons systems, and that while plastic ammunition does exist, is doesn't support all the weapons systems and so isn't a good tool for training soldiers effectively.

COL FitzPatrick said that the Mass Guard will have to go through a number of processes to be able to return to using lead ammunition, the first of which will be the Massachusetts Environmental Policy Act (MEPA) and National Environmental Policy Act (NEPA) processes, in which the Mass Guard will identify the agencies whose approval will be needed. Those agencies are EPA, with respect to its Administrative Order #2, and the Environmental Management Commission (EMC), which was established as part of a Memorandum of Agreement (MOA) with the state to provide environmental oversight for the northern part of MMR. COL FitzPatrick also noted that throughout the process the Mass Guard will be briefing the public at venues such as IART meetings. In addition, the Mass Guard will be developing new Environmental Performance Standards (EPSs) that identify management methods that ensure that the lead ammunition that's

used at the Small Arms Ranges doesn't present a threat to the aquifer in the future and a Pollution Prevent Plan that details those methods and their implementation.

COL FitzPatrick reported that the Mass Guard filed a Notice of Project Change (NPC) under MEPA to state its intent to try to return to the use of lead ammunition, for which a 42-day public comment period is ongoing, and for which a scoping meeting that was open to the public was held yesterday. He also noted that forms are available at tonight's meeting for anyone who wants to submit comments, and that on November 8, 2006 the Secretary of the Executive Office of Environmental Affairs (EOEA) is expected to indicate whether the state accepts the Mass Guard's proposal to return to firing lead, working through EPA and EMC to get there.

COL FitzPatrick also mentioned working with the IAGWSP, which is conducting the Small Arms Range RI and risk assessment. He then noted that two weeks ago the Mass Guard submitted its draft Pollution Prevention Plan to the regulatory agencies, who will be providing their initial comments by mid November. He also said that anyone who would like a copy of the draft plan could indicate that on the sign-in sheet and the IAGWSP and the Environmental & Readiness Center (E&RC) would ensure that it's sent. He further noted that the Mass Guard will be submitting a formal petition to EPA to modify the scope of work to allow the use of lead.

COL FitzPatrick stated that the EMC's two advisory councils would be reviewing the Pollution Prevention Plan with respect to its adequacy in terms of types of collection or containment system, groundwater monitoring wells, lysimeters, soil sampling, and so forth. Those groups will also be reviewing the revised EPSs for each range and then making their recommendations to the EMC, which is made up of the commissioners for MassDEP, Massachusetts Fish & Game, and the Massachusetts Division of Conservation & Recreation. COL FitzPatrick also noted that the Pollution Prevention Plan will be published in the Environmental Monitor for a 30-day review, after which the Mass Guard will formally present the plan to the EMC for approval. He further stated that until the EPA and EMC have given their approval, no bullets will be sent downrange for training.

COL FitzPatrick also reported that in concert with the activities he mentioned the Mass Guard is conducting a lead research review, information from which will be tied in with the information from the IAGWSP's Small Arms Ranges investigations to help determine best management practices for future training.

COL FitzPatrick then reviewed the slide showing the proposed timeline, as follows: the NPC was submitted on September 15, 2006 and the Secretary's decision is expected on November 8, 2006; the draft Pollution Prevention Plan was submitted on October 6, 2006 and comments are due on November 6, 2006; installation of new monitoring wells and data results will be collected from several Small Arms Ranges from September through November 2006; the lead fate & transport research should be completed by December 2006/January 2007; the IAGWSP RI and risk assessment should be completed by December 2006/January 2007; the revised Pollution Prevention Plan/Small Arms Range Management Plan is scheduled to be issued in January 2007; the Mass Guard will petition EPA Region 1 and the EMC to return to the use of lead in March 2007; and the Mass Guard will resume Small Arms Range training in April 2007.

COL FitzPatrick further noted that he's scheduled to give a briefing to the IART at the December meeting and that the IAGWSP is slated to present aspects of the Small Arms Ranges RI at the January meeting. In addition, the Mass Guard is planning a separate meeting in the February/March timeframe to discuss the status of the process of going back to lead. COL FitzPatrick also noted that the return to firing lead will be approached in phases, with the current focus being on two ranges, Tango and Echo.

COL FitzPatrick also showed a photograph of the STAPP bullet-catching system at Tango Range, which he described as "a big rubber sandwich" to contain the bullets and a self-sealing membrane to prevent precipitation from getting inside. He said that the STAPP system will be identified in the Pollution Prevention Plan for Tango Range and will include the notation that it will be inspected (and repaired, if needed) before each firing activity.

