

U.S. Army Soldier Systems Center RAB Meeting Minutes for January 19, 2006

**Restoration Advisory Board (RAB) Meeting
Dr. Stephen Kennedy Conference Room
U.S. Army Soldier Systems Center
January 19, 2006
Meeting Minutes**

I. Attendance

RAB Members Present:

Robert Campbell	Massachusetts Department of Environmental Protection (MADEP)
Marco Kaltofen	Co-Chair, Community Member
Joel McCassie	Co-Chair, Environmental, Safety and Health Office (ESHO), U.S. Army Soldier System Center (SSO)
John McHugh	Restoration Officer, ESHO SSC
A. Richard Miller	Community Member
Dr. Kannan Vembu	Representative of Natick Board of Selectmen
Christine Williams	U.S. Environmental Protection Agency (EPA)
James Fitzgerald	Community Member
Dr. Harlee Strauss	Community Member

RAB Members Absent:

Steven Lubic	Representative of Natick Board of Selectman
Dr. Charles Czeisler	Community Member, Lakewood Association
Sid Grantman	Community Member
Elizabeth McCoy	Employee Member, SSC
James Straub	Massachusetts Department of Conservation and Recreation (DCR)

Others in Attendance:

Harry Prebensen	ESHO, SSC
Stacey Greendinger	U.S. Environmental Protection Agency (EPA)
Jeffrey Pickett	Environmental Consultant, Mactec
Kathleen Thrun	Environmental Consultant, ICF Consulting
Kevin Palaia	Environmental Consultant, ICF Consulting
Dr. Margaret McVey	Environmental Consultant, ICF Consulting
James Connolly	ESHO, SSC
Michelle Bonanca	ESHO, SSC
Amy Rosenstein	Environmental Consultant, ICF Consulting
Brian Olson	U.S. Environmental Protection Agency (EPA)
Anne Marie Desmarais	Environmental Insight
Neill Osgood	Lakewood Association
Marybeth Riley	Environmental Consultant, ICF Consulting
Carole Berkowitz	POWR (Protect our Water Resources)
Ron Price	Cochituate State Park Advisory Committee
Debi Heims	Recorder, H&S Environmental
Darren Gainer	Environmental Consultant, ECC

II. Handouts

1. First Five – Year Review, U.S. Army Soldier System Center (SSC)
2. Draft Lake Cochituate Angler Survey Report
3. Copy of email: subject – Control of Eurasian Milfoil using wind-powered water circulators

III. Meeting Minutes

Mr. McCassie called the meeting to order at 7:05 pm and asked if there were any comments, changes or revisions to the November 17, 2005 RAB meeting minutes.

The minutes were accepted without amendment.

General Comments

Mr. Kaltofen stated that there were a few visitors in attendance and they were interested in the public comment period to discuss issues related to Eurasian water-milfoil. He said that there were some action items from the previous meeting commenting on how notices are being posted at the town hall and with the town clerk.

Mr. McHugh said that he did check and proper notification did occur, but it was not on the calendar located at the Town's homepage.

Mr. Miller asked if it was requested.

Mr. Connolly responded that it was sent and he would check with the Town Clerk to get it posted.

Mr. McCassie asked if there were any more comments. He then asked Mr. Connolly for his Five-Year Review Report.

FIRST FIVE-YEAR REVIEW

Mr. Connolly began the power point presentation stating that this is the first Five-Year Review for the U.S. Army Soldier Systems Center (SSC) and it is a requirement under CERCLA. He explained it as a process reviewed for corrective action sites and it applies to the remedial actions that have taken place where contaminants remain. The purpose of the Five-Year Review is to evaluate the implementation of the remedies, their performance, and whether they continued to be protective of health and safety.

Mr. Connolly stated that the Army is the lead agency and listed the Site Identifiers.

The CERCLIS FD No. is # MA1210022063
The EPA ID number is # MA1210030631
The Site ID number is # 0101831.

Mr. Connolly commented that most of the review would concentrate on the groundwater pump and treat system for the T-25 Area (also called OU-1 or NRDEC-05). He explained that NRDEC-05 is the Army's identifier for the site. He commented that other operable units would be reviewed and provided the preliminary list:

- T62/68 Lab Pack Waste Storage Area
- Chlordane Soil Removal
- T-25/Bldg 5/Bldgs 2 and 45 Sediment Concentration
- Former Post Drinking Water Wells
- Former Proposed Gymnasium Site
- Bldg 14 POL
- Bldg 13 Former Incinerator
- Bldg 19 Boiler Plant Area
- Bldg 22 and 36

Mr. Connolly said that the list was the initial list of sites to be covered under the Five-Year Review. He commented that some sites were initially classified and thought to be contaminated but no contamination was found and the sites have since been closed. Those sites would not be required to be included in the study. He then pointed out the locations of the operable units on a site map.

Mr. Connolly reminded the committee that the T-25 Area was being remediated by groundwater extraction. The groundwater was being treated with an air stripper and granular activated carbon. The effluent was discharged to Lake Cochituate or reused/recycled on the Post as non-potable water. He also stated that there was a long term monitoring program underway. He commented that when the groundwater treatment phase was finished, it would be followed by a period of Monitored Natural Attenuation (MNA) and Institutional Controls as applicable. Also, as part of the original program the Army provided financial support to the Town of Natick at the Springvale Treatment Plant.

