United States Army Corps of Engineers ATTN: CELRH-RD-N Public Notice No. LRH-2013-848-OHR 502 Eighth Street, Huntington, West Virginia 25701-2070 *Via email to Teresa Spagna, teresa.d.spagna@usace.army.mil* **RE:** Comments on Sect. 10 Permit Application #LRH-2013-848-OHR (GreenHunter Meigs County Docking Facility)

Dear Ms. Spagna:

I hereby submit my comments in strong and informed opposition to U.S. Army Corps of Engineers issuance of a permit to GreenHunter Water, LLC for construction and operation of a barge unloading and pipeline facility in Meigs County, Ohio, to deliver "bulk liquids" generated by hydraulic fracturing ("fracking") operations to upland facilities.

I. I request a public hearing and full Environmental Impact Statement

I request a public hearing and an Environmental Impact Statement (EIS) on this matter, owing to its significant, likely or certain and largely irremediable impacts, especially on public water supplies, water conservation, and air and water quality as well as on public safety and the needs and welfare of the people throughout the eleven-state region who would all be affected by impacts of the project. The unloading and storage of vast quantities of highly hazardous, highly flammable, explosive, toxic radioactive chemicals¹ on the Ohio River are a matter of extreme public interest. In addition to chemicals used in the drilling and fracking process, mercury and other heavy metals, high salinity (chloride at up to 196,000 mg/l), radioactivity (for example, EPA reports liquid Marcellus Shale waste to contain radium 226 at concentrations of up to 16,030 pCi/l; the MCl is 5 pCi/L), and hydrocarbons are at significant levels in frackwaste.². The project has no benefits to the region. Its reasonably foreseeable detriments are of great public consequence and must be considered in a public hearing and an EIS. As your Notice states,

The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity on the public interest. That decision will reflect the national concern for both the protection and the utilization of important resources. The benefit that reasonably may be expected [sic] to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors that may be relevant to the proposal will be considered, including the cumulative effects thereof; among those factors are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people. Requests for public hearings shall state, with particularity, the reasons for holding a public hearing. Any comments received will be considered by the Corps to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used

¹ See for example U.S. House of Representatives Committee on Energy and Commerce, Minority Staff, *Chemicals Used in Hydraulic Fracturing* (April 2011), identifying 750 chemicals used in hydraulic fracturing, including 29 chemicals that are known carcinogens, regulated under the Safe Drinking Water Act, or listed as Hazardous Air Pollutants; US General Accountability Office, *Information on the Quantity, Quality, and Management of Water Produced During Oil and Gas Production*, GAO-12-56, January 2012; PADEP "Permitting Strategy for High Total Dissolved Solids (TDS) Wastewater Discharges," April 11, 2009; Warner, N.R. et al, *Impacts of Shale Gas Wastewater Disposal on Water Quality in Western Pennsylvania*, Environ. Sci. Technol., 2013(47):11849–11857 (pubs.acs.org/doi/abs/10.1021/es402165b)

² New York State Department of Environmental Conservation, Revised Draft Supplemental Generic Environmental Impact Statement on the Oil, Gas, and Solution Mining Regulatory Program, Well Permit Issuance for Horizontal Drilling and High-Volume Hydraulic Fracturing to Develop the Marcellus Shale and other Low-Permeability Gas Reservoirs, September 2011, Table 5.9; Appendix 13; Marvin Resnikoff, Ph.D., Radioactive Waste Management Associates, "Comments on Marcellus Shale Development", October 2011; USEPA letter from Shawn M. Garvin, Regional Administrator to The Honorable Michael Krancer, Acting Secretary, PADEP, 3.7.11; US General Accountability Office, Information on the Quantity, Quality, and Management of Water Produced During Oil and Gas Production, GAO-12-56, January 2012.

in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act [NEPA]. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity. (Irh.usace.army.mil/Missions/Regulatory/PublicNotices/tabid/4125/Article/486509/Irh-2013-848-ohr.aspx) The public interest in this potentially devastating project clearly requires both a public hearing and a full Environmental Impact Statement. If approved, GreenHunter would be adding infrastructure to a large-scale river barge frack waste shipping scheme, the polluting effects of which will pose an immediate and dire threat to the Ohio River region in the form of possible to probable toxic radioactive frack waste spills and possibly catastrophic explosions with likely irremediable consequences for water and air quality, public health and safety, and ecosystems throughout the region. In addition, the cumulative environmental problems from the additional millions of barrels of frackwaste being introduced to the region around Meigs County will greatly exacerbate already significant groundwater and air pollution, negative economic impacts, and public health and safety risks. The affected public throughout the Ohio River region should be allowed to deliver facts and analysis to the Corps via a public hearing and analysis of a comprehensive EIS.

