

**U.S. Army Garrison Fort Monmouth
Restoration Advisory Board (RAB)
July 12, 2012 ~ 7:00 p.m.**

MINUTES

1. Attendees:

- The meeting was called to order by Mr. James Allen at 7:00 p.m. Those in attendance were Wanda Green, James Allen, Dianne Crilly, Linda Range, Jonathan Cohen, Frank Barricelli, Brian Charnick, Ed Dlugosz, William Simmons, Richard Gruskos and Tim Rider. Ms. Rosemary Brewer had to leave the meeting early to attend another meeting.
- Dan Levine was absent.

2. Old Business

- April 5, 2012 meeting minutes were approved with a few minor corrections.
- Mr. Simmons asked that a copy of the following report, that discusses the chromium discharges to the CWA sewer plant, be provided to the RAB at the October meeting (request originally emailed in April): USAEHA, 1976. Water Quality Engineering Special Study No. 24-016-75-76, Sanitary and Industrial Wastewater, Fort Monmouth, New Jersey. September 23-October 9, 1974; April 15-17, 1975; June 10-12, 1975. He commented that waste oil was reportedly used as dust control until the late 1960's at CWA, as cited on page 32 of " U.S. Army Toxic and Hazardous Materials Agency, 1980. Installation Assessment of Fort Monmouth, Report No. 171. May 1980."
- Ms. Green gave the status of the TAPP Grant application:
After careful review, the Army cannot approve this request for technical assistance for the following reasons:
 - * The purpose of the TAPP grant is to provide technical expertise to understand the remediation efforts and issues regarding the actual Installation Restoration Program (IRP) documents. TAPP funding is still available for that purpose. But the Wampum Lake issues are outside the IRP.
 - * The Restoration Advisory Board (RAB) requested a TAPP Grant to assist them to understand the sources of contamination at Wampum Lake. Wampum Lake is approximately 1 mile off the installation. Addressing contamination at Wampum Lake is not part of the Installation Restoration Program (IRP) to address contamination within the Fort Monmouth installation boundaries. (Dlugosz corrected this statement... the Fort is less than 1 mile from the lake.)
 - * The previous studies of Wampum Lake by the State and County have shown that the contaminants in question have been identified in 20 other lakes throughout the area. The contaminants are linked primarily to heavy

metals from highway and rail run-off, as well as manufacturing processes that have been around the lakes for years.

* Mr. Dlugosz and others disputed that runoff was the major contributor to Wampum Lake like the others due to the difference in magnitude of both the cumulative and individual levels of contamination which ranged from 4 to 20 more times according to the MCHD 20 Lakes Study and illustrated in Mr. Dlugosz's presentation. Even Mr. Barricelli, at the RAB meeting, conceded that Wampum was much more polluted than any of the other 19 lakes.

3. New Business Discussion, Board Questions and Answers

- a.** Mr. Gruskos application for membership to the RAB was accepted by the board.
 - b.** Ms. Green distributed CDs of the revised BEE, which incorporated a response to comments from NJDEP.
 - c.** Mr. Charnick request that a quarter report of the status of the caretaker process be given at each RAB. In particular, he is requesting an update of the sanitary sewer lines and the possibility of contamination coming from the sewers. Ms. Range stated that the series of monitoring wells throughout the installation would show if there is a spread of contamination from the sewer pipes. Mr. Cohen asked how often are the wells sampled. Ms. Green stated that for the last 15 years, the wells have been sampled on a quarterly basis, up to closer of the installation. We are in the process of acquiring a contractor who will review the monitoring program and determine if changes, such a frequency, need to be made.
 - d.** Mr. Charnick asked if there were any environmental issue as a result of the resent military exercises conducted at the insulation. Ms. Green explained that there was a representative from the installation, who monitored the exercises before, during and after the activities to ensure that there weren't any safety or environmental issues.
4. Mr. Joe Pearson, from Calibre, gave a presentation on the Parcel E FOST and the ECP Update of Parcel 14.
- He explained the purpose of a Finding of Suitability to Transfer (FOST) and the public involvement. He stated that Parcel E did not have any environmental issues and that the area was being transferred to the FMERA.
 - Mr. Charnick asked if the Army still had any liability of the area, although the FMERA owns it.
 - Mr. Allen asked if the Army would still have liability after the FMERA transfers the property to the new owner.
 - Mr. Pearson explained how and when the Army would still have liability.
 - Mr. Pearson explained the CERFA Categories. Ms. Crilly asked questions regarding the selection of categories for Parcels in the area. Mr. Pearson explained that the portion of the ECP Parcel 14 associated with Parcel E, did not have any environmental issues.

5. Mr. Dlugosz gave a presentation regarding contamination at Wampum Lake.
- Mr. Dlugosz discussed the following:
 - Two independent scientific studies confirming Wampum Lake's health problems in 1990
 - New opportunity resulting from BRAC RAB Law
 - Wampum Lake's contamination is our [Eatontown's] problem and polluter's responsibility.
 - Contamination sources – Fort Monmouth R&D labs, Garbage Dumps, & former STP & Sewer Infrastructure
 - Previous Investigations by USAEHA cited heavy metals, solvents, acids, and other contaminants made its way to the STP thru plumbing in labs
 - The un-named stream- a missing link is another pathway to Wampum Lake from the pesticide spill, the STP & broken sewer infrastructure
 - Disputed Metallurgical Industries is major contributor–EPA and NJDEP reports deny MI responsibility for Wampum Lake heavy metal contamination
 - Disputed claims of Barricelli and Army that Non-Point Source (NPS) was the major contributor to Wampum Lake pollution due to enormity, i.e., orders of magnitude difference between Wampum and the 2 local lakes.
 - Also disputed the unfounded claim that a dump containing mainly building debris in proximity to the Lake was a source of the heavy metals; NJDEP stated in a letter that there was no evidence to support claim as a result of their tour of the site.
 - Conclusion: Additional Testing Needed to determine any and all sources of Wampum Lake to ascribe responsibility.
 - Mr. Allen accepted Mr. Dlugosz's motion that the RAB [voted to support Eatontown's effort to seek funding for an independent study to determine the source of contamination at Wampum Lake](#). The motion was seconded by Jon Cohen. Mr James Allen called for discussion and the vote on the motion. The motion passed 6 to 1 with 1 abstention: Yea (James Allen, Jonathan Cohen, Brian Charnick, Ed Dlugosz, Richard Gruskos, and Ms. Rosemary Brewer); Nay (Frank Barricelli); and Abstain (Dianne Crilly)
6. Ms. Green presented a summary of the RAB tour and terrain walk of the installation and IRP sites.
- Ms. Green discussed what was observed by the RAB members on the tour:
 - The members followed the path of the Southern and Northern Tributaries leading to Wampum Lake
 - Observations made during the terrain walk: 1) coal slag found along the railroad line; 2)The stream originating from Hwy 36, Rte 18, behind Appleby's, flows along the former Metallurgical property; 3) Metallurgical property is a Superfund site, currently operated by the state with over 20 monitoring wells; 4) The stream flows from the Metallurgical property under Pinebrook Road; 5) The stream then flows behind Pinebrook Housing, on the opposite side of the southern tributary coming

from CWA; 6)The stream then flows behind the railroad storage yard; 7) The stream then flows under Maxwell Road; 8) The stream flows behind the Eatontown DPW Recycling Center, between the piles of material being stored; 9) The stream continues behind local industry , to include a metal fabrication company.

- Due to rain and slippery conditions, the RAB members were unable to walk through the woods to observe the area where there is a suspect undocumented landfill within 15 feet of Wampum Lake.
- Mr. Dlugosz, Mr. Cohen, and other RAB members disputed the characterizations and implications above, including photos taken that don't represent the conditions of the day of the tour. Other disputes are included in additions to Dlugosz's presentations.

7. Questions/Comments from the Public.

- Ms. Sara Breslow from Eatontown stated that she was thankful for the information that was presented by Mr. Dlugosz and that she agrees that additional sampling should be performed for Wampum Lake.
- Mr. Anthony Talerico, President of Eatontown Borough Council, stated...

8. Meeting adjourned.

Motion to adjourn was made and second.

Parcel E FOST Overview

- Finding of Suitability to Transfer (FOST)
- Advertised on April 4, 2012
- 30 Day Public Comment Period Ended May 3, 2012
- FOST is document that assess and establishes the environmental suitability of transfer of property. Satisfies the Army's compliance with Section 120(h) of CERCLA.
- All environmental work completed at Parcel E and property ready for transfer.