Mr. Connolly stated that the public could contribute in a variety of ways. The RAB would review the Draft 5-Year Review and provide comments. The public could participate in meetings, including a meeting in March where there will be an update status of all the sites. Contact and schedule information was provided:

Contacts:	Army Contact:	James Connolly
	EPA Contact:	Christine Williams
	MADEP Contact:	Bob Campbell

Schedule:	Draft Report for review - March/April 2006
	Final Report due on the 5 th anniversary of the original Record of Decision - October 29, 2006

Mr. Connolly asked if there were any questions.

Mr. Kaltofen asked when the areas with Institutional Controls would change.

Mr. Connolly responded that everything would be evaluated. One of the purposes of the Five-Year Review is to determine if the controls that are currently in existence are protective and necessary. A possibility of change could occur, but the Review must be looked at before a decision could be made. The control of groundwater use in the Town of Natick was a condition of the original Record of Decision and it would get reviewed.

Mr. Miller commented that at the last meeting there was a discussion of ways to improve outreach to the community. He commented that the Final Report was coming out a little too late, particularly after Natick Days. Although, not completely sure of the date of Natick Days, he commented that this could be a good outreach opportunity.

Mr. Connolly stated that the due date for the Final Report is set under the regulations and can not be altered.

Ms. Williams asked if Natick Days was before the Final Report due date.

Mr. Miller responded yes.

Mr. Connolly commented that they could conceivably put out the report earlier.

Mr. Kaltfen stated that he would like to keep that idea on the table because it is a way to link with the community and added if the weather was good, then Natick Days is a spectacular day.

Mr. Connolly commented that there would be a number of opportunities going forward to discuss this. If Natick Days happens before October 29th that certainly could be one of them. If Natick Days happens after October 29th, then it would be impossible to delay the report.

Dr. Strauss thought that Natick Days was around Labor Day.

Mr. Connolly commented that if it was mid-September, it would leave about six weeks to capture all of the comments and provide them to the contractor.

Dr. Vembu asked what the sequence was from the current pump-and-treat method and when would natural attenuation occur?

Mr. Connolly stated that this was an over-simplification response. He stated that when the pump-and-treat system had achieved everything it could do, and demonstrated to the EPA and discussed it with the public, then at some point in the very distant future, the Army would discuss the transition over to Monitored Natural Attenuation. The system would be shut down and, conditions would be monitored to see how attenuation progressed following shutdown. The system would not be shut down and taken apart and it could be started back up if necessary.

Dr. Vembu asked if that was part of this Five-Year Plan.

Mr. Connolly responded that this was a Five-Year Review and that it was a review of the past five years. It has been five years since implementation of the Record of Decision and all of its conditions. The importance is to make sure that the Plan is on track to achieve goals that were set at that time. Monitored Natural Attenuation would be looked at but Natural Attenuation would not be implemented now and probably not during the next five years.

Ms. William asked if biological degradation was evaluated at each quarterly or at the semi-annual sampling round.

Mr. Connolly responded that biological degradation was evaluated semi-annually. Monitored Natural Attenuation would be the next step in the ROD once the treatment system phase was completed.

Mr. Miller commented that Natick Days is the second Saturday in September.

Mr. Connolly responded affirmatively as a possible captured opportunity for public involvement.

DRAFT LAKE COCHITUATE ANGLER SURVEY REPORT

Mr. Kaltofen introduced Ms. Amy Rosenstein and Dr. Margaret McVey of ICF Consulting as the presenters for the Draft Lake Cochituate Angler Survey Report.

History and Overview of Survey

Ms. Rosenstein stated in January 2004, the U.S. EPA requested the Army to study the human health risks associated with adult recreational consumption of fish based on largemouth bass fillet data. The plan was submitted to the regulators and the public for approval in April 2004. In December 2004, the Draft Final Sediment Risk Technical Memorandum was sent to the RAB, the regulators, Cochituate State Park, Mass DCR/DPH, and the Town of Natick.

At the May 12, 2005, RAB Meeting, the results of Human Health Risk Assessment (HHRA) for recreational fish ingestion were presented. On October 6, 2005, the RAB was presented with the angular survey approach.

The December 2004 HHRA stated that the incremental cancer risks associated with central tendency exposure (CTE), or “average” exposure, were within the range considered acceptable by the EPA, while reasonable maximum exposure (RME), or “worst case” estimates, slightly exceeded EPA’s acceptable levels at both SSC and other Lake locations. The non-cancer hazard indices (HIs) exceeded one for both the CTE and RME scenarios. The HHRA used fish ingestion rates based on a Lake Cochituate winter creel survey conducted by the MA Department of Fish and Wildlife. Those rates were estimated to be 10 grams per day for the average scenario and 16 grams per day as the RME scenario. The risks were driven by the PCBs, and the risks found at the site were similar to background risks.

Public comments received on the HHRA focused on several issues, one of which was the applicability of the fish ingestion rates derived from the winter creel survey. Another comment was the use of largemouth bass fillet concentration data only versus other species. A final comment was the use of PCB concentrations measured in largemouth bass skinless fillets instead of PCB concentrations measured in skin-on fillets. In order to estimate an open-water fish ingestion rate for Lake Cochituate, the Army conducted an angler survey at Lake Cochituate in 2005. The survey plan was reviewed by the regulators and technical experts.

The Angular Survey was conducted from August through October 2005 and was designed to cover all times of the days including: weekdays, weekends, and holidays. The locations of the survey were selected based upon RAB members’ and local anglers’ input. Pilot studies were conducted to identify the most popular fishing locations on the lake. Eleven areas were identified on Lake Cochituate and Fisk Pond. The Plan was modified one-third of the way through the process in order to focus on the most popular fishing times and locations. The interviewers were accompanied with a Portuguese interpreter some of the time. Ms. Rosenstein then pointed out the initial survey locations on a site map.

