



RESPONSE TO TASC REVIEW ON PERCHLORATE, LEAD & BENZENE

Presented by Anne Pavelka,
NJDEP – 11/2/11





BACKGROUND

- Ground water sampling has been conducted at the DuPont site since 1981
- The early data analysis included the Priority Pollutant List for VOCs, SVOCs, metals, and PCBs
- Based on this data the 1995 Comprehensive Monitoring Plan was developed. The contaminants of concern were reduced from 312 contaminants to 11 contaminants (10 VOCs and lead)
- The TASC report reviewed the 1995 report as well as 8 other documents. In the conclusions the reviewer suggested additional ground water evaluation for contaminants where the GWQS had changed since 1995. These compounds include lead, selenium, arsenic, antimony, dibromochloromethane, bis(2-ethylhexyl)phthalate, and indeno(1,2,3-c,d)pyrene.
- The TASC report also suggested that the ground water be monitored for benzene, perchlorate and explosives (i.e. PETN, RDX, TNT, TETRYL, and HMX)
- This presentation will address perchlorate, lead and benzene. Other contaminants will be addressed in the future





PERCHLORATE

- TASC Statement: “The June 2010 EMA remedial investigation report states that potassium perchlorate was processed at the site in building FA-1250, near AOC 187, and may have been stored at AOC 156 (ingredient storage) (pp. 38, 43). However, the 1995 CGMP does not indicate that any ground water samples were tested for perchlorate. Perchlorate is an emerging contaminant of concern. EPA announced in February 2011 that it will regulate perchlorate under the Safe Drinking Water Act. Currently, EPA recommends using the Interim Health Advisory level of 15 µg/L as a preliminary remediation goal.⁵ **TASC recommends that the community ask NJDEP to consider testing ground water for perchlorate. ”**





PERCHLORATE

- Perchlorate is both a naturally occurring and manmade contaminant increasingly found in groundwater, surface water and soil. It is not a volatile organic compound. Most perchlorate manufactured in the U.S. is used as an ingredient in solid fuel for rockets and missiles. In addition, perchlorate-based chemicals are also used in the construction of highway safety flares, fireworks, pyrotechnics, explosives, common batteries, and automobile restraint systems.