FOST Major Components

- Environmental Condition of Property
- Environmental Remedial Actions
- Documentation of Storage, Release and Disposal of Hazardous Substances
- USTs/ASTs
- PCB Equipment
- Asbestos
- Lead Based Paint
- Radiological/Radon
- Munitions and Explosives of Concern
- CERCLA Notices and Covenants (for deed)
- Environmental Protection Provisions (for deed)

FOST Parcel E

- Environmental Condition of Property
 - Property Category 1 and Category 2
 - ECP Update and Recategorization prepared for parts of Parcels 14 and 28
- Environmental Remedial Actions
 - One UST removed and petroleum contaminated soils removed
- Documentation of Storage, Release and Disposal of Hazardous Substances
 - None noted
- USTs/ASTs
 - Former USTs at housing areas all removed no releases
 - Potential for former unregulated tanks to still be present but no longer in use.

FOST Parcel E

- PCB Equipment
 - Some transformers previously present but removed, no spills noted
- Asbestos
 - Limited asbestos in some of the existing residential all removed except potentially some remaining behind walls
- Lead Based Paint
 - Present but not a risk, notification provided to FMERA
- Radiological/Radon
 - No issues
- Munitions and Explosives of Concern
 - No issues

FOST Parcel E

- CERCLA Notices and Covenants (for deed)
- Environmental Protection Provisions (for deed)

ECP Property Re-Categorization Parcels 14 and 28

- Parts of Parcels 14 and 28 were re-categorized to Category 1, “Areas where no release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas).”
- ECP update reports were prepared to document/reflect these changes as well as document applicability of original ECP.

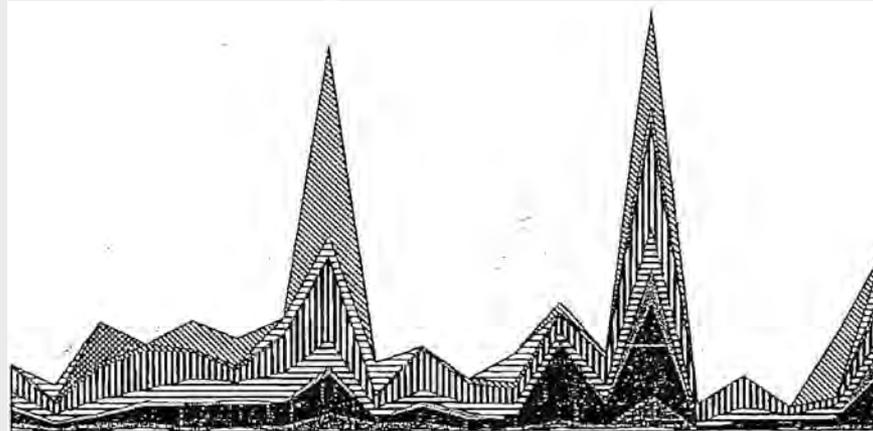
ECP Property Re-Categorization Parcels 14

- ECP Phase 1 identified potential petroleum issue with Parcel 14 and it was listed as a Category 2, “Areas where only release or disposal of petroleum products has occurred”.
- ECP Phase 2 evaluated the potential for petroleum discharges through geophysics, sampling and analysis.
- Army addressed NJDEP comments on Phase 2 and obtained concurrence on change for most of Parcel 14 to a Category 1.

ECP Property Re-Categorization Parcels 28

- ECP Phase 1 identified potential environmental issue (potential former storage pads) with the part of Parcel 28 that was within Parcel E and it was listed as a Category 7, “Areas that are not evaluated or require additional evaluation.”
- ECP Phase 2 evaluated the potential for release in this area sampling and analysis. No issues found.
- Army addressed NJDEP comments on Phase 2 and obtained concurrence on change of this part of Parcel 28 to a Category 1.

Heavy Metal Impacts on Wampum Lake



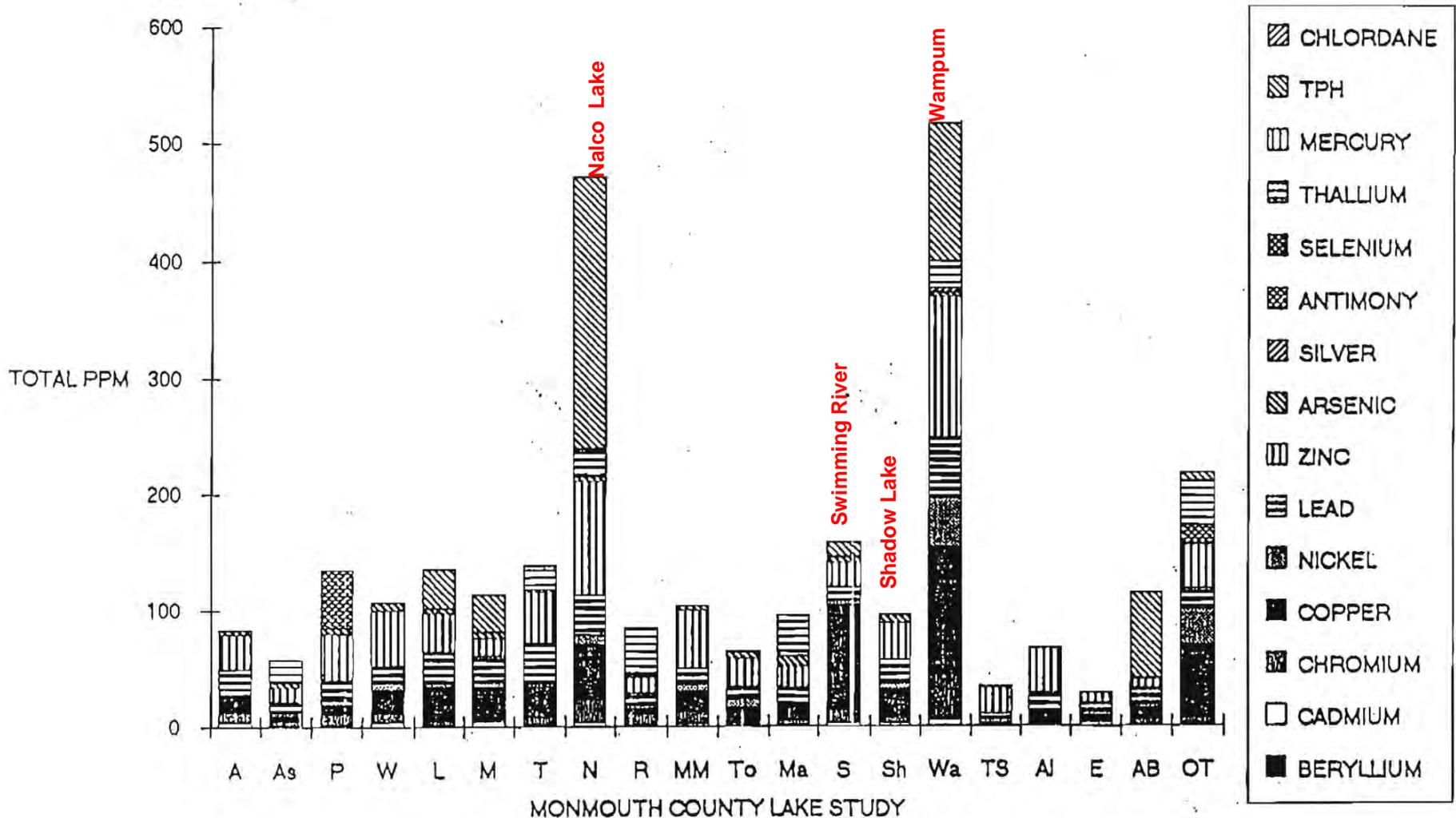
Concerns and Plan of Action

Presented to
Restoration Advisory Board
by
Ed Dlugosz
Chairman, Eatontown Environmental Commission
July 12, 2012

Outline

- ✓ Two Independent Scientific Studies Confirm Wampum Lake Health Problems in 1990
 - ✓ Monmouth County Health Department 1990 "20 Lakes Sampling"
 - ✓ Dr. Donald Dorfman, "Heavy Metals and Chlordane In The Tissues of Fishes From Wampum Lake, Eatontown, New Jersey"
- ✓ New Opportunity Resulting From BRAC RAB Law
 - ✓ Abundant RAB Evidence is Available to Instigate a New Study
 - ✓ Town is Reeling From Loss of Jobs/Business & Cannot Afford Not To Take Initiative While Players are Still in Place--Continued Army RAB and FMERA Resources
- ✓ Wampum Lake's Contamination Is Our Problem & Polluter's Responsibility! If Not Now, When?
 - ✓ Plan For Investigative Study & Remediation
 - ✓ Seek Grant Money For the Study Available From EPA, etc.
 - ✓ When Proven, Cost for Remediation Will Be Borne by Those Responsible. Got Nothing to Lose

Wampum 1st Among County Lakes



Wampum did not have the highest level for every contaminant in the County lakes, its cumulative record puts it in first place. We know from reading the report that Chlordane pesticide was also found.