Dr. Vembu asked when the plan was modified.

Ms. Rosenstein responded that within three to four weeks, it was obvious that the more popular fishing locations were South Pond and Fisk Pond. A modification began in the beginning of September or possibly earlier.

Ms. Rosenstein provided the definitions of terms used in the Survey:

- Anglers: individual with fishing rods
- Anglers encountered: anglers who could be approached for an interview
- Anglers interviewed: those anglers for whom a survey could be conducted
- “Sport” anglers: catch-and-release all fish caught
- “Food” anglers: anglers who keep their fish for consumption
- “Sport/food” anglers: keep some fish to consume and release some – may include both native and stocked species

Ms. Rosenstein continued that this was a two-part survey, section one was administered to all interviewees, and section two was administered to only those anglers who were defined as a food or sport/food angler.

Key questions included, but were not limited to:

- Are you a “take home” or “catch-and-release” angler?
- What fish have you caught today?
- What is the native language and home town?
- If “take home” angler, they were asked to recall:
 - Number of fish caught over the past season
 - What seasons did they fish over the year (including open water and ice fishing)
 - Species of fish
 - Size of fish
 - Preparation/cooking method
 - Who eats the fish
 - How much does each person eat

Ms. Rosenstein stated that a total of twenty-one survey blocks were completed and each block ranged from 3- 5 ½ hours.

Distribution of Weekdays/Weekend and Morning/Evenings

	WEEKDAYS	WEEKEND
MORNING	4	2
AFTERNOON/EVENING	7	8

Two of the survey blocks were done from a boat to capitalize on the people fishing out on the middle of the lake. Interviews were also conducted at State Park Boat Ramp to catch the boaters when they were docking their boats.

Ms. Rosenstein stated that a total of 205 anglers were encountered and 163 different individual anglers were interviewed - the ones that were not interviewed were 22 repeat encounters, 13 did not speak English and 7 refused.

The breakdown of the 183 anglers (163 interviews plus 20 that were not interviewed, but whom we could observe) were:

- 61% sport (catch-and-release) anglers
- 17% food (take home) anglers
- 14% sport/food anglers (both catch-and-release and take-home anglers)
- 8% could not be determined (not interviewed, or couldn't make observation regarding creel)

Other statistics:

- 22% of the anglers were fishing from a boat and 78% were fishing from shore
- 97.5% of boat anglers were sport anglers

Dr. Strauss asked if the number of people fishing from a boat were not included because they couldn't be interviewed or it couldn't be determined what kind of anglers they were.

Ms. Rosenstein responded that a lot of the boaters who were interviewed were at the boat ramp going in or out. The more productive days were standing at the boat ramp versus going out in a boat.

Ms. Rosenstein discussed the Ethnic Groups Encountered based on the 205 anglers encountered:

- 56% White
- 15% Brazilian
- 12% African-American
- 8% Asian
- 5% Hispanic
- 4% Slovak

Anglers encountered by location:

- 92 persons equally distributed between Fisk Pond/South Pond at Rte. 135
- 54 persons were at State Park
- 36 persons were at Car Top Boat Access
- 11 persons were at Toolmex/Veterans Beach
- 6 persons were at Pegan Cove (South Pond)

Mr. Miller commented that the name for State Park is State Park Day Use Area.

Ms. Rosenstein continued that no anglers were observed fishing from the South Pond SSC shoreline but there were 13 anglers in seven bass boats observed fishing near the SSC Shoreline.

Number of Food Anglers encountered by location:

- 51% of all food anglers interviewed were encountered at Fisk Pond (of the 17 individuals interviewed at Fisk Pond, ten stated that they only fish at Fisk Pond)
- 24% of all food anglers interviewed were encountered at Rte. 135 culvert on South Pond

Mr. Kaltofen asked if some of the anglers just parked there and then would fish at other parts of the lake.

Ms. Rosenstein responded that one of the questions asked was, "Where do they fish on the lake?" Ms. Rosenstein introduced Dr. Margaret McVey.

Dr. McVey continued discussing the general results of the Angler Survey, the types of fish ingested, and the fish preparation and cooking methods. The annual consumption rates focused on native fish species only as these species would likely accumulate PCBs over time, particularly largemouth bass.

Dr. McVey presented the percentages of the types of fish ingested. There were a total of 243 fish that had been harvested, either observed in creels or determined through interviews.

<u>Native</u>	<u>% of Total Fish Harvested at Lake Cochituate</u>
• Largemouth bass 5-7 lb. (0.8%); 3-4 lb. (9.5%); 1-3 lb. (0.8%); < 1 lb. (7%)	18%
• White perch 7-12 inches	34%
• Yellow perch 7-10 inches	4.9%
• Sunfish (Bluegill) 5-8 inches	9.0%
• Bullhead 7-17 inches	1.2%
• Black crappie 9-11 inches	4.5%
• Pickerel (large)	0.4%
<u>Stocked</u>	
• Trout 12-18 inches	26%
• Salmon (large) 6.5 lb	1.2%

Dr. McVey commented that anglers were asked if they had consumed eel or pike. She noted that of the stocked species, trout were popular to harvest by anglers who would often release bass.

Mr. Kaltofen asked out of the 243 fish consumed over the last 1-2 years, there were no eel consumed.

Dr.. McVey responded that that was correct.

Dr. Strauss asked if this data was based on what was observed in the creel and the actual survey questions.

Dr.. McVey responded yes.

Mr. Palaia commented that this survey period extended into October which was during the fall stocking period.

Mr. Gainer asked if the weight of bass equaled 100%.

