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House Bill 1484 – SUPPORT

Environmental Permits - Requirements for Public Participation and Impact and Burden Analyses

(Cumulative Harms to Environmental Restoration For Improving Shared Health - CHERISH Our Communities Act)

House Environment and Transportation Committee

Below is a perfect example of a proposed project that has a high likelihood of impacting public health and safety. Little thought has been given by the Maryland Port Authority to the potential negative impact of such a major project on the surrounding area. The MPA have stated in meetings that the public will have the "opportunity to comment in the Permit Process". If that is the only opportunity to voice the negative impact of such an undertaking then the reviewing agency must expand their review and give greater consideration to potential negative impacts.

The MPA's process to analyze the impact of a major dredging operation titled Contained Aquatic Disposal (CAD) has consisted of a 3-point scoring system of a -1, 0 or +1. The utter ridiculousness of such an approach would result in the dumping of radioactive waste being only a -1. When such utter disregard for negative impacts is built into the decision-making process then the permit reviewing agency MUST be tasked with a thorough review of immediate, future and long-term results.
I therefore support this bill 1484.

David Copley AIA

Following is my analysis on potential impact to both AA County public water systems and private wells in the Pasadena area of the proposed CAD dredging operation just off shore in the Patapsco River bottom.

Source: AA County Water & Sewer Master plan 2022:

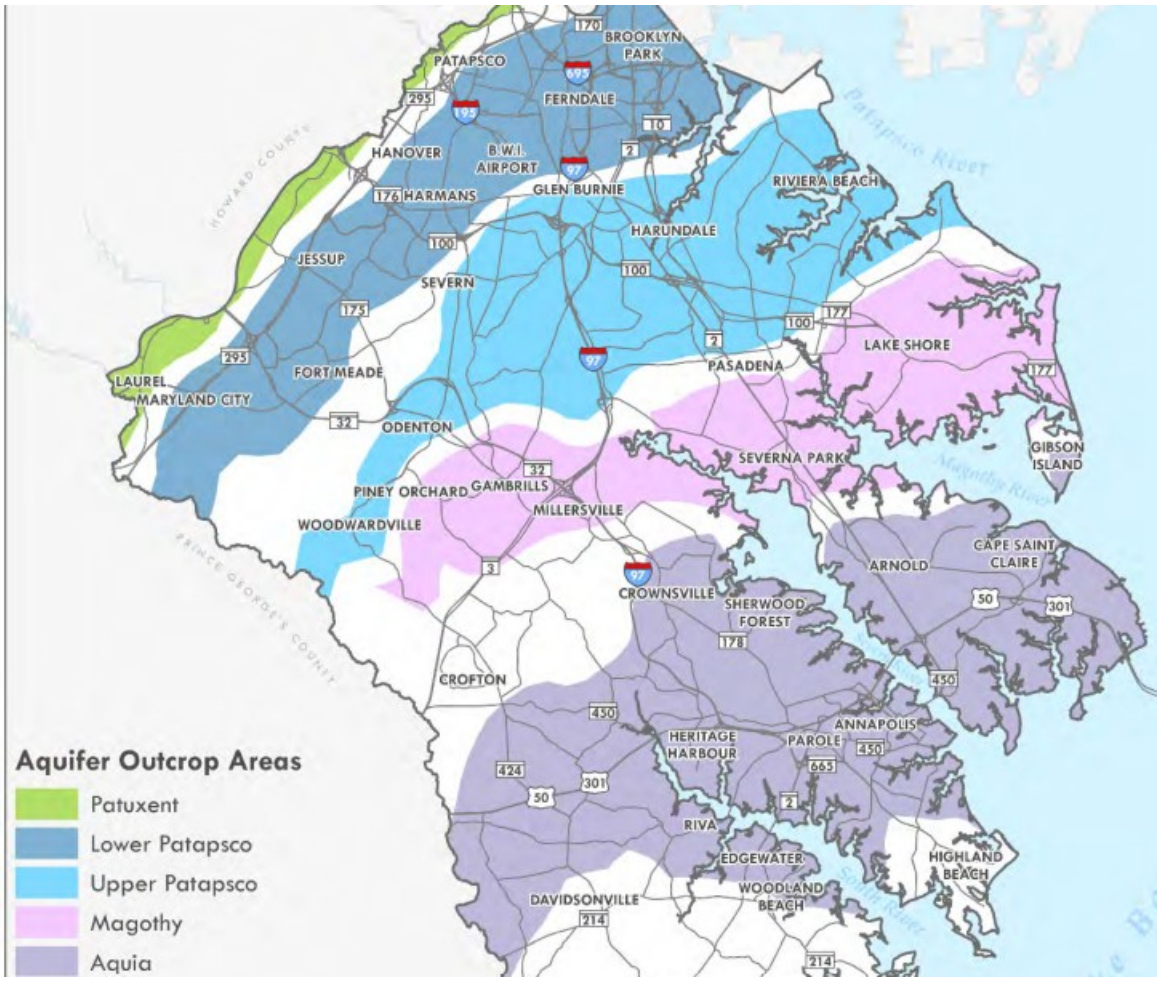
This effort was triggered by a relatively new community member voicing concerns to me on impacts to our wells and drinking water of the Maryland Port Authority (MPA) plan to dig a 90 foot deep 20-acre hole in the bottom of the Patapsco and dump channel dredged material there. MPA refers to this as Confined Aquatic Disposal (CAD).