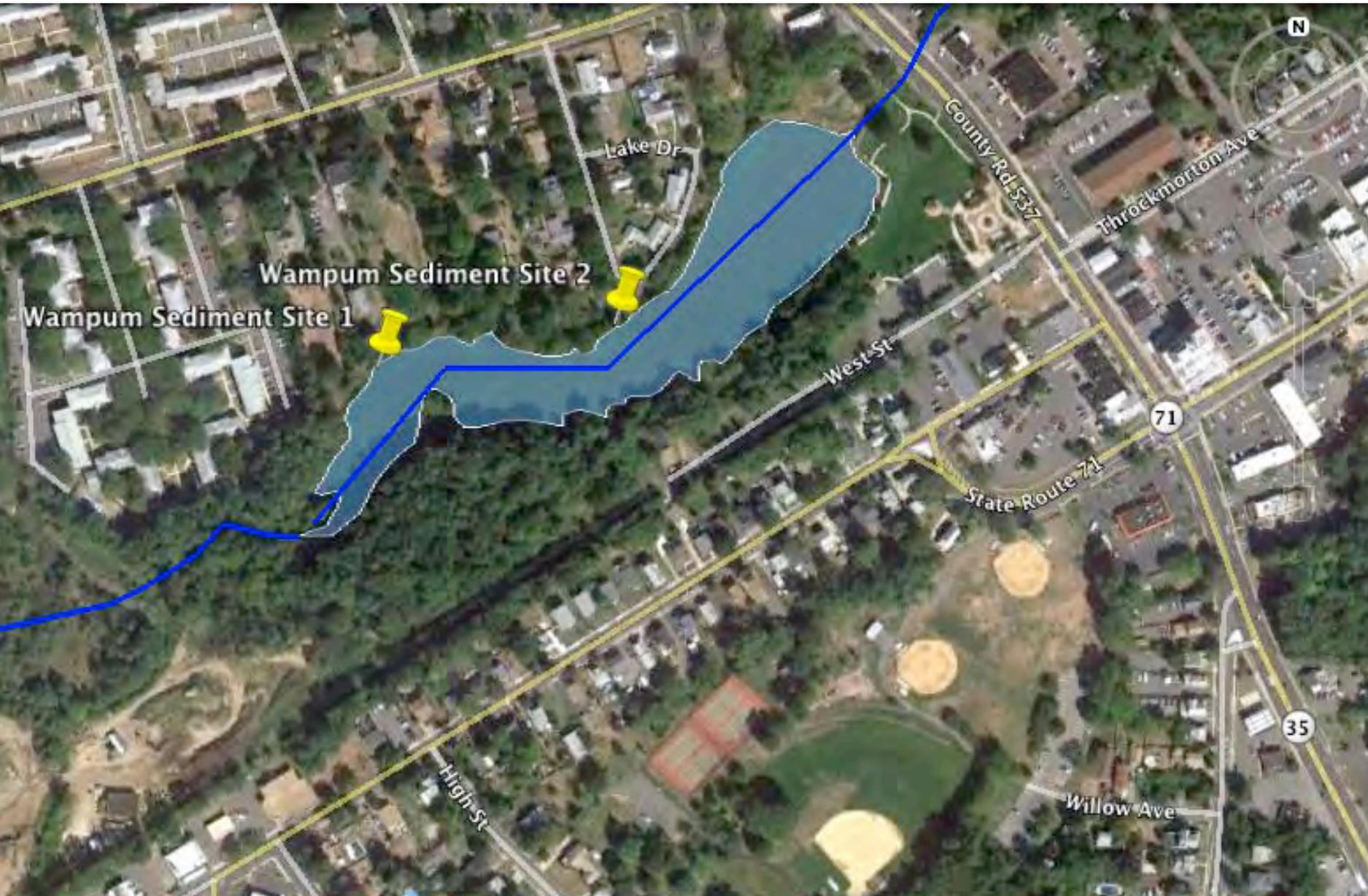
MCHD Tests Monmouth County Lakes

- In 1990, Monmouth County Health Department (MCHD) conducted a significant test of all the chief lakes in Monmouth County.
- Among these lakes was Wampum Lake, which lies 0.2 mile east of the Charles Woods Area (CWA) of Fort Monmouth.
- Impact and scope of its findings and possible sources may not have been fully realized at the time.
- We know that MCHD tested for the same contaminants--Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc--in all the lakes and was not targeted on Wampum.

SOURCE	SAMPL_TYPE	A BERYLLIUM	B CADMIUM	C CHROMIUM	D COPPER	E NICKEL	F LEAD	G ZINC	H ARSENIC	I SILVER	J ANTIMONY	K SELENIUM	L THALLIUM	M MERCURY	SOLIDS	LAT	LONG
WAMPUM		< 12.5	27	196	545	215	262.5	605	17	22	< 50	< 2.5	110	1.05	20		
WAMPUM SITE 1	SEDIMENT	5	10.24	193.28	59.17	62.65	91.73	314.28	27.44	< 10.24	< 1.48	< 2.46	< 0.059	0.27	24.21	401818	740355
WAMPUM SITE 2	SEDIMENT	4.89	16.95	246.41	176.93	138.97	151.17	429.44	33.22	< 16.95	< 1.13	< 3.39	< 0.6	69	27.76	401820	740349
WAMPUM COMPOSITE	SEDIMENT	6.63	10.72	256.31	130.62	110.67	131.91	428.11	29.38	< 10.72	< 2.23	< 2.79	< 0.087	0.48	24.73		
WAMPUM SITE 1	WATER	< 0.0003	0.001	0.005	< 0.02	< 0.05	0.002	< 0.05	< 0.001	< 0.001	< 0.0005	< 0.002	< 0.002	0.0004	0	401818	740355
WAMPUM SITE 2	WATER	< 0.0003	0.001	0.004	< 0.02	< 0.05	0.003	< 0.05	< 0.001	< 0.001	< 0.0005	< 0.002	< 0.002	0.0004	0	401820	740349

- Wampum Lake tested not only positive for all the contaminants but all exceeded the NJDEP criteria, 10 of 13 exceeded the **Severe Effects Level**.
- ECP, IRP and the BEE Reports report there are more than 21 heavy metals present in the contaminated CWA Parcels.

MCHD Wampum Sediment Sample Sites



Dr. Dorfman 1990 Public Health Study

Wampum Lake was posted for Mercury and Lead contamination as a result of another 1990 public health study entitled "Heavy Metals and Chlordane In The Tissues of Fishes From Wampum Lake, Eatontown, New Jersey" authored by Dr. Donald Dorfman of Monmouth College shortly after the MCHD findings were available. Dr. Dorfman states in his abstract to the study:

"Cadmium, chromium, copper, lead, mercury, nickel, zinc, and chlordane levels were examined for their presence, and quantities if present, in fish tissues from fishes collected in Wampum Lake, Eatontown, New Jersey, during June 1990. Cadmium and nickel were not detected in fish tissues. Chromium, copper, mercury, lead, and zinc were detected in fish tissues. Chromium, copper, and mercury levels were below alert levels. Lead and zinc levels each exceeded alert levels once in the 15 tissues examined. Lead was found in excess in a single sample of carp body tissue, and zinc was found in excess in a single sample of carp ovarian tissue. Chlordane was not detected in carp tissue. Chlordane was detected in brown bullhead tissue."

Carp, Largemouth Bass, Pumpkinseed (*Lepomis gibbosus*), and Brown Bullhead spawn upstream in the Wampum Brook freshwater wetlands. Dr. Dorfman warned that the "Lake should be monitored several times a year, all fishing should be prohibited ...[and] the lake sediments mined [i.e., dredged]."