Dr.. McVey responded that the weight of the bass should equal 18%.

Dr.. McVey commented that fish preparation and cooking methods are important factors to consider as it influences the PCB concentrations in the fish and the PCB ingestion rates in the anglers. She stated that 80% of anglers included the skin at the time of cooking, but only 48% of

the anglers ingested the fish skin with the fillet. Two anglers out of forty reported eating the “whole fish”, but 39 of 40 anglers gutted the fish prior to cooking. There were no trends observed relating to fish size to preparation or cooking methods. She then cited some examples. Example 1. No trend of gutting the small fish and filleting the large fish. Example 2. No trend with anglers removing the skins of native species versus stocked fish species. Example 3. The anglers’ ethnic affiliation did not affect the likelihood of fish skin removal.

Dr. Vembu asked about the 48 % of anglers who ate skin plus fish, if that was what constitutes the whole fish.

Ms. Rosenstein responded that the 48% includes individuals that reported eating either (1) the fillet plus the skin or (2) the whole fish, which would include all parts of the fish (including the skin) except for the insides.

Dr. McVey discussed the percent of anglers of various ethnic groups who would consume the native fish species.

<u>Ethnic Groups</u>	<u>Consume Native Fish Species</u>
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<u>White Anglers</u> (n=99)	4%
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87% of white anglers were catch-and-release fisherman
9% of white anglers would eat stock species only

<u>Brazilian/Portuguese Anglers</u> (n=26)	69% (*1)
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(*1) Fish must be large (6-7 inches long) = food anglers
Others emphasized that the bass must be 3 lbs to be worth taking home =food/sport anglers
23% of the Brazilian/Portuguese anglers were strictly catch and release anglers
8% reported eating stocked species only

<u>Black Anglers</u> (n=22)	55%
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Dr.. McVey commented that for the remaining ethnic groups (Asian, Hispanic and Slovak), sample sizes were too small to draw any meaningful conclusions. The conclusion that could be drawn was that at Lake Cochituate, the Brazilian/Portuguese and Black ethnic groups represent a higher proportion of anglers who harvest and consume native fish.

Dr. Strauss asked of the repeat anglers who were interviewed, was there a sense if they were food or sport anglers?

Dr.. McVey responded that she remembered the repeat anglers in both categories, but would look up the answer.

Dr. McVey continued with discussion on how ICF calculated the native ingestion rates for the study. ICF calculated separate estimates for native and stocked species but concentrated on native species. The calculation was based on 34 anglers who reported targeting native fish species to eat. For each individual angler, ICF used the best information gathered to calculate the food ingestion rate. For some anglers, ICF used meal size and frequency. For other anglers, ICF used the number and size of fish harvested thus far this year. Fish ingestion rates could be estimated from either of the sets of information. Dr. McVey noted that when fish size was reported as a

“length”, ICF used published length:weight regression equations to estimate the weight of the fish. ICF also used the published EPA estimate of 30% of the total of the fish as the estimate of the weight of the fillet. Note: if the angler reported cutting the head off only and gutting the fish, ICF assumed 50% of the fish weight.

Dr. Strauss asked if the EPA’s 30% estimate included the skin on or off.

Dr. McVey responded that it was the fillet only and the difference in weight was small.

Dr. Strauss commented that she was not sure of the EPA 30% estimate, but the number seemed low for the skin on example.

Dr. McVey said she would check into it.

Dr. McVey continued that ICF developed their best conservative estimate, with likely minimum and maximum values based on data for each individual angler. She cited an example if an angler reported catching ten bass that were 12-18 inches in length; ICF would use the weight of the 12 inch fish for a minimum estimate and use the weight of the 18 inch fish for the maximum and then average the two together to determine the “best” estimate for fish weight. Another example, was if an angler reported he had caught nothing in 2005, but caught ten fish in 2004, ICF used the ten fish caught in 2004 as the best estimate of the fish ingestion rate for that angler but would set minimum ingestion rate to zero as he had caught nothing in 2005. ICF attempted to correct potential under-estimates for time of day that the angler was interviewed and the remainder of the day left to fish, as well as the remainder of the 2005 open-water season length and potential harvest for the season. A third example was if the angler caught three perch in 30 minutes prior to the interview, and he planned to fish another 30 minutes after the interview, ICF would give him credit for six fish caught. A final example was if the angler has fished for two months and caught ten fish, and planned to fish one more month after the interview, ICF gave him credit for five more fish or a total of fifteen fish caught in order to estimate the entire fishing season in 2005.

Mr. Kaltofen asked if this estimate was only in 2005 open-water fishing season and were no fish harvested in winter.

Dr. McVey responded that the survey was only addressing native fish.

Mr. Kaltofen asked if any native fish were caught in winter.

Dr. McVey responded that the survey was conducted angler by angler. A few anglers responded that they fished year round. Open-water season goes thru December. One of the survey questions asked was does the angler fish in ice; if the answer was yes, ICF would ask him about his ice-fishing and record those results separately.

Mr. Kaltofen commented that there was no cut off date, thus a 365 day window.

Dr. McVey agreed that was correct for anglers who fished both ice and open-water and season.

Mr. Kaltofen asked if the angler was asked how many months he would fish.

Dr. McVey responded affirmatively and that ICF extrapolated out the length of time based on responses to how many months the angler had fished and how long he planned to fish.

Dr. McVey continued that fish ingestion rates were calculated as grams /day based on an averaging time of one year. An example was given, if the angler fished for three months out of the year, ICF would divide their total catch of three months by 365 days to get the grams/day of native fish consumed.