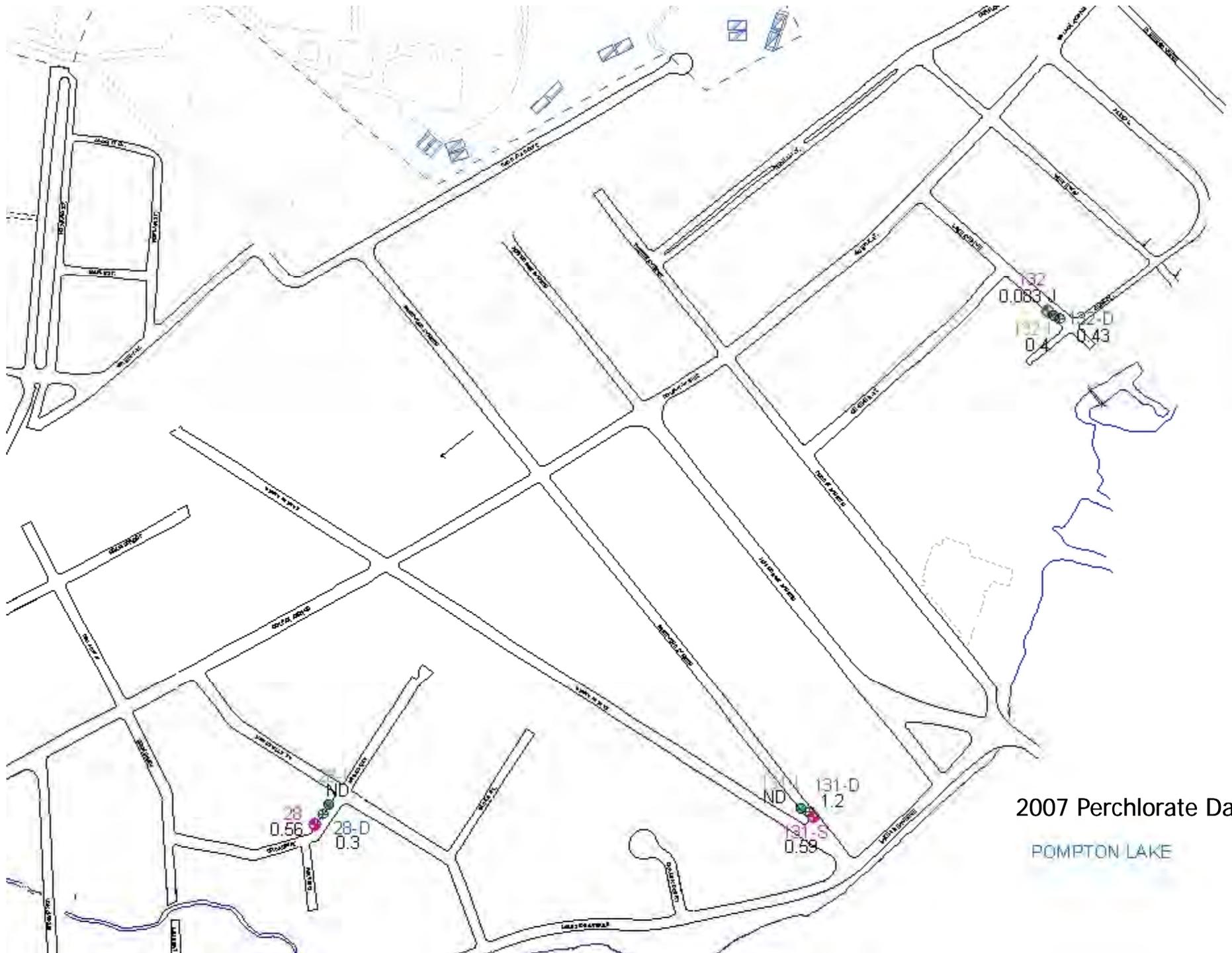




PERCHLORATE

- In 2007 Perchlorate was added to the NJDEP Hazardous Substance List
- In 2007 DuPont collected 9 off-site samples for perchlorate in the plume area
- NJDEP Health-Based Interim Specific Ground Water Quality Criteria of 5 ppb
- Highest concentration found is 1.2 ppb in well 131D





2007 Perchlorate Data

POMPTON LAKE



PERCHLORATE CONCLUSIONS

- 2007 ground water sampling event did not detect perchlorate above the NJDEP Health-Based Interim Specific Ground Water Quality Criteria of 5 ppb in the off-site wells sampled
- DuPont will be required to do additional on-site ground water sampling for perchlorate
- Perchlorate is not a volatile organic compound and thus is not an inhalation risk.





LEAD

- TASC stated that “In 2000, five wells (including two off-site wells) were above the new standard of 5 $\mu\text{g}/\text{L}$ ”.
- TASC recommends that the community request that NJDEP review currently available data to evaluate whether monitoring should resume for any of the contaminants that have been removed from monitoring, based on new, more stringent Class II-A standards. In particular, it may be prudent to resume monitoring for lead.





LEAD - NJDEP REGULATORY STANDARDS

- Drinking Water Standard – 15 ppb
- Ground Water Quality Standard – 5 ppb
- Surface Water Quality Standard
 - Human Health – 5 ppb
 - Ecological – based on water hardness during sampling – range 1.04-1.46 ppb during DuPont sampling





LEAD – SURFACE WATER SAMPLING

- 1998 Ecological Risk Assessment
- Three surface water samples from Acid Brook and two from Pompton Lake at the Delta
- Results were less than 1 ppb
- No surface water impact





LEAD – Air Stripper Influent and Effluent Sampling

- From August, 1998 to August, 2011, 645 monthly influent and effluent samples collected for the air stripper
- No results above 5 ppb
- No significant levels of lead are being captured by the pump and treat system





LEAD – GROUND WATER SAMPLES

- From 2000-2003 DuPont sampled lead as part of the Comprehensive Ground Water Monitoring Program
- 223 samples collected and analyzed for lead both on- site and off-site