The project is significant due to its potentially devastating public health and safety impacts, and therefore an Environmental Impact Statement (EIS) is required. With roughly 105,000,000 gallons annually of frack waste to be offloaded, handled, stored at, and ultimately transported away from the Meigs County facility, that facility, alone, should be the object of an EIS to assess expected and unexpected air and water quality effects and probable impacts from expected and unexpected occurrences on public safety, local economies, public infrastructure, biota and ecosystems³, greenhouse gas emissions and climate change. The potential effects include spills and waste generated by the facility's normal operations; air pollution emissions, routine and non-routine; water contamination, routine and non-routine; air and sound effects of having vastly increased truck traffic on area highways to transport the wastes for land disposal; and potential routine and non-routine spill effects from trucking vast amounts of wastes on public roads. The accident potential from barge transport must be examined and analyzed; routine and non-routine toxic emissions must be accounted for. Due to increasing levels of recycling of frack fluids before disposal,⁴ which concentrates toxicity and increases radioactivity levels, frackwaste is becoming ever more lethal. The potential for catastrophe that can affect the drinking water of over three million downstream water users must be considered in a public hearing and an EIS.⁵ The Meigs County facility must also be cumulatively analyzed in an EIS in light of the larger disposal stream.

The Corps' own April 2014 EIS on the upper Ohio River⁶ states that the Corps "must assure that any recommended project is consistent with protection of the Nation's environment," with the ten Valued Environmental Components to be evaluated being Water and Sediment Quality, Fish, Mussels, Riparian/Floodplain Resources, Health and Safety, and Recreation, Air Quality, Transportation and

³ Souther, et al., *Biotic impacts of energy development from shale: research priorities and knowledge gaps*, **Front Ecol Environ** 2014; 12(6): 330–338: "Land application of wastewater has caused rapid, complete mortality of vegetation and 56% mortality of trees within 2 years (Adams 2011). Other research ...indicates that even low concentration of wastewater can alter species composition (DeWalle and Galeone 1990).

⁴ Maloney KO and Yoxtheimer DA. 2012. Production and disposal of waste materials from gas and oil extraction from the Marcellus Shale Play in Pennsylvania. *Environ Pract* **14**: 278–87.

⁵ See for example, R.E. Steacy (1961) "Time of Travel of Water in the Ohio River Pittsburgh to Cincinnati" regarding the potential for contamination issues that may impact potability of water supplies for millions of people (Geological Circular 439, US Department of Interior, Washington, DC).

⁶ <u>lrp.usace.army.mil/Portals/72/docs/HotProjects/Upper%20Ohio%20Navigation%20Study%20PA%20Draft%20Feasibility%20Report%20and%20Integra</u> ted%20EIS.pdf

Traffic, Socio-Economic Resources, and Cultural Resources. The April EIS also states the Corps' requirement to adhere to environmental sustainability, defined as "a synergistic process whereby environment and economic considerations are effectively balanced through the life cycle of project planning, design, construction, operation and maintenance to improve the quality of life for present and future generations." (p. 3-14)

The Corps' April EIS states furthermore: "Health and safety concerns are related to issues of worker health and safety, commercial and recreational boater safety, and general population health. Health and safety impacts can occur during construction site activities at the locks and dams; boating accidents, spills, and operational practices associated with commercial navigation; spills or related impacts from other sources; and recreational boating accidents." (section 3.3.2.14, p. 3-57) In addition, the document states that Corps-approved activities must support Attainment of the Ohio River's four Designated Uses:1) warm water aquatic life, 2) public water supply, 3) contact recreation, and 4) fish consumption.