Dr. Strauss asked if the study assumed that the angler ate all the fish himself.

Dr.. McVey stated that one of the survey questions asked the angler with whom do you share the catch. If he responded nobody, then he would get credit for all the eaten fish. If he said that he shared the fish with his wife, the calculation used was that a woman eats 0.68 times the amount of food as a man. ICF added one for the man and 0.68 for the woman and divide the total fish by 1.68.

Mr. Kaltofen asked if this was the same calculation used for children.

Dr. McVey said that they would calculate children consumption slightly different. Children under the age of 10 received a 0.5 serving size and teenagers received a 0.68 serving size.

Dr. McVey continued with the results of the 34 anglers who consumed native fish species. The best estimates demonstrated the arithmetic mean was 2.3 grams/day. The median value was 1.9 grams /day. Both the 90th and 95th percentiles were the same at 5.6 grams /day, and the maximum best estimate was 8.8 grams/day. With a sample size as small as 34 anglers, the upper percentile estimates are somewhat uncertain. So, the 95% confidence intervals for those upper percentiles of distribution were estimated. For example, for the best estimate of the 95% percentile, it was 95% confident that the true 95% percentile was not higher than 8.8 grams/day. For the maximum estimates of fish ingestion rates for each angler, the 95th percentile was 7.0 grams/day, and the upper 95% confidence interval for that value was no more than 11.5 grams/day. Based on the estimated ingestion rates, none of the anglers could be classified as “subsistence” fishers (anglers who ate fish from Lake Cochituate as their primary source of protein). For comparison, a person who ate a quarter of a pound of fish a day would be eating 114 grams of fish a day. A person who ate a quarter pound of fish every other day would be eating 57 grams per day. In this study, the upper percentiles were 5-11 grams per day.

Dr.. McVey stated that as in all surveys, there were several sources of uncertainties in the estimates. One example, was the response truthful? Did some anglers over-report to appear as really good anglers? This is defined as prestige bias. Did some anglers under-report because they didn't have a fishing license, or they were harvesting some fish of an illegal size. The extent of that uncertainty could not be evaluated in the survey. Another question: was the recall of the angler accurate? Assuming that the anglers want to tell the truth, how accurate could their recall be? Studies have shown that the longer the recall period, the less accurate the recall. For the anglers at Lake Cochituate, the interviewer asked the anglers to recall fish consumed over the last 2-8 months depending on how long his fishing season was. There are studies that compare the long-term recall estimates verses daily logs given to other members of the same population. Those studies indicated that the long-term recall tended to over-estimate fish consumption rates not under-estimate it. The final question was, “Are the dates and times of the survey representative of the native fish-consuming population?” In the first three weeks of the survey, ICF covered all times of day and locations around the Lake and saw some patterns; ICF then changed the days and times so to maximize their exposure to more anglers.

The following conclusions were drawn:

1) The native fish ingestion rates from the survey are 2 – 5 times lower than the fish ingestion rates used in the 2004 HHRA.

Mr. Kaltofen asked which numbers were being compared.

Dr. McVey responded that the central tendency or average fish ingestion rate used for the 2004 HHRA was 10 grams/day which is 4-5 times higher than the 2005 angler survey's mean or median value. The reasonable maximum estimate (RME) fish ingestion rate used for the HHRA was 16 grams/day. In the 2005 angler survey, the upper 95% percentile value for Lake Cochituate was between 5.6 and 11.5 grams/day depending on how the upper percentile was calculated. The 2004 HHRA was 1.5 to 3 times higher than the upper percentile from the survey.

2) Fishing Locations:

a. Shoreline fishing at the SSC was not observed in the 2005 survey. Anglers were observed fishing by boats near the SSC shoreline. However, from interviews with anglers fishing from boats and anglers pulling boats at the State Park boat ramp, 97.5% of anglers who were boat fishing only were catch-and-release fishermen.

b. Most of the native fish harvested came from Fisk or South Pond at Route 135. The 2004 HHRA report assumed that all fishing occurred at the SSC shoreline. The 2005 survey ingestion rates were based on non-SSC locations.

3) The 2004 HHRA assumed that largemouth bass was the only type of fish ingested while the 2005 survey demonstrated smaller fish such as perch and sunfish were harvested at much greater numbers. The 2005 survey data indicated that only 11% of fish harvested were largemouth bass greater than 1 pound in weight; all the rest were smaller fish. As determined during the sampling for the ecological risk assessment, PCB concentrations in the smaller fish were much less than the concentrations of PCBs in large largemouth bass. With regard to preparation and cooking methods, 80% of the fish fillets were cooked with the skin on and about 50% of the anglers ate the skin with the fillet. The 2004 HHRA assumed skin off and fillet consumption only. Thus, the 2004 HHRA may have underestimated PCB concentrations. However, PCB concentrations are reduced in cooking 35-50% no matter what kind of cooking it is; grilling, steaming, baking etc. The 2004 HHRA did not assume any PCB loss thru cooking, thus the 2004 HHRA may have overestimated consumptions of PCB. The two (under/overestimate) may cancel each other out.

Mr. Fitzgerald asked if the consumption weights and frequencies of sunfish were less than the largemouth bass because the sunfish were smaller.

Dr. McVey responded that it is a concentration per unit weight of fish.

Mr. Fitzgerald asked if the perch were consumed the most, were there studies done on them.

Dr. McVey responded that they did not have data on perch; they are similar in size, but have not been investigated.

Mr. Price commented that it made sense that the largemouth bass has higher concentrations of PCBs compared to the white perch because perch eat tiny things, mostly crustaceans.

Dr. Strauss commented that different size perch and different size bass can eat same size animals.