WAMPUM LAKE CONTAMINANTS

13 Heavy Metals Detected in Lake Sediment

NJDEP Criteria			WATER BODY	WAMPUM	WAMPUM SITE 1	WAMPUM SITE 2	WAMPUM COMPOSITE	WAMPUM SITE 1	WAMPUM SITE 2	ECP Cited Source of Contaminant		CWA ECP Phases 1 & 2 # of Sources of COCs
Fresh Water	Sediment		SAMPL_TYPE		SEDIMENT	SEDIMENT	SEDIMENT	SURFACE WATER	SURFACE WATER			
Surface Water (ug/L)	Lowest Effects Level (LEL) 1 2(mg/kg)	Severe Effects Level (SEL) (mg/kg)	DATE_COLL	9/5/89	10/31/90	10/31/90	10/31/90	10/31/90	10/31/90	ECP Phase 1 CWA SITE	ECP Phase 2 CWA PARCEL	
			ACRES	6	0	0	0	0				
			DEPTH1	1.9	0	0	0	0				
			DEPTH2	2.1	0	0	0	0				
			PH1	7.38	0	0	0	6.91	6.88			
			PH2	6.92	0	0	0	0	0			
			TEMP1	18.9	0	0	0	0	0			
			TEMP2	18.5	0	0	0	0	0			
5.6	?	3	ANTIMONY**	50	1.48	1.13	2.23	0.0005	0.0005			nr
0.017	6	33	ARSENIC***	17	27.44	33.22	29.38	0.001	0.001	CW-2, CW-3A, CW-6	27, 28*, 49	3
6	3.68	6	BERYLLIUM*	12.5	5	4.89	5.63	0.0003	0.0003		49	1
3.4	0.6	10	CADMIUM**	27	10.24	16.95	10.72	0.001	0.001	CW-3A	27, 49	2
92	26	110	CHROMIUM	196	193.28	246.41	256.31	0.005	0.004	CW-3A	15, 27, 28*, 49	4
1,300	16	110	COPPER**	545	59.17	176.93	130.62	0.02	0.02		15, 27, 49	3
5	31	250	LEAD**	262.5	91.73	151.17	131.91	0.002	0.003	CW-2, CW-3A, FTMM-63	27, 49	3
0.05	0.2	2	MERCURY**	1.05	0.27	69	0.48	0.0004	0.0004	CW-5,	27,	1
500	16	75	NICKEL**	215	62.65	138.97	110.67	0.05	0.05		27,	1
170	<1	>1	SELENIUM**	2.5	2.46	3.39	2.79	0.002	0.002			nr
170	1	3.7	SILVER**	22	10.24	16.95	10.72	0.001	0.001		49	1
0.24	?	?	THALLIUM**	110	0.059	0.6	0.087	0.002	0.002			nr
7,400	120	820	ZINC**	605	314.28	429.44	428.11	0.05	0.05		27, 39, 43, 49	4
			SOLIDS	20	24.21	27.76	24.73	0	0			nr= not recorded in ECP for non-residential
			LAT		401818	401820		401818	401820			
			LONG		740355	740349		740355	740349			
Contaminant's Uses:			* xray, electronics, nuclear. & acoustics	** Battery & Electronics	*** Electronics & wood preservative							

Exceeds Severest Effects Criteria

Exceeds Lowest Effects Criteria

Ample evidence that these contaminants come from the radio, computer, electronics, battery, & communications R&D Labs of Fort Monmouth Charles Woods Area. Majority of samples exceed severe effects criteria & all exceed minimal standards. Disciplined scientific searches for other sources have yielded minimal results--1 site with only 1 contaminant.

Wampum Lake Contaminants

Heavy Metal Health Impacts

Contaminant	Affected Organ Systems	Cancer?	R&D, Prototype, & Product Uses
ANTIMONY**	Cardiovascular (Heart and Blood Vessels), Respiratory (From the Nose to the Lungs)	No	Used with lead for batteries, electronics, and solder
ARSENIC***	Dermal (Skin), Gastrointestinal (Digestive), Hepatic (Liver), Neurological (Nervous System), Respiratory	Yes	Used in preserved wood such as CCA, i.e., "pressure-treated" lumber. CCA is not for home uses. Also used for pesticides (termites).
BERYLLIUM*	Gastrointestinal, Immunological (Immune System), Respiratory	Yes	Used to make electronics, computers, speciality ceramics for electrical & high-technology applications.
CADMIUM**	Cardiovascular, Developmental (effects during periods when organs are developing), Gastrointestinal, Neurological, Renal (Urinary System or Kidneys), Reproductive (Producing Children), Respiratory	Yes	Used for batteries, pigments, metal coatings, and plastics.
CHROMIUM	Immunological, Renal, Respiratory	Yes	Used for plating, dyes, pigments, and wood preserving.
COPPER**	Gastrointestinal, Hematological (Blood Forming), Hepatic	No	Copper was widely used in wire, pipes & conduit.

Wampum Lake Contaminants

Heavy Metal Health Impacts (cont.)

Contaminant	Affected Organ Systems	Cancer?	R&D, Prototype, & Product Uses
LEAD**	Cardiovascular, Developmental, Gastrointestinal, Hematological, Musculoskeletal (Muscles and Skeleton), Neurological, Ocular (Eyes), Renal, Reproductive	No	Lead was used in batteries, ammunition, solder, pipes, paints, gasoline, & X-rays shield.
MERCURY**	Developmental, Gastrointestinal, Neurological, Ocular, Renal	No	Used for batteries, electrical switches, radios, pigments, metal coatings, and plastics.
NICKEL**	Cardiovascular, Dermal, Immunological, Respiratory	Yes	Used for batteries, plating, and catalysts
SELENIUM**	Dermal, Developmental, Reproductive	Yes	Used in electronics, batteries, paints, inks, rubber, & pesticides. Radioactive selenium is used in diagnostic medicine.
SILVER**	Renal, Reproductive	No	Used for batteries, electronics, photography, in brazing alloys & solders;
THALLIUM**	Gastrointestinal, Hepatic, Neurological, Renal	No	Used in electronic devices, switches, and closures, primarily for the semiconductor industry.
ZINC**	Gastrointestinal, Hematological, Respiratory	No	Used for batteries, electronics, paints, rust preventive coatings

Contamination Source: Laboratories

The Myer Center facility (Bldg 2700) is located in the CWA of FTMM at the intersection of Pearl Harbor Avenue and Corregidor Road. Bldg 2700 is a four-story building with a basement approximately 673,000 square feet in size. The building footprint totals approximately 171,000 square feet. It was built in 1954 and has an extensive history of laboratory operations, photoprocessing, and paint spraying booths. Various laboratory processes were noted in a 1955 Industrial Hygiene (IH) Survey, following the construction of the Myer Center. Operations included electrochemical research, growing and shaping of crystals, various plating operations, mixing of magnetic powders, machining, welding, spray painting, use of solvents for equipment cleaning, and other miscellaneous laboratory operations utilizing standard laboratory chemicals (15). By 1959, additional operations included shock and vibration testing of certain components; glass blowing; a plastics laboratory which made plastic castings, laminates, and forms sprayed with polyester resins; and a ceramics laboratory (16). A satellite dispensary and dental clinic was present in 1972 that serviced 2,610 employees (17). During the 2006 Visual Site Inspection (VSI) performed as part of the Phase I ECP, the Dental Clinic was no longer operational at Bldg 2700. According to FTMM personnel, no chemical wastes have been discharged to the sanitary sewer since the mid-1980s. Activities at Bldg 2700 have since been converted primarily to administrative functions. Current waste management practices prohibit the discharge of any materials, other than water and biodegradable soaps, into the sanitary sewer system. Additional information pertaining to this parcel can be found in Section 4.3.1,

Concurrent with the performance of the ECP, an HSA was conducted to evaluate the historical use of RAM at FTMM (3). The presence of RAM at FTMM has been predominantly limited to certain areas and functions of the installation. Historically, laboratory R&D in the areas of radio and electronics use of vacuum tubes and radium dials, the use of ionizing radiation-producing machines, and military support equipment such as night vision goggles that contain radioactive commodities, have been among the most common uses of RAM. Facilities, buildings, and rooms that contain or once

- FM is renowned for its R&D labs around the world. Many firsts were researched then developed & produced here including radars, electronics, communications systems, computers, batteries, night vision, ceramics, & more.
- To perform these miracles, a great deal of heavy metals & other chemicals were used or created as byproduct
- The Myers Center comprises Parcel 15 while the Pulse Power & other buildings comprise Parcel 27, and Eatontown Lab is Parcel 28; all of which are the major users of the heavy metals itemized in Sediment Contamination slides.

Previous Investigations

U.S. Army Environmental Hygiene Agency (USAEHA) sampling of Bldg 2700 effluent from 1974-1975 showed discharges of the following wastewaters: alkaline cleaning agents, high concentrations of (hexavalent) chromium that were likely rinse water from a chrome plating operation, 93-94 percent sodium hydroxide slugs, sulfuric acid that was likely a dip solution used to activate a metal surface for plating, copper pickling waste, sodium dichromate as part of a cleaning agent, parabenzoquinone likely from photographic processing effluent, ammonium persulfate from the printed circuit manufacturing shop, and acetone. Samples were collected from each of the two former wastewater treatment lime pits (CW-1 and CW-2) serving Bldg 2700 prior to discharge to the CWA sewage treatment plant (STP). The purpose of the investigation was to characterize the wastewater because the FTMM STP was scheduled to be replaced by the local sewerage authority (20).

Contamination Source: Garbage Dumps

- CWA & the Main Post have 9 unprotected dumps that the ECP and IRP laughingly call landfills. According to the boiler plate introduction to each of the dumps, they contain:
 - "...construction debris, scrap metal, asbestos containing materials, vegetative waste, unwashed containers which previously held hazardous materials/wastes, outdated photographic chemicals, small quantities of outdated drugs, sludge from the sewage treatment plant, soot and boiler scale, incinerator ash, oil spill debris, oil filters, batteries, fluorescent tubes, and electronic components."¹
- Mixed into these dumps are a wide variety of VOCs, POLs, B/N, and as well as the metals that were encountered in CWA. The tests of those COCs have not shown a marked improvement since the remediation had begun 10 years ago. Perhaps there are more than empty, unwashed containers embedded in those dumps.
- The only documented dump in CWA is CW-3A (FTMM-25) which contained heavy metals. Benzene and lead were detected in three downgradient monitoring wells at concentrations exceeding the NJDEP GWQC. Arsenic, chromium, and lead were detected in one upgradient monitoring well .