The recent Monroe County, Ohio, frack pad explosion in which twenty trucks burned in a fire that lasted a week and an estimated 70,000 fish were killed in Opossum Creek (which "discharges to the Ohio River 1.7 miles upstream of a public water intake on the West Virginia side of the river. There are also protected species located down steam of the Opossum Creek confluence with the Ohio River") exposes state and federal authorities' current inability to prevent environmental and public health catastrophe from highly flammable, explosive mixtures of largely unidentified and unidentifiable⁷ fracking chemicals. One of the chemicals identified long after the fire began does not have a protocol for testing -i.e., there is no way for downstream drinking water authorities to determine if the chemical is in their water supplies. Information on proprietary chemicals was not provided to authorities until a week after the fire began. Testing of nearby drinking water wells only began a full week after the crisis began. As stated in Souther et al. (footnote 4), "Because compounds in mixtures can have synergistic or antagonistic effects (Altenburger et al. 2003), full chemical disclosure of fracturing fluid and wastewater is essential for understanding the associated risks to biota, including the effects of leaks, spills, and direct terrestrial or aquatic application." Excerpts from USEPA's initial report on the Monroe County crisis give an idea of what's at stake if millions of gallons at a time of these explosive, highly flammable materials in unknown mixtures are unloaded and stored at the Meigs County facility:

Over 16 different chemicals products were staged on the Pad at the time of the explosion and subsequent fire. Materials present on the Pad included but was not limited to: diesel fuel, hydraulic oil, motor oil, hydrochloric acid, cesium-137 sources, hydrotreated light petroleum distillates, terpenes, terpenoids, isoproponal, ethylene glycol, paraffinic solvents, sodium persulfate, tributyl tetradecyl phosphonium chloride and proprietary components. As a result of fire-fighting efforts and flow back from the well head, significant quantities of water and unknown quantities of products on the well pad left the Site and entered an unnamed tributary of Opossum Creek that ultimately discharges to the Ohio River. Runoff left the pad at various locations via sheet flow as well as by two catch basins located at the northwest and

⁷Souther, S. et al.: "Overall, 67% of wells in our sample were fractured with fluid containing at least one undisclosed chemical, and 37% were fractured with five or more undisclosed chemicals. Some wells (18%) were fractured with a complex fluid containing 10 or more undisclosed components. Importantly, many disclosed chemicals lacked Chemical Abstracts Service (CAS) numbers or concentration values. Most wells (82%) were fractured with fluid containing either undisclosed components or disclosed chemicals lacking this information...No chemical information was provided for produced water."

southeast corners of the well pad. Opossum Creek discharges to the Ohio River 1.7 miles upstream of a public water intake on the West Virginia side of the river. There are also protected species located down steam of the Opossum Creek confluence with the Ohio River.

The fire and explosion that occurred on the Eisenbarth Well Pad involved more than 25,000 gallons of various products that were staged and/or in use on the site...Chemicals not consumed in the fire, water from firefighting efforts and flowback from the well head migrated into rock/soils on the pad and flowed off-site via sheet flow and catch basins located in the northwest and southeast corners of the pad. A minimum of 300,000 gallons of water was sprayed onto the fire as measured from free board drop in the well pads water impoundment.... There was concern over the ability to analyze for and detect the primary component of BE-9 [tributyl tetradecyl phosphonium chloride (TTPC)] for which there is no approved standard method to detect. In consultation with ATSDR, an industry method was obtained and shared with CTEH (Statoil's environmental consultant) to work with a laboratory to develop a method to analyze for TTPC in environmental media.... Air and Environmental Monitoring and Sampling Plans were developed. Sample parameters are as follows:...If a method is developed to analyze for TTPC this will be added to the list, as well as any methods necessary to detect any of the constituents that make up the proprietary component of GasPerm 1000....

June 30, 2014: ... ODNR Division of Wildlife completed their in stream assessment of the fish kill and reported an estimated 70,000 dead fish from an approximately 5-mile stretch extending from the unnamed tributary just west of the Eisenbarth Well Pad to Opossum Creek just before its confluence with the Ohio River...Water samples of runoff indicated the presence of TPH, 2-butanone, acetone, benzene, xylenes, toluene, bis(2-ethylhexyl)phthalate, 1- methylnapthalene, 2-methylnapthalene, o-Cresol, m&p Cresol, naphthalene, phenol, and chlorides. Surface water sampling results indicated the presence of TPH, acetone, bis(2-ethylhexyl)phthalate, phenol and chlorides downstream of the well pad....

July 1, 2014: ... Due to the unknown cause of the fish kill, the potential for them to be scavenged and the large volume of decaying biomass having a continued negative impact on the creek, it was determined that recovery of the dead fish would be needed. US Fish and Wildlife Service (USFWS) arrived to evaluate the creek and concurred with the plan to recover dead fish and advised that there were no endangered or threatened species in the creek but the stream was a high quality habitat....