Mr. Miller commented that he had two areas of concern in the study. He commented that if the angler was reasonably truthful, then the statistics demonstrate a large skew in the numbers of people in minority groups eating the fish. Also, Mr. Miller commented that if he was from a foreign country and didn't know the local rules, he would ask himself, who was asking me about the fish and why, before he gave his response. Mr. Miller asked if the angler wanted to know who they were and why were they asking these questions? And how did they answer the questions, with enthusiasm or caution?

Dr. McVey responded that they performed the survey in extremely casual clothes with no identifying marks. They carried a clip board and a notebook showing the different species of fish. The anglers were told that they were doing a small research project on fishing habits at Lake Cochituate and asked if they would be willing to talk. Most anglers said yes, only seven people refused. The anglers were never asked about fishing licenses. Most people didn't ask who were we doing this for, and if they did ask, we said that we were contractors for SSC. The people who did ask usually asked at the end of the interview. Most people were enthusiastic and shared information freely. She commented that the interviewers were extremely non-threatening and most anglers were extremely chatty; the suspicious people refused the interview.

Mr. Miller asked if there was any attempt to apply a double blind study to measure the questions to see if the answers are accurate.

Dr.. McVey responded that they were unable to do that.

Mr. Miller commented that eels are rare, but recalled when eels weren't so rare and remembers seeing a 4 1/2 foot long one. He commented that there seems to be "shifts" taking place and the data are beginning to look better. He asked why the eels are disappearing. He asked if the eels rely on the food chain. He commented that the worse the news was, the better the data gets. And from a fishery/ recreational standpoint, Lake Cochituate was a disaster.

Mr. Kaltofen asked why 94% of the whites didn't take the fish home to eat.

Dr. McVey responded that that question was asked and the most common response was sport ethic, but some people said pollution. Five anglers said mercury and one said PCBs, others said that they were going back to work and they couldn't bring fish home.

Dr. Strauss asked if they were aware there was consumption advisory?

Dr. McVey responded that they did not ask that and that they were trying to stay clear of being associated with anything that would influence or bias the answers. If anglers did ask, they were directed to the consumption advisory signage.

Mr. Miller asked if there was more data on various topics.

Dr. McVey said there was a lot of additional data in the full Angler Survey report but it was not presented today. Regarding the previous questions about the consumption advisory, the majority of the anglers stated that mercury was of concern as the main contaminant.

Dr. Vembu asked if there was a survey done for the eel population in the lake.

Mr. Miller said that there were some recent fishery studies but he didn't remember them being that intensive as ones that were conducted approximately 20 years ago when the state aquatic bi-

ologists involved volunteers to work with them on a night shocking program. Mr. Miller commented that he was the Executive Director of the group and went with the volunteers once or twice.

Mr. Palaia commented that in 2001 the SSC ecological risk assessment study used the electric shock methods and the results recovered quite a few eels. The ecological risk report demonstrated that eels were not absent about 5 years ago.

Mr. Miller commented that he remembers an eel infrequency discussion a meeting or so ago.

Dr. McVey commented that one angler said that an angler next to him caught an eel the week before.

Mr. Miller introduced Mr. Ron Price, the fishing representative of the Cochituate State Park Advisory Committee and Ms. Carole Berkowitz of Protect Our Water Resources (POWR).

Mr. Kaltofen commented about the conclusion section and the PCBs concentrations being reduced during cooking. He stated that it was the only statement in the presentation that wasn't a part of the creel survey but it was a comment from the risk assessment report. He wanted to know why it was in the creel survey. He asked if the Army was backing off of some assumptions from the original risk assessment.

Ms. Rosenstein commented that each of the conclusions in the presentation had a comparison to the 2004 risk assessment report. The reason that the angler survey was done was to find out if the assumptions that were used in the original risk assessment made sense. The survey was done to find out the ingestion rate for ethnic groups who fished on the Lake in other seasons not just ice fishing.

Mr. Kaltofen asked Mr. Connolly that since the field study included comments on methodologies of the risk assessment had the risk assessment changed.

Mr. Connolly replied that the risk assessment hasn't been changed yet. The Army received lots of comments on the risk assessment methodology, and ICF was asked to look into all the comments. One of the comments received was the preparation and cooking methods for the fish. The HHRA said that the fish were cooked and the skin was off. The HHRA assumed no loss of PCBs during preparation and cooking process. ICF was tasked to look at the fish and to find the best data available on the loss of PCBs during cooking (e.g., steaming, boiling) and PCBs in fillet with the skin on versus the skin off. A goal was to figure out how people actually cooked and consumed this fish and what impact that would have on the PCB ingestion rates and what the net affect would be. The underlying question is whether or not the HHRA adequately reflected consumption of fish.

Mr. Kaltofen asked why the creel survey was so different than published literature values.

Dr. McVey said that the fish ingestion rates were lower because the study was restricted and anglers were asked only about the fish they caught on Lake Cochituate. She commented that many of the anglers fish on other bodies of water between Natick and Boston. So restricting the ingestion rates to this Lake only was the primary reason that the values were lower.

A question was asked from what towns do the anglers come?

Ms. Rosenstein responded that 90% came from within 30 miles of the Framingham-Natick area.

- 5 miles or less is = 59% Wayland, Natick, Framingham, or I work near-by
- 5-10 miles = 16% Wellesley, Ashland, Southborough, Waltham Newton,
- 10-15 miles = 11% Holliston, Marlboro, Brookline, Maynard, Watertown
- 15% = Brighton, Jamaica Plain, Cambridge, Roslindale, Dorchester and Mattapan
- 21% = Boston, Somerville, Stoughton, Revere, and Stoneham
- < 30 miles away = 15% Lynn, New Hampshire, Rhode Island, and Uxbridge

Mr. Miller asked if interviews occurred during fishing tournaments.