Wells Sampled for Lead

POMPTON LAKE



LEAD – GROUND WATER RESULTS 2000-2003

- On Site Wells > 5 ppb lead
- MW 20 - EMA (north) – 117 ppb, 332 ppb
 - 3700 feet from southern plant boundary
 - installed in waste pile
- MW 13 – EMA (mid) – 8.8 ppb
 - 1600 feet from southern plant boundary
- MW 105A-I – EMA (south) – 5.1 ppb
- MW 107-D – EMA (south) – 7.4 ppb





LEAD – GROUND WATER RESULTS 2000-2003

- Off-Site Well > 5 ppb lead
- MW 28 – I - 5.7 ppb
- MW 128 – 6.7 ppb
- MW 128-I - 6.5 ppb, 7.6 ppb
- MW 137 – I – 5.4 ppb





LEAD - CONCLUSIONS

- No routine monitoring of lead is necessary for the following reasons:
- No surface water impacts
- Lead below 5 ppb in influent and effluent samples from air stripper
- Sporadic ground water results above 5 ppb GWQS, except in EMA (north) in the Waste Pile
- All ground water results, except in the waste pile, below the NJ Drinking Water Standards of 15 ppb





LEAD - CONCLUSIONS

- No one is drinking the water in the off-site plume
- Not an inhalation risk
- A CEA was established for lead in the EMA (north) in the area of the waste pile including MW-20





BENZENE

- TASC state, "The 1995 report shows that benzene was detected above its standard in off-site well 138. Also, Table 22 of the report shows that many of the samples in which benzene was not detected have detection limits above the standard, so it is possible that benzene was present in these samples above its standard even though it was not detected. Suggest considering continued monitoring for benzene unless it can be shown that it is not due to site activities. "





BENZENE

- Benzene is formed from both natural processes and human activities. Natural sources of benzene include volcanoes and forest fires. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke.
- Some industries use benzene to make other chemicals that are used to make plastics, resins, and nylon and synthetic fibers. Benzene is also used to make some types of lubricants, rubbers, dyes, detergents, drugs, and pesticides.
- In and around the home benzene is found in automobile exhausts, gasoline, cigarette smoke, scatter rugs, carpet and glue.





BENZENE

- Ground Water Quality Standard is 1 ppb
- NJ Drinking Water Standard is 1 ppb
- 941 ground water samples were collected and analyzed for benzene from 1989 - 2009 in both on and off-site wells
- TASC did not evaluate all the ground water data





BENZENE – 1989 to 1994

- For most samples the reporting limit was 5 ppb
- 708 samples were collected for benzene
- Benzene Detections
 - MW 7 – 1[J] ppb - 1991
 - MW 138D – 1.2 [J] ppb – 1991
 - MW 126I – 2.8[J] ppb - 1992
 - MW 125D – 1.1 [J] ppb - 1993





BENZENE – 1995- 2002

- Reporting Limit was 1.2 ppb
- 46 samples were collected for benzene
- Benzene Detections
 - MW 107D – 1.3[J] ppb – 1995
 - MW 61- 1[J] ppb, 1[J] ppb – 1996





BENZENE – 2003 to 2009

- Reporting Limit was < 1 ppb
- 50 samples were collected for benzene
- Benzene Detections
 - MW – 131D - 0.7 ppb - 2009
 - MW – 105A-I - 0.7J ppb - 2009





BENZENE – MW 138D

- MW 138 in TASC report is really 138D
- In 1991 benzene was estimated at 1.2 [J] ppb
- Two samples were analyzed for benzene in 1992 and one in 1994 in MW 138D. All three results were nondetect.
- MW 138D is a deep well and not a vapor issue





BENZENE - CONCLUSIONS

- No benzene source areas on site
- 9 detections of benzene in 941 samples over 22 years
- All results below 3 ppb – Not significant
- Split GW Samples collected for benzene in 2009 for 15 on- site and off-site wells – No detections above GWQS
- Does not indicate a benzene plume
- Benzene is not an issue in the GW