July 2, 2014: ... Fires continued to rekindle on the pad and spread. Several options were evaluated and Statoil worked with Monroe County EMA to smother the fire with earthen material. Recovery of dead fish from the creek began. The impacted area was divided into 4 divisions and would be walked and all dead aquatic life would be collected, counted and speciated and retained on-site. Access points would be identified and documented for rehabilitation if necessary. USFWS advised to minimize removal of any vegetation along the riparian zone and not to remove trees with bore sizes greater than 3 inches. Air, water and sediment sampling continued. Water quality measurements indicated a lowering in the dissolved oxygen likely due to the decaying dead fish...

July 3, 2014: ...Plans to assess surround drinking water wells are being developed.... OEPA and USEPA were provided, by Halliburton, the constituents of the proprietary component of GasPerm 1000. (full report at theoec.org/sites/default/files/Eisenbarth%20well%20pad%20fire.pdf)

There are no maximum contaminant levels (MCLs) or CAS numbers for many chemicals used in fracking, so a spill and contamination of water supplies cannot be handled to protect the public. Some chemicals used in fracking have been known to kill cattle that drank it within an hour.⁸

Wheeling Jesuit University biology professor Dr. Benjamin Stout's comments on the US Coast Guard frackwaste barging proposed rule are also relevant for numerous reasons, including that the Coast Guard's current proposal allows withholding of proprietary and other information and lacks risk assessment:

As presented, the proposed policy does not answer the questions 1) "how many people are dependent on the Ohio River

⁸ See the recent interview with Michelle Bamberger, co-author of *The Real Cost of Fracking: How America's Shale Boom is Threatening Our Families, Pets and Food:* salon.com/2014/08/02/frackings untold health threat how toxic contamination is destroying lives/

for their water supply?", 2) "what are the low-flow volumes available for drinking water minus the projected withdraws for frackwater?", 3) "what would the concentrations be of elements of concern (e.g. barium, bromide, benzene) in a worst-case scenario of low flow, high demand, and total liquidation?", 4) "What is the turnover/residence time for contaminants entering the water supplies downstream?", and finally 5) "what is the resupply or evacuation (action) plan for the millions of people living downstream of a worst-case scenario?" This proposed activity cries-out for risk assessment with oversight by seasoned professionals representing a variety of expertise and affiliations. There are not enough tankers in the National Guard fleet to supply water to the millions of people that could lose their water for a long period of time in a worst-case scenario.

... Bromide is scantly mentioned in the proposal. It is well known that communities in the upper Ohio River valley have been struggling to make-up safe drinking water due to the bromination of fine organic particles during pre-chlorination at water treatment facilities. The resulting trihalomethanes, a class of polycyclic aromatic hydrocarbon, all known carcinogens, brominated PAH's being the worst, routinely exceed primary drinking water standards in this region's public water supplies. The scientific community paid little attention to bromide in this region prior to the onset of slickwater hydrologic fracturing. This issue is a consequence of bromides residing within the 350 million year old shale formations and coming to the surface with fracwater flowback.

Background bromide levels in water supply sources should be at or near the limit of detection, perhaps as low as 0.015mg/l. Those levels have been often exceeded in regional rivers and streams in the past several years, and particularly at two sites draining Ohio watersheds that have been sampled by my laboratory as part of the foundation funded Three Rivers Quest project. During low-flow conditions the Ohio River at Wheeling frequently exceeds bromide target levels, and Wheeling continues to violate EPA primary drinking water standards for trihalomethanes.

Wheeling, WV has one of the more sophisticated analytical laboratories in the region at its water plant on which other smaller municipalities rely for analytical services. Yet Wheeling does not have the analytical capabilities to measure bromide at levels that impact the community water supply (personal communications). If a spill occurred at the proposed Wheeling barging terminal 1.2 miles upstream of the Wheeling water intake, it is questionable whether the spill could be detected prior to shutting down the intake. It is doubtful that other communities could either. If contaminated water ends up in the distribution system it would take weeks to clear it, a period of time during which thousands, and downstream perhaps millions of people would be without potable water. Given that it takes 80 to 100 days for Ohio River water to move from Pittsburgh to Cincinnati during low flow conditions, a contamination event could result in mass evacuations from the