Ms. Rosenstein responded that interviews occurred on a day of the Rhode Island Bass Derby Practice time, but participants in the derby were not interviewed so as not to bias the survey results.

Mr. Price asked if there were any studies showing concentrations of PCBs in the South verses the North pond.

Ms. Rosenstein responded that there are data from the SSC ecological risk assessment.

Mr. Price commented that he would guess that the concentrations were higher in South Pond.

Ms. Rosenstein responded that that was correct.

Mr. Price commented that most fish consumed were from the South Pond. He commented that the risk would be less in the North Pond.

Ms. Rosenstein agreed.

Mr. Price commented that the South Pond used to be a popular sport fishing area.

Mr. Kaltofen commented that obviously the risk assessment study is being re-visited. He commented that he was very concerned that 90% of the anglers who are consuming fish are non-white. He commented that he appreciated the additional survey but there needs to be a universal way to make sure that a warning message gets out. He commented that there are institutional controls in place for groundwater protection. He commented that something like that needed to be developed because it was an unacceptable situation.

Mr. Connolly responded that one of the purposes of the study was to determine if the Human Health Risk Assessment needed to be revisited. He commented on the HHRA statement that Mr. Kaltofen made and stated that it was not completely accurate. He commented that after looking at the HHRA data some of it was questioned, so additional data was collected to see what was accurate or not. A true statement was that the majority of people in the survey who caught and consumed the fish were minorities. Those people had fish consumption rates that were 2-5 times lower than what was used in the prior HHRA. That is the fact that is going into the calculation.

Mr. Kaltofen asked if there was a schedule to look at some of the specific interviews that occurred.

Mr. McCassie commented that the plan was to have a draft report in middle of February so the RAB would have the paperwork to review.

Mr. Kaltofen asked to hold off on the Public Comment section to discuss upcoming meeting dates.

Mr. McHugh commented that at the last meeting it was discussed to have meetings off the facility to provide increased public participation. The proposed date was Thursday night, March 2, 2006, at the Public Library.

Mr. Campbell asked if this would be a poster session.

Mr. McHugh said it would be a poster session, with Army representation and community representatives who have been involved.

Dr. Strauss asked when the draft five-year review was coming out.

Dr. Vembu said March or April.

Dr. Strauss asked if it could come out in March because it would create a great basis for discussion.

Mr. Fitzgerald asked if **March 2nd** was enough time to get the word out.

Mr. McHugh said that this would be a general informational meeting and we would have to work at it. He commented that he was hoping to use the meeting room in the library.

Mr. Connolly commented that he had requested it and thought that it was available but has also requested backups.

Mr. Fitzgerald asked if there was a security issue, i.e. pictures of the facility.

Mr. McHugh said that he would address that. He commented that the next meeting is **April 20th** to talk to the RAB about sediment and then on **June 8th**. He also commented that they should have another RAB meeting at the end of March or beginning of April because of potential site work on the Building 22 & 36 sites.

Mr. Fitzgerald asked when comments would be due on the Five-Year Plan to make the October date.

Mr. McHugh said thirty days after you receive it.

Mr. Fitzgerald asked for clarification if comments come in up to thirty days before October 29th.

Mr. McHugh said that he would prefer if they didn't and that he intended to give the report to the RAB before June.

Dr. Vembu asked if they could get them at the April meeting.

Mr. McHugh commented that it was a possibility and that projecting from January it would be a busy spring.

Mr. Fitzgerald commented that the meetings used to be once every three weeks.

Mr. Kaltofen asked if there were any additional comments or questions.

Mr. Miller stated that he would like to address alternative treatments for the Eurasian water milfoil. He commented that the state agencies would go before the Natick Conservation Commission with a notice of intent for treatment of the Eurasian water milfoil. He said that it would be a tug-of-war with chemical treatment but less of a struggle with alternate techniques that were not chemical based. The State recognized the need for alternative treatments. Two notices-of-intent have just been filed and the hearing was scheduled for Feb 2nd before Natick Conservation Commission. He commented that the lake is a receptacle. He said that the lake has sediments but it was not being removed. He compared this to the Eurasian milfoil, commenting that nutrients or chemicals were put into the lake and were left in the lake. He expressed an interest in an option that actually kills milfoil instead of sickening it and mowing it. He commented that he liked the idea of lake-drawdown because two weeks of exposure to freezing weather killed milfoil and nothing else had worked. He searched on the Web and found an alternate device for milfoil treatment being used in Quebec. He explained that it worked in cold weather and was a fairly passive approach. He asked the questions: A) Do you trust the research? B) How would it interfere and cause concerns? He commented on every time lake gets sicker there was less motivation and responsibility to clean it. If fish get sick enough, then people stop fishing. He asked if this was a viable alternative, what interest does military base want to pursue it and what would the state and the Natick Conservation Commission need to get interested in it too.