Information about AA County's aquifers can be found in AA Co DPW's Master Water & Sewer Plan: Water-And-Sewer-Master-Plan-2022-Council-Approved.pdf Also, the MGS has some good data: Aquifers in Maryland

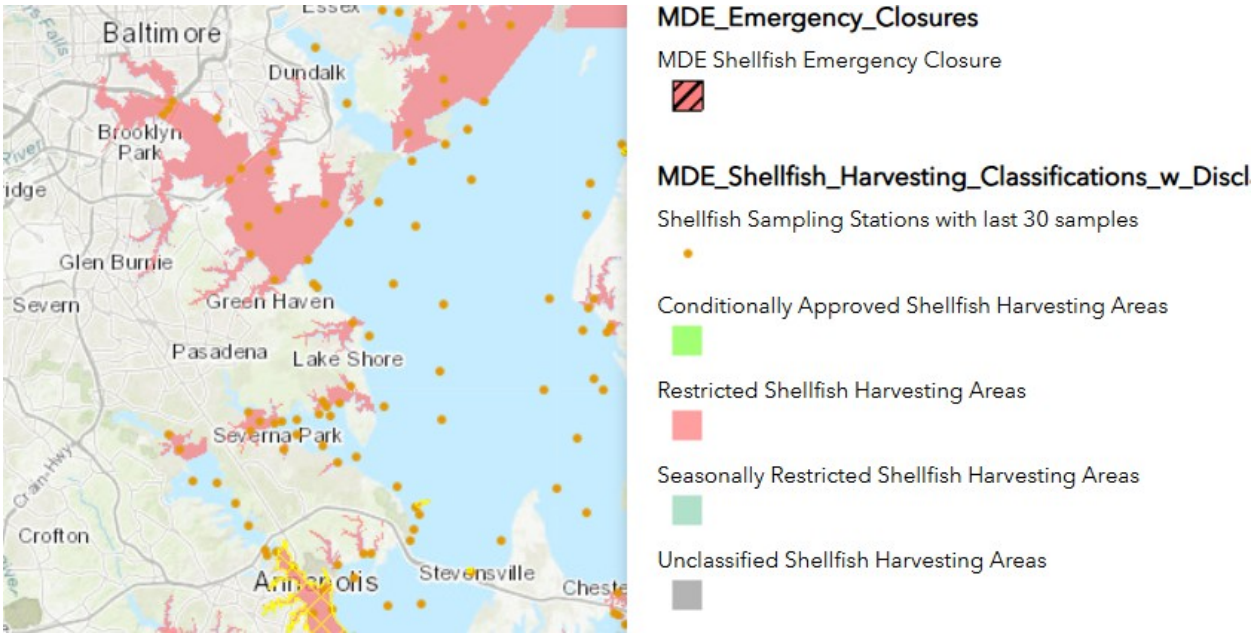
My review of pertinent information follows with my analysis and conclusions/warnings at the end:

Following extracted from AA County Water And Sewer Master Plan (in quotes) along with my comments:

"1.1.2 Goal NE5: Ensure the safe and adequate supply of groundwater resources and wastewater treatment services for current and future generations."
2.5 Aquifer outcrop area for "Upper Patapsco" is in immediate area of proposed CAD cell.
"Abandoned or improperly constructed wells are a source of contamination for Aquifers."
It is hardly a stretch to imagine digging into a sand layer in a 20-acre site would then allow contaminants to enter the Aquifer if just a drilled well is considered a source of contamination.
Page 56:
"The results of the study produced the following:
a. An aquifer vulnerability map depicting four (4) qualitative degrees of aquifer vulnerability to potential contamination,
b. A set of maps depicting a 1-year, 10-year and 20-year zone of transport along with the zones of contribution (recharge), and
c. A written report detailing methodology and findings. The major findings indicated:
a. The overall water quality of the Lower Patapsco aquifers is good, although some contaminants have been determined at several sites.
b. The water produced from the aquifer in 1991 was water that entered the ground after 1945.
c. Particle tracking from known contaminant sites posed no threats to the production wells currently in use, as most contamination sites are down-gradient of the production wells. Releases from contamination sites up-gradient of the Glendale and Sawmill wells would, without remediation, pose a threat; however, the Sawmill wells have been abandoned, and the Glendale wells are out of service and are in design for decommissioning and well abandonment.
d. Particle tracking indicated that the time for groundwater to flow from land surface to the wellhead at the 1990 extraction appropriation rates range from less than 10 years to as long as 60 years, depending on the location of the well."


Aquifer Outcrop Areas
Patuxent
Lower Patapsco
Upper Patapsco
Magothy
Aquia
BROOKLYN PARK
PATAPSCO
FERNDALE
HANOVER
B.W.I. AIRPORT
GLEN BURNIE
HARMANS
RIVIERA BEACH
HARUNDALE
JESSUP
SEVERN
PASADENA
LAKE SHORE
LAUREL
MARYLAND CITY
FORT MEADE
ODENTON
SEVERNA PARK
GIBSON ISLAND
PINEY ORCHARD
GAMBRILLS
MILLERSVILLE
WOODWARDVILLE
ARNOLD
CAPE SAINT CLAIRE
CROWNSVILLE
SHERWOOD FOREST
CROFTON
ANNAPOLIS
HERITAGE HARBOUR
PAROLE
RIVA
EDGEWATER
HIGHLAND BEACH
WOODLAND BEACH
DAVIDSONVILLE
Patapsco River
Magothy River
South River
HOWARD COUNTY
PRINCE GEORGE'S COUNTY

Area of CAD is already a Restricted Shellfish Harvesting Area.
See following illustration:



Water & Sewer Masterplan:
"Part 3.3 Hydrology of Anne Arundel County. Anne Arundel County is underlain by a wedge-shaped mass of stratified unconsolidated sedimentary deposits, the Coastal Plain sediments, which dip and thicken to the southeast. The wedge thickens from about 50 feet in the northwestern part of the County to as much as 1,800 feet below ground level in the southeastern part of the County. It consists of layers of sand, silt, clay, and gravel and overlies much older consolidated bedrock, which has little or no water supply potential for the County. The water-bearing aquifers, which overlay bedrock, are from oldest to youngest, the Patuxent, Lower Patapsco, Upper Patapsco, Magothy and Aquia. The four deepest aquifers are the sources of water supply for most of Anne Arundel County.

3.9.3 Northern Anne Arundel County - Elevated Radium New and replacement wells in Northern Anne Arundel County are required to be installed to a minimum well depth and meet gross alpha and Radium 226 / 228 drinking water standards. The region within which wells are tested by the County for these parameters is shown in Figure 3-4. A minimum well depth is determined by the Department of Health and is based on an aquifer with acceptable radionuclide concentrations. A computer model showing the distribution of radionuclide data, well depths, property elevations, and deep test wells is used to determine the minimum well depth requirements. Owners of existing private wells are encouraged to test for gross alpha particles. Where levels are found above the drinking water standards, a water treatment unit or a replacement well in a deeper aquifer is recommended. See Section 3.5.3.1.11 for more details on ongoing capital projects to reduce elevated radium in three SCWs in the Glen Burnie area."