¹ FM, NJ Installation Action Plan/Installation Restoration Program, FY2006: Preamble to each of the 9 FTMM- Landfill Site Description.

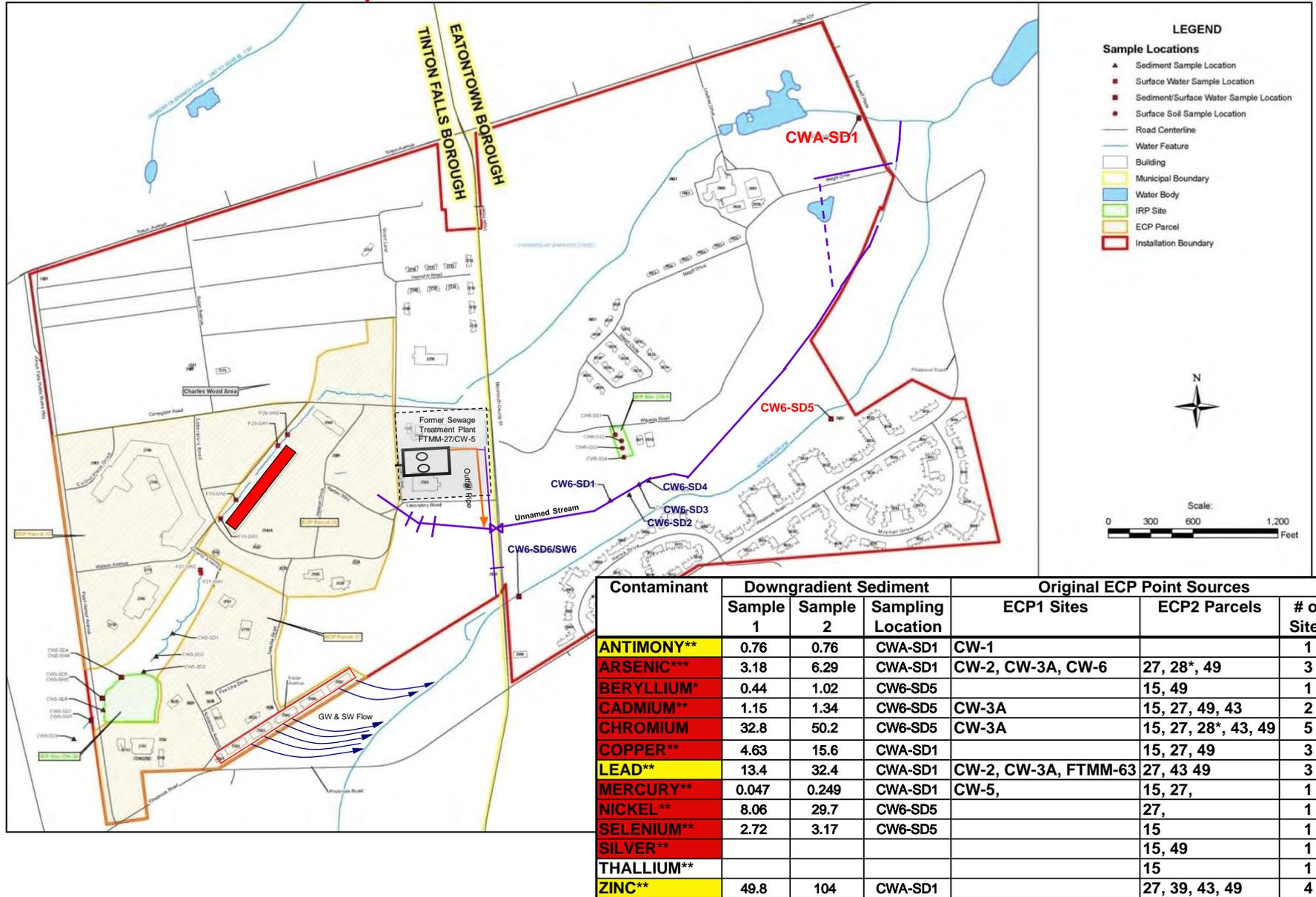
Charles Wood Area Downgradient Contaminants*

Sediment samples were collected from 2 new test locations downgradient [i.e., at the CWA eastern border] of the CWA activities. One [CWA-SD1] was collected from North Branch and one [CW6-SD5] was collected from South Branch of Wampum Brook. The 2 sample sites were placed on the branches only after insistence of this author.

- ✓ **Metals.** A total of 21 metals were detected in sediment from CWA downgradient samples: aluminum, antimony, **arsenic**, barium, **beryllium**, **cadmium**, calcium, **chromium**, cobalt, **copper**, iron, **lead**, magnesium, manganese, **mercury**, **nickel**, potassium, **selenium**, **silver**, sodium, vanadium, and **zinc**. Seven of the metals with applicable freshwater or saltwater sediment criteria were found at concentrations in one or more sediment sample exceeding the criteria: **cadmium, chromium, and selenium in both** samples; **arsenic, mercury, and lead in North** Branch and **nickel in South** Branch of Wampum Brook.
- ✓ **VOCs.** Two VOCs were detected in sediment from CWA downgradient samples. Acetone was detected in both sediment samples and methylene chloride was detected in the sample from North Branch of Wampum Brook.
- ✓ **SVOCs.** A total of eight SVOCs were detected in sediment from CWA downgradient samples: anthracene, benzo(a)anthracene, and benzo(a)pyrene which were detected in both samples, acenaphthene and phenanthrene which were detected in the North Branch sample, and fluoranthene, Dimethyl phthalate and pyrene which were detected in the South Branch of Wampum Brook sample. The concentrations of acenaphthene and phenanthrene in the South Branch of Wampum Brook sample were greater than the freshwater sediment criteria.
- ✓ **PCBs.** Aroclor 1242 was detected in the sample from South Branch of Wampum Brook. The detected concentration was below the applicable freshwater sediment criteria but above the saltwater sediment criteria. No other PCBs were detected in sediment from CWA downgradient samples.

Charles Wood Area

New Sediment Sample Sites Still Show Lake's Contaminants After 21 Years!



Contaminant	Downgradient Sediment			Original ECP Point Sources		
	Sample 1	Sample 2	Sampling Location	ECP1 Sites	ECP2 Parcels	# of Sites
ANTIMONY**	0.76	0.76	CWA-SD1	CW-1		1
ARSENIC***	3.18	6.29	CWA-SD1	CW-2, CW-3A, CW-6	27, 28*, 49	3
BERYLLIUM*	0.44	1.02	CW6-SD5		15, 49	1
CADMIUM**	1.15	1.34	CW6-SD5	CW-3A	15, 27, 49, 43	2
CHROMIUM	32.8	50.2	CW6-SD5	CW-3A	15, 27, 28*, 43, 49	5
COPPER**	4.63	15.6	CWA-SD1		15, 27, 49	3
LEAD**	13.4	32.4	CWA-SD1	CW-2, CW-3A, FTMM-63	27, 43, 49	3
MERCURY**	0.047	0.249	CWA-SD1	CW-5,	15, 27,	1
NICKEL**	8.06	29.7	CW6-SD5		27,	1
SELENIUM**	2.72	3.17	CW6-SD5		15	1
SILVER**					15, 49	1
THALLIUM**					15	1
ZINC**	49.8	104	CWA-SD1		27, 39, 43, 49	4

The Un-Named Stream: A Missing Link

1. Another pathway to Wampum Lake for heavy metals, SVOCs, and other toxins has been identified in CWA. Apparently, the Army chose not to acknowledge, document and correctly characterize the presence of a running stream in the BEE and the Phase 2 ECP. However they chose to sample its surface water and sediment as it passed southwest of CW-6 and the nearby sludge dump FTMM-31 IRP sites. All those heavy metals and SVOC readings of *un-named* stream are high and the several are above SEL levels.
2. This *un-named* stream does not coincide and cannot be referred to as Wampum or Shrewsbury Brooks because the former flows exclusively on the southside of the NJ Transit RR tracks. At points in the ECP, IAP and BEE it is incorrectly referred to as *the Wampum Brook*.]
3. This *un-named* stream originates about 130 yards southeast from Bldg 2525 and was in the middle of the polluting, since-demolished Watson Lab buildings area. The *un-named* stream flows past the former CWA STP CW-5 location (*and is identified in Phase 1 ECP as the recipient of the outflow of the STP that was the way-station for all those metals, SVOCs etc. in the "unsanitary" sewer infrastructure" at the RAB meeting*) and the current AAFES gas station IRP sites. It flows through a wetland south of these IRP sites, west of Hope Road, and north of the NJ Transit RR tracks. There is a definite petroleum sheen on the water in the TF portion.
4. From there *un-named* stream flows through an Army-designated culvert (CW-29 & CW-32) under Hope Rd and onto the Eatontown portion of CWA in the southern section of the Suneagles Golf Course (GC). In dry weather the stream flow is moderate at 3-4 mph as it enters the Golf course and varies, based on the width & depth of the stream, as it traverses the property. There is a manhole cover with the *Two Rivers Water Reclamation Authority (MRSA)* logo situated between the stream and CW-6.
5. There are receptors [not included in the BEE] in this area including a large herd of deer, water fowl, at least one raptor, woodpeckers, and various other animals. During and after wet weather, the *un-named* stream literally rages through the wooded area and bursts into the gully that follows the northside RR. Once out of the wooded area, it flows along that gully, also receives runoff from the GC, and then flows through another culvert under Maxwell Rd.
6. About 150' further, it empties into the "Shrewsbury Brook" (the northern branch of Wampum Brook) before the combined flow goes eastward through a culvert under the RR Tracks where it meets up with the southern branch of the Wampum Brook and into the Wampum Lake. See the purple line representing the un-named stream in the attached map.