Mr. Miller continued that the method was a gadget that sucks water up from beneath and circulates it. He commented that a similar method was tried a few years ago when there were little free swimming tiny animals, (looking like a green pea soup). Jason M. Cortell Associates was hired and put a helical aerator at the deepest part of South Pond. This circulated the water and the free swimming animals were under water and didn't show on the top of the lake but it didn't work at the edges of the lake or in the middle of the lake below the surface where they were swimming. The activity was limited to a great central area thus recreationally it not a success. This gadget is the same but opposite, it is used in shallow areas. It uses passive windmills or solar cells running the system full-time. The windmill sitting 14 feet high or the solar cells, although more costly, are used where there is no prevailing wind. It was tried on the Eurasian Milfoil and the results were better than anticipated. There was a study done in 1999 at a shallow lake completely infested with milfoil and the results were excellent. The email discusses links to review three papers that were translated from French to English. The 1999 report discussed a round, shallow lake unlike Lake Cochituate. Lake Cochituate does have a shallow portion that supports the milfoil. The study used six gadgets each costing \$6500 with a life expectancy of 15 years. They require minimum maintenance. The gadgets can be picked up and moved. The results were a complete eradication of the milfoil problem of a one hundred foot radius. The study looked at the wind current and drifts, adjustments were made and the new results improved to a four hundred foot radius. He commented that he was not sure about the noise level but would personally prefer some noise rather than seeing the lake taken over by milfoil. The studies conclude that it killed the milfoil because in the winter it kept an open section on the lake, ice-free. The cold temperature comes down, similar to the draw down effects. One theory is that the hole in ice transmits the sunshine that accelerates the growth of the milfoil but then the temperature kills it. There exists nodules on many other aquatic plants that are not on milfoil and these nodules act as an insulator in the winter.

The year round method is the aeration of the bottom of the lake breaking down the biota. The study reflected a 20% growth (worst case) of Curly Pond Wheat which is some what invasive but not taking over the water. It is biologically friendly, low nutrient load friendly method and working.

Mr. Osgood commented that South Pond was created by glaciers and wanted to know what depth this alternative method was effective.

Mr. Miller said that he thought it was effective from the depth that milfoil grows. He commented that he thought the milfoil grew at 10-12 feet depths in Lake Cochituate, but heard from divers that milfoil was growing up from 20 feet.

A question was asked to what depth the device work would.

Mr. Miller said that the circulation power could be adjusted but would ask that question.

Dr. Strauss commented that she read the paper and it sounded interesting. She wondered if there were similarities of the study with the ecology and the fish populations of the lakes in the study with Lake Cochituate. She added that because of the South Pond PCB contamination, if the lake was stirred up then the sediment and the PCBs associated with that sediment could be stirred up, thus she suggested not starting in South Pond.

Mr. Miller commented that the person he had spoken to was an aquatic biologist and he did not make the gadgets. The gadgets were made on west coast of Canada but he was a distributor of them. Mr. Miller explained the PCB problem and the biologist anticipated that it would not a problem because only the top of the sediment was aerated to get at the milfoil. He said you can adjust the circulation to move cold water across the sediment verses a churning scenario.

Mr. Kaltofen commented if this were to be pursued, a better location would be where there would not be a requirement to write an environmental impact statement.

Dr. Vembu commented that he also read the article and that it was clear that it was not designed to treat milfoil.

Mr. Miller stated that that was true but it was working and the only other non-chemical alternative treatment was lake drawdown.

Ms. Berkowitz asked if PCBs have been found on the west side of the shore.

Mr. Kaltofen responded yes that there were hot spots in the pond.

Ms. Berkowitz introduced herself as a member of POWR (Protect Our Water Resources). She stated that she was a local citizen of the area and has been in Natick for over twenty years. She said that her group, POWR, was working with Dr. Czeisler. Some of the members gave testimony at the first appeal before the Natick Conservation Commission. She stated that this was the second round and that two Notices of Intent (NOI's) were presented to Natick Conservation Commission. One method was chemical and one non-chemical. She commented that she had visited the SSC website and was concerned, because the state was planning to put in more chemicals into the South Pond. She stated that her group has been studying fluridone and Sonar® and know that it is different than diquat taking down natural growth in lake as well as the milfoil. She commented that her group did not want chemicals because the chemicals were not killing the mil-

foil. She referred to the Dudley Pond example where chemicals were used three different times and the chemicals did not eradicate the milfoil. POWR would like to try alternative methods. There is a hearing on February 2nd before the Natick Conservation Commission. She encouraged the RAB to come and share information about South Pond. She commented that Fluridone and weevils do not mix. She stated that once Fluridone was put into the lake several years will need to pass because weevils need a healthy plant to take hold and to kill the milfoil. Weevils reproduce in the stem of the milfoil and they can not do that if the milfoil is sick.

Mr. Kaltofen asked if there were any other questions.

Mr. McHugh commented that tonight there was discussion about sediment moving and concentrations of contamination in fish. He commented that the water had been tested for along time and there was nothing unusual.

Mr. Kaltofen interjected that there was only one case on the western side with extremely low numbers.

Mr. McHugh commented that there was nothing particularly unusual about the water.

Ms. Berkowitz commented that she had read on the website that there was something in the wells.

Mr. McHugh said that there is some groundwater contamination in the aquifer. He commented that he was talking about the lake water.

Ms. Berkowitz said that she was talking about the aquifer, where the drinking water comes from. She commented that if fluridone or the breakdown products of fluridone can get into the water system and this is the system that feed 32,000 people, where would Natick get its water?

Mr. Kaltofen commented that some of these issues had been addressed, such as how much water is drawn from the lake into the aquifer and into the Town's water supply. He commented that these issues do come up and suggested that Ms. Berkowitz give Mr. Connolly her email, so she would get notice of meetings.

Ms. Berkowitz commented that she read in the newspaper that eight million gallons were being drawn down but that she also heard a two million figure. She commented that there were areas of details that are not quite known.

Mr. Kaltofen said if there were no more comments he would motion to adjourn.

Meeting was completed at 9:12 p.m.