My thoughts based on the Master Plan and local knowledge regarding MPA proposed CAD Pilot:

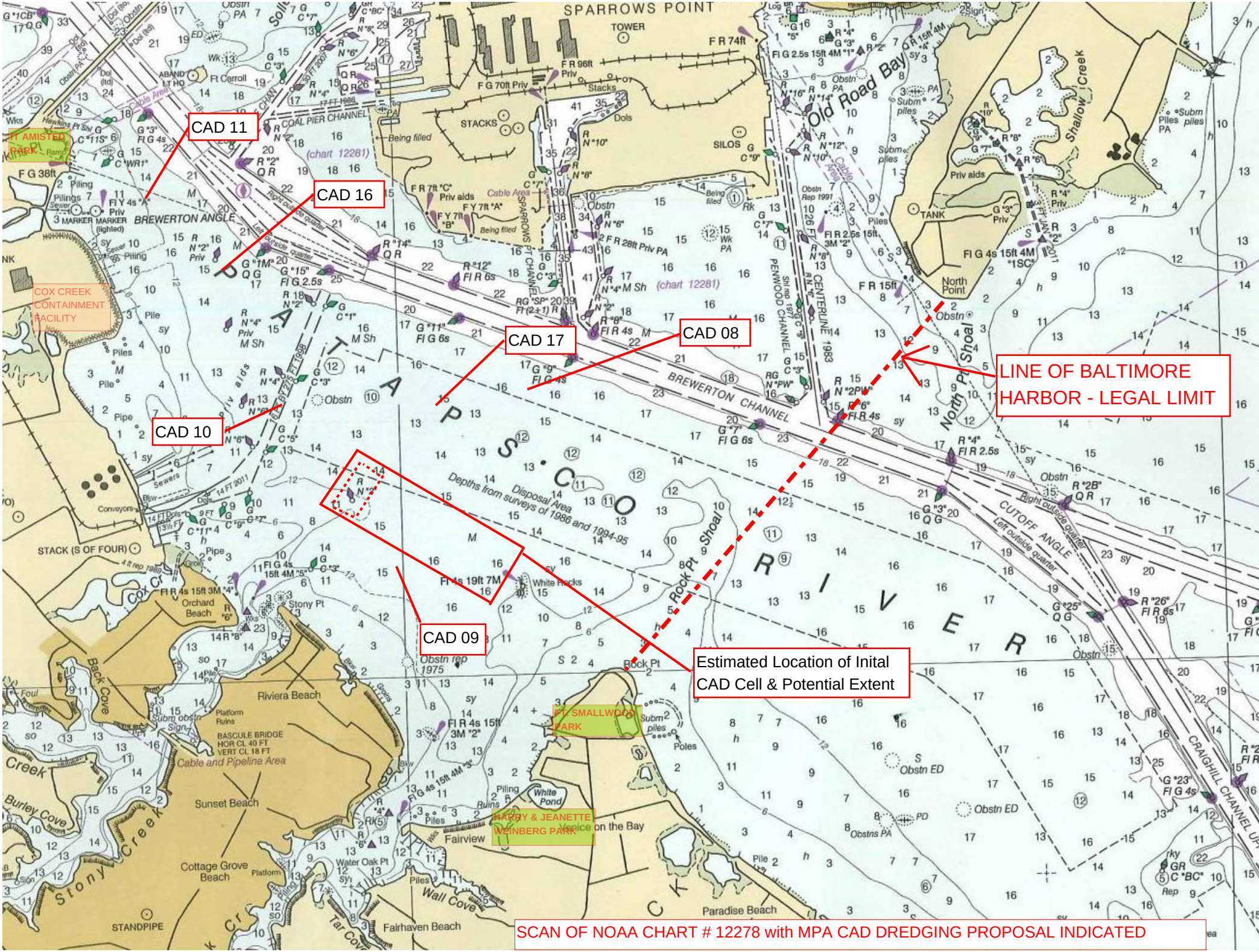
The proposed CAD location, size, and 90-foot depth potentially could lead to the Upper Patapsco Aquifer recharge area being exposed to any contaminants in the dumped dredge material and intrusion of river water. The maps clearly indicate the recharge area along the shoreline (limited to extent of Master Plan) and CAD exploration borings have indicated sand and gravel in that location. Logically the recharge area extends beyond the shoreline into the CAD area. Presently the river bottom is in a natural state and sand is covered by 6' to 8' of what could be considered topsoil if it was dry land. The excavation of the river bottom area to receive the dumped channel dredge material will create a significant sloping side surface of the aquifer's sand bed exposing it to a much increased level of exposure than occurs naturally. This CAD dredging is significant as the 50-foot shipping channel only required dredging 35' +/-. The depth of this excavation will be 16' water depth + 90' or 106'. Assuming the angle of repose of the sand is 30 degrees we end up with an excavation in plan 52' greater than the size of the planned size of bottom of the hole. The exposed side of the aquifer recharge sand face (hypotenuse) will be 100'+/-. Multiply this 100' by the length of the CAD cell (100s of yards) and we are not even in the same universe of potential negative impact to the aquifer of that caused by one well (as mentioned in the Master Plan). We all know water pressure increases with depth. In my opinion that could lead to a faster penetration of whatever is contained in the dumped material as well as brackish river water into the aquifer. This aquifer is being drawn down which could lead more rapid penetration into the active water supply than might be anticipated.