The Un-Named Stream: A Missing Link



The Un-Named Stream: A Missing Link



[Show Rush of Water Emerging from Golf wetland to RR Gully.MOV](#)

Contamination Source: Sewer Infrastructure

- Fort Monmouth has many miles of an ancient "sanitary" sewage system infrastructure linked into the Monmouth Regional Sewage Authority (MRSA) pipelines **since the 1980's**. The Army and FMERPA/FMERA Infrastructure Committee have declared it unfit for future use in the coming redevelopment. The redevelopment plan calls for totally new sewage infrastructure to support the public sector, businesses and residential properties.
- In addition to greywater or blackwater (human waste), these sewer pipes have also carried a wide variety of contaminants including the Heavy Metals, VOCs, SVOCs, POLs, B/N, and others, resulting from C4 R&D and production, that were flushed down the lab sinks counter to laboratory best practices, going back forever.
- Mr. Brian Charnik (Eatontown SA & MRSA) reported a seemingly strange situation: i.e., Fort Monmouth complained that their sewage treatment fees were significantly higher after the base closure than before. His organization cited higher flow of effluent & concluded that surface and groundwater had infiltrated the infrastructure from corroded FM sewage pipes. He suggested conversely, that the same widespread corrosion of pipes could contribute the high levels of contaminants into the environment in groundwater, soils, and possibly surface waters.
- In the past, the Army the sewage pipeline was analyzed for only one toxin, Mercury (Phase 2 ECP, Section 3.22 Sanitary Sewer System). During the review of that document in 2007, I raised the concern that none of those other contaminants that were known to be originating from the CWA labs were tested in the sewage infrastructure. Without proof, I was told that there were none.
- It is likely that those same heavy metals not only made their way into the sewage infrastructure as effluent but also gravitated into the sludge that was a byproduct of the STP. As we know from Phase 1 ECP, IRP, & IAP that the STPs' sludge was delivered not only to the golf course but to every landfill on the base (IAP pg. 57, FTMM-27: *"The chlorinated effluent was discharged to a tributary of Wampum Brook on the east side of Hope Road. According to the IA and DPW employees, sludge was transported to the Charles Wood golf course and to landfills."*--which serves as another source of those contaminants of CW-6 as well as near and at the 9 landfill sites.

Metallurgical Industries

Responsibility

Army has indicated in their ECP1, ECP2, IRP and BEE documents that responsibility for Wampum Brook & Lake contamination on Metallurgical Industries and other sources. EPA records show that none of MI's pollution has been put into the groundwater or water bodies that feed Wampum. The only contaminant in common with Fort Monmouth is Chromium which was put into the NMRSA sewer lines identified in the charts below. While MI is a polluter, we could not find them guilty of this contamination.

Publicly Owned Treatment Works (POTW) that Chemicals were Transferred to:		
Chemical Name	Year	POTW Name and Address
CHROMIUM	1987	NORTHEAST MONMOUTH REGIONAL, SEWER AUTHORITY 1 HIGHLAND AVE MONMOUTH BEACH, NJ 07790
HYDROCHLORIC ACID (1995 AND AFTER "ACID AEROSOLS" ONLY)	1987	NORTHEAST MONMOUTH REGIONAL, SEWER AUTHORITY 1 HIGHLAND AVE. MONMOUTH BEACH, NJ 07709
NITRIC ACID	1987	NORTHEAST MONMOUTH REGIONAL, SEWER AUTHORITY 1 HIGHLAND AVE MONMOUTH BEACH, NJ 07790
SODIUM HYDROXIDE (SOLUTION)	1987	NORTHEAST MONMOUTH REGIONAL, SEWER AUTHORITY 1 HIGHLAND AVE MONMOUTH BEACH, NJ 07790

Transfer of Chemicals to Publicly Owned Treatment Works (POTW):			
Chemical Name	Year	Unit Of Measure	Total Transfer Amount
CHROMIUM	1987	Pounds	21

Names and Amounts of Chemicals Released to the Environment by Year.				
Chemical Name	Media	Unit Of Measure	1988	1987
HYDROCHLORIC ACID (TRI Chemical ID: 007647010)	AIR STACK	Pounds	NR	250
NITRIC ACID (TRI Chemical ID: 007697372)	AIR STACK	Pounds	NR	750

NR - signifies nothing reported

Other Types of Contaminants & Methods of Discharge by Metallurgical
Discharge of Chemicals into Streams or Bodies of Water: <i>No releases of chemicals into streams or bodies of water reported by this facility. Rows with Release Amount equal to "0" were not listed.</i>
Transfer of Chemicals to Off-Site Locations other than POTWs: <i>No Transfer of Chemicals to Off-Site Locations other than POTWs.</i>
Summary of Waste Management Activities <i>This facility did not report any waste management activities for non Dioxin-like Compounds.</i>
Summary of Waste Management Activities for Dioxin and Dioxin-like Compounds <i>This facility did not report any waste management activities for Dioxin and Dioxin-like Compounds.</i>
Chemicals Under Waste Management: <i>This facility did not report any chemicals as being treated, recycled, or used in energy recovery.</i>

Search For Other Sources of Contaminants

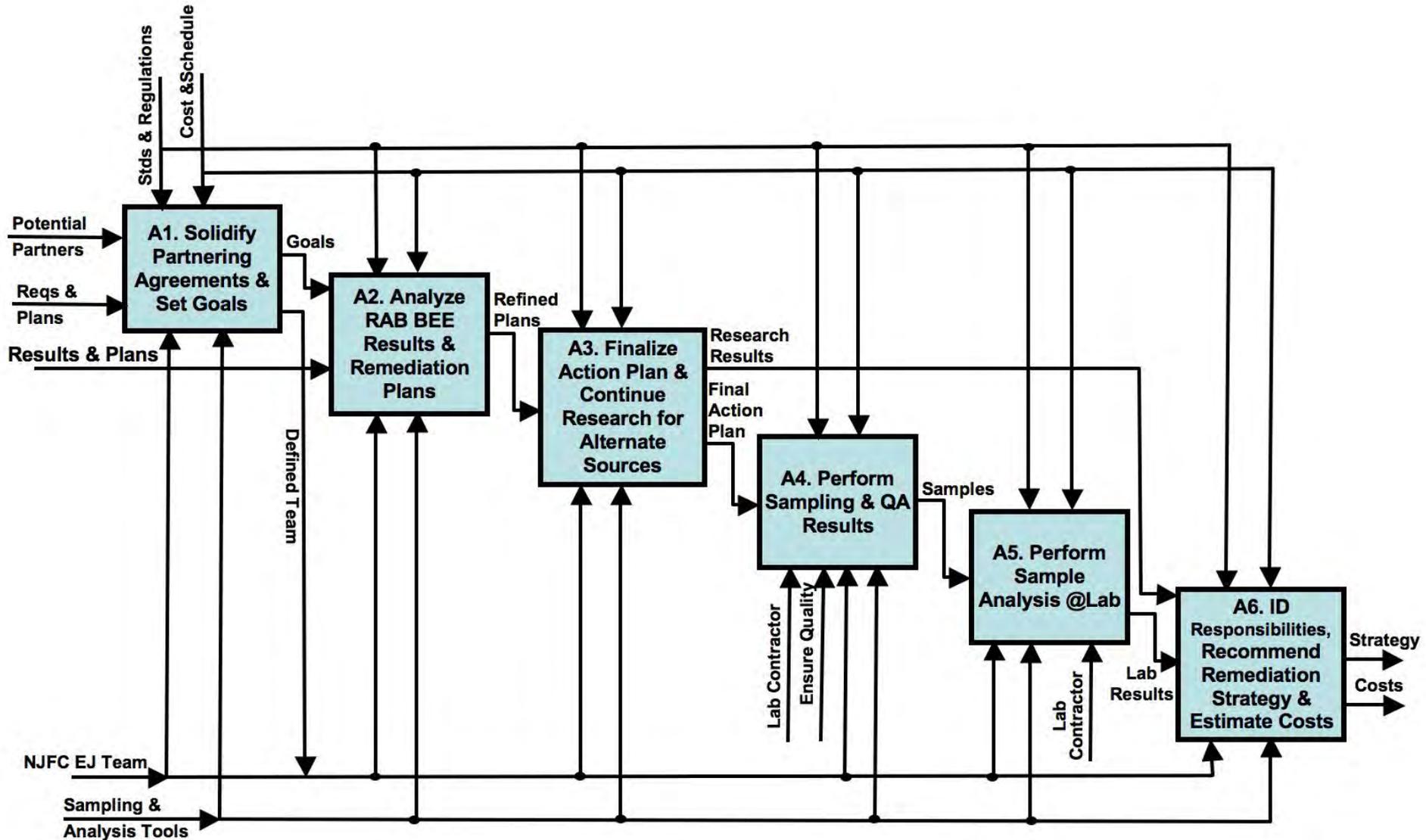
- Providing little if any detail, as shown by the previous Metallurgical Industries example, the Army has claimed that all the contaminants in Wampum Lake have come from sources outside of Fort Monmouth. We've researched the Army's other claims & found no correlation.
- The EEC felt that it was better to be proactive in finding other potential sources of the Lake's contaminants than to be told of another & lose credibility.
- The research has been more of a paper chase than a field investigation. EEC has been doing rigorous research into Eatontown's tax records to see if there is a company, past or present, that could be the source of a migration of the toxins from an upgradient location.
- The EEC started what might be called an outward spiral approach starting from the city block 401 that surrounds Wampum Lake & moving upgradient & outward to the surrounding blocks. We found a sheetmetal shop to the southwest and were able to ask about their process & materials and were able to eliminate as suspect. We plan to continue these lines of inquiry & other suggestions in our quest to be fair & open
- We plan to revisit EEC's own Parker Subwatershed Survey & its Wampum source for outfalls, seaps, and other tell-tale features.