COL FitzPatrick then discussed the proposed management plan for Echo Range, a 15-lane, 7-pop-up targets per lane, combat pistol course. He explained that because the shooter fires at a negative angle at this range, a horizontal sand berm arrangement was proposed. Before constructing a sand berm for the entire range, however, with EPA's and MassDEP's approval, the concept was recently tested using one target. COL FitzPatrick noted that the test involved firing of 50 bullets, during which it was determined that the top layer of sand needed to be rough rather than smooth, or the bullets would skip across the surface instead of penetrate the sand. He also noted that by the end of the day, more lead bullets were recovered than were fired.

Mr. Mullennix asked if any live firing is occurring at this time. COL FitzPatrick replied that since October/November of last year the Mass Guard hasn't fired at any of its outdoor ranges. Mr. Mullennix commented that the initiative to return to lead is then critical to the plan to resume live firing and training at the base. He then urged the regulatory agencies to "go into this thing with an open mind and take a look at the science" and move forward as expeditiously as possible. He also said that it sounds as though the Mass Guard is doing everything possible to manage the ranges in an environmentally conscientious manner. COL FitzPatrick stated that it's a team effort.

Mr. Schlesinger asked if the other ranges would be covered in order to prevent infiltration of water. COL FitzPatrick referred to the lead removal project that was done in 1999/2000, and he also mentioned the soil consolidation project that was done in response to tungsten detections in groundwater. He also noted that any residual lead-contaminated soil that remained after the lead removal project was treated with a phosphorus-based compound to bind up the lead. Therefore, the Mass Guard doesn't necessarily see a need to cover the ranges at this time.

Mr. Conron asked to be provided with a list of weapons to be used for training with lead ammunition at the Small Arms Ranges, and COL FitzPatrick agreed to do so. Mr. Conron also asked which services would be training using lead ammunition. COL FitzPatrick mentioned the Army Guard, the Army, the Air Force, and the Coast Guard. He also said that the ranges have been used by law enforcement as well.

Mr. Cambareri noted that the plan is to use a phased approach to return to firing lead. COL FitzPatrick confirmed that it is and added that the most critical range for the Mass Guard is a 300-meter M-16 qualification range (Sierra East/Sierra West). However, that will probably be the most challenging in terms of determining an appropriate management method; information from the lead research study, the RI data, and from Tango and Echo Ranges will be tied together in an effort to help make that determination. COL FitzPatrick also said that the Mass Guard will need approval from EPA and the EMC with respect to each individual range.

Agenda Item #7. Open Discussion

Mr. Conron asked for a future IART presentation on a summary of the IAGWSP's activities and budget (remediation versus investigation) over the past year and a forecast of next year's planned activities and budget. He also noted that he's not looking for a great deal of detail, but some basic information on how much is being spent on remediation and so forth.

Agenda Item #8. Adjourn

Mr. Murphy noted that the IART would meet next on December 5, 2006 at the Bourne Best Western. He then adjourned the meeting at 9:11 p.m.

Action Items:

1. EPA requested that the IAGWSP provide a schedule for the Plume Booklet and Fact Sheet at the December IART meeting.
2. MassDEP requested that updates on the CHPPM tungsten toxicology study be provided to the IART as available.
3. Mr. Conron recommended that the IAGWSP institute a formal protocol for providing reports on groundwater monitoring at the Western Boundary to the Bourne Board of Health, Water District, and Board of Selectmen.
4. Mr. Conron asked the E&RC to provide a list of weapons to be used for training with lead ammunition at the Small Arms Ranges.
5. Mr. Conron asked for an IART presentation on a summary of the IAGWSP's activities and budget (remediation versus investigation) over the past year and a forecast of next year's planned activities and budget.

Potential Future Agenda Topics*:*

December 5. 2006:

- Gun and Mortar Positions Remediation Investigation & Groundwater Monitoring Plan
- Phase IIB Remedial Investigation
- J-1 Range South Groundwater Rapid Response Action

January 23, 2007:

- Central Impact Area Feasibility Study Screening Report
- Central Impact Area Natural Resources Discussion
- J-3 Range Groundwater Remedial Investigation/Feasibility Study

Agenda Topics TBD:

- Wellhead Treatment vs. Aquifer Restoration

Handouts Distributed at the Meeting:

1. Responses to Action Items from the September 26, 2006 IART Meeting
2. Presentation handout: J-2 Range Study Area 2
3. Presentation handout: Western Boundary Update
4. Presentation handout: Groundwater Monitoring Plan Western Boundary
5. Presentation handout: Remediation & Investigation Update
6. Presentation handout: Action Plan for Returning to Firing Lead Ammunition
7. UXO Discoveries/Dispositions Since Last IART (Ending 10/19/06) All Awaiting CDC
8. Map Legends