The Upper Patapsco Aquifer presently serves the rural area of Pasadena as well as county wells in the public water system. The rural area is NOT projected to receive extensions/connections to the county water system. Solutions for these rural area residents (should contaminant intrusion occur) would be to drill a deeper well and install a costly water treatment system to deal with the water quality (high levels of iron) in the Magothy Aquifer. The cost to the homeowner is in the tens of thousands of dollars.

In conclusion, the CAD Pilot should be dismissed on this potential to impact drinking water supplies alone. Let alone other negative impacts such as the known loss of biologics in this 20-acre site and repeated generation of turbidity negating the goals of the Critical Area Commission laws. The turbidity issue is significant as the dumped dredge material is dropped through a water column of up to 100'. The 20-acre CAD operation could be replicated 10 times before the buildout of the full 220-acre CAD area MPA identified is reached. As the CAD Pilot is potentially only the first of multiple year expansions, the extent of negative impact to the water source could indeed be expanded for years before the hazards showed up in wells. At that point the impact of the failed experiment would be with us forever.

Remember, fracking was "no impact" until wells in the vicinity started to release gas which was concentrated enough to sustain a flame and additional increases in earthquakes were documented in multiple other locations.

To aid in visualization of the issue, following is a NOAA chart with some information provided by MPA added.


CAD 11
CAD 16
CAD 17
CAD 08
CAD 10
CAD 09
LINE OF BALTIMORE HARBOR - LEGAL LIMIT
Estimated Location of Inital CAD Cell & Potential Extent
SCAN OF NOAA CHART # 12278 with MPA CAD DREDGING PROPOSAL INDICATED
SPARROWS POINT
Old Road Bay
BREWERTON ANGLE
BREWERTON CHANNEL
COAL PIER CHANNEL
SPARROWS PT CHANNEL
PENWOOD CHANNEL
CENTERLINE 1983
North Pt Shoal
Rock Pt Shoal
CUTOFF ANGLE
Depths from surveys of 1986 and 1994-95 Disposal Area
COX CREEK CONTAINMENT FACILITY
FT AMISTED PARK
PT SMALLWOOD PARK
HARRY & JEANETTE WEINBERG PARK
Riviera Beach
Sunset Beach
Cottage Grove Beach
Fairview
Venice on the Bay
Paradise Beach
Fairhaven Beach
Orchard Beach
Stony Pt
Water Oak Pt
Wall Cove
Back Cove
Burley Cove
Stony Creek
Craighill Channel
Shallow Creek
North Point
TOWER
STACKS
SILOS
TANK
Ft Carroll
STACK (S OF FOUR)
STANDPIPE
BASCULE BRIDGE HOR CL 40 FT VERT CL 18 FT
Cable and Pipeline Area
Obstn rep 1975
White Rocks
White Pond
Platform Ruins
Being filled
Dolphins
Piles
Poles
Obstn ED
Obstns PA
Subm piles
Priv aids
Conveyors
Sewers
Pipe
Pile
Piling
Pilings
Foul
Rock Pt
Chart 12281