Additional Testing Needed

- Past Efforts Have Been Superficial at Best. ECP2 Has Pointed to Contaminants in the Streambed Sediment to Include: Heavy Metals, B/Ns, and Arsenic, Chromium, & Copper and in Sediments of Wampum Brook in CWA
- 1990 Testing of Wampum Lake Shows High Correlation Between the Surface and Sediment Contaminants of the Lake and the Sources of those Contaminants of Concern Identified in the Charles Wood Area
- 1990 MCHD Was Limited to 13 Standard Metals Across 20 MC Lakes. As List of CWA Metals Attest, There Are 8 Additional Untested. Additional Contaminants Are Lurking Untested, Maybe Even Non-Fort Monmouth Sourced.
- No Significant Sediment Testing, Including Biota, Upstream.
- **Have Yet to Discover Viable Alternative Source of Metals in Eatontown Borough**
- **The BEE has not considered Wampum Lake environs or the wetlands of Suneagles Golf Course as receptors of contaminants as other off-base parcels.**

Investigative Study & Remediation Plan

Grant Money For the Study Available From EPA, DOI, NJDEP, NJDCA, FMERA, ICMA, NJLM, Foundations, etc.



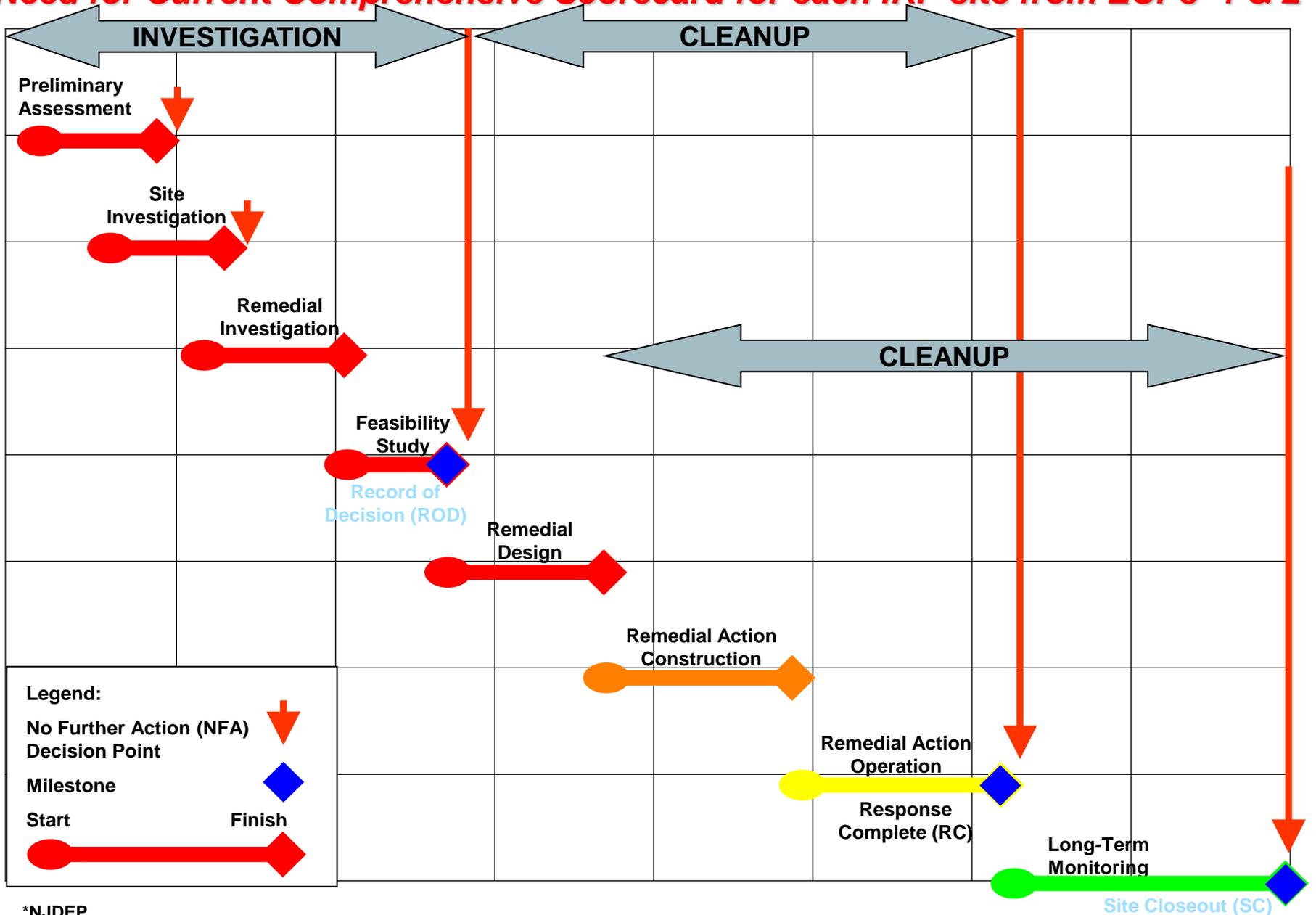
Charles Wood Area

Proposed New Sediment Sample Test Locations



Site Remediation Process Phases*

Need for Current Comprehensive Scorecard for each IRP site from ECPs 1 & 2



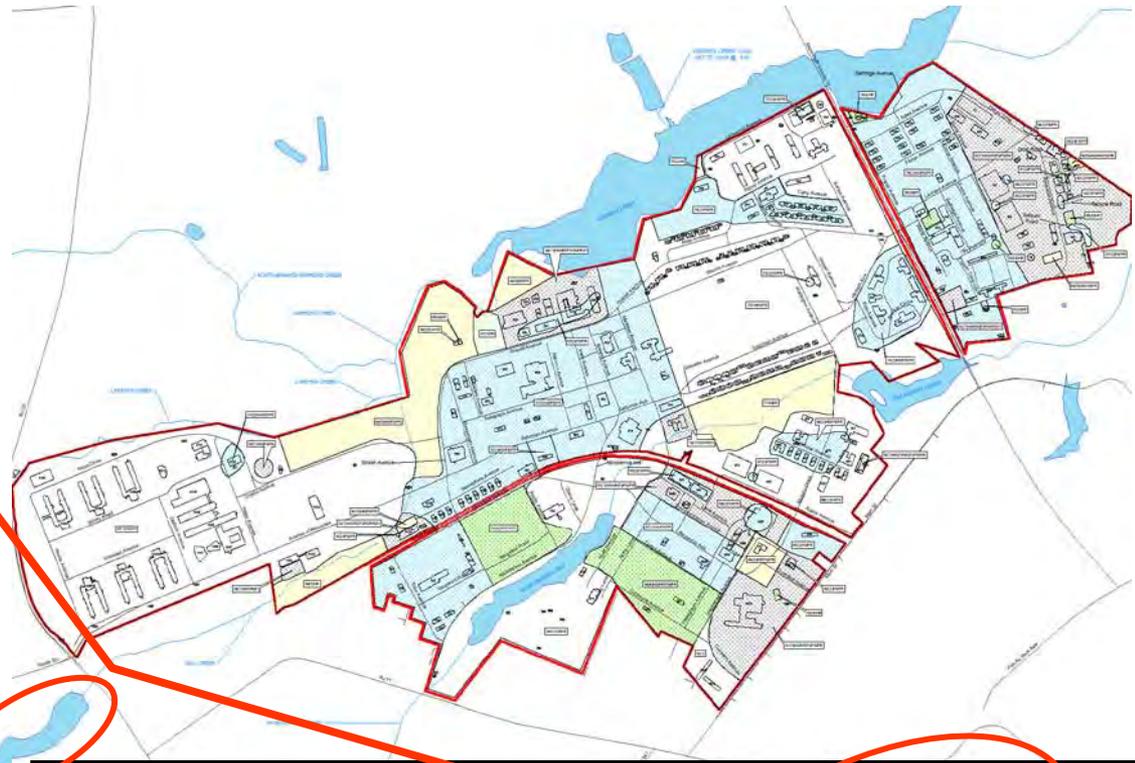
Place Responsibility on Polluters Whomever They Might Be

- **Don't Assume or Be Blindly Tied to a Position**
- **Using Scientific "Forensic" Methodologies,
Identify All Responsible Parties:**
 - **Fort Monmouth**
 - **Any Others**
- **When Proven, Demand Compensation for
Remediation Costs.**
- **We've Got No More to Lose.**

Impacts Outside of Ft. Monmouth

Downstream Repositories: Legacy of 80 Years of Contamination

- Wampum Lake
- Wampum/Mill Brook
- Parker Creek
- Oceanport Creek
- Shrewsbury River
- Sandy Hook Bay



Contact Info

Edward Dlugosz

Chairman, Eatontown Environmental Commission (EEC)

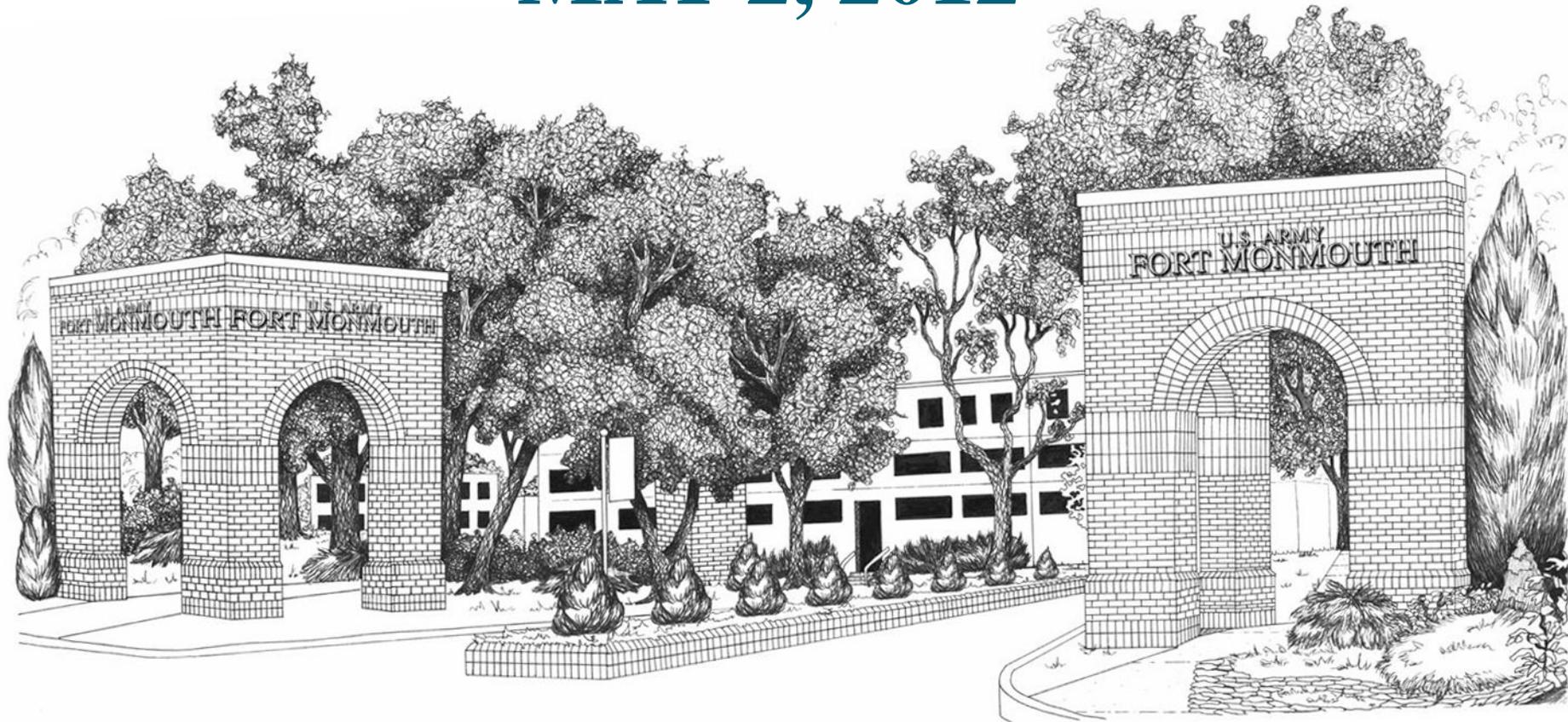
Former Chairman, Restoration Advisory Board (RAB)

Member FMERA Environmental Advisory Committee

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U.S. ARMY FORT MONMOUTH RAB TOUR AND TERRAIN WALK MAY 2, 2012



Tour of Main Post and Charles Wood Area IRP Sites

- All IRP sites are well maintained
- The Stream Bank Stabilization is still structurally sound at each landfill



Followed Southern and Northern Tributaries Leading to Wampum Lake

- **Former STP was located in building 2566 current site**
- **During the STP operation, the discharge created a stream leading to the southern tributary to Wampum Lake**
- **STP was closed in 1975. The stream area is now a ditch that has flowing water during a heavy rain event.**
- **A drainage ditch north of building 2567 connects with the ditch that led from the STP site.**



Followed the Southern Tributary Leading to Wampum



- The drainage ditch created a stream that started the southern tributary to Wampum Lake.
- The RAB members followed the water flow under Hope Road and across the street.
- The water flows through the woods adjacent to the golf course and then along the NJ Transit railroad tracks.
- The southern tributary ended, approximately $\frac{3}{4}$ of the way between Hope Road and Maxwell Road.
- During a heavy rain event, the water would flow further.

Followed the Southern Tributary Leading to Wampum



- Southern tributary ends before Maxwell Road

Followed Southern and Northern Tributaries Leading to Wampum Lake

- **The northern tributary begins in CWA and flows under Maxwell Road**
- **The water flows behind Fiore Paving Company**
- **The water then flows along the NJ Transit railroad tracks and ends before Wampum**
- **During a rain event, the water may continue to the lake**



Observations Made During the Terrain Walk

- Coal slag found along the NJ railroad line



Observations Made During the Terrain Walk



- Stream coming from Metallurgical area, and flowing behind Pinebrook housing

Observations Made During the Terrain Walk

- Railroad storage area with rusting rails, next to NJ rail line
- Railroad storage ends at Maxwell Road
- The stream coming from the Metallurgical property, flows behind the railroad storage area.



Observations Made During the Terrain Walk

- **The stream originating from Hwy 36, Rte 18, behind Appleby's, flows along the former Metallurgical property.**
- **Metallurgical property is a Superfund site, currently operated by the state with over 20 monitoring wells.**
- **The stream flows from the Metallurgical property under Pinebrook Road**
- **The stream then flows behind Pinebrook Housing, on the opposite side of the southern tributary coming from CWA.**
- **The stream then flows behind the railroad storage yard**



Observations Made During the Terrain Walk



- **The stream then flows under Maxwell Road**
- **The stream flows behind the Eatontown DPW Recycling Center, between the piles of material being stored by**
- **The stream continues behind local industry , to include a metal fabrication company.**

Observations Made During the Terrain Walk



- Piles along Maxwell Road, next to the NJ railroad line

Observations Made During the Terrain Walk



- **The dead end road that is adjacent to Wampum Lake has a large mound of dirt mixed with debris.**



Observations Made During the Terrain Walk

- Due to rain and slippery conditions, the RAB members were unable to walk through the woods to observe the area where there is a suspect undocumented landfill within 15 of Wampum Lake.
- A RAB member has take photos of the area.



Suspect Undocumented Landfill Near Wampum Lake



Suspect Undocumented Landfill Near Wampum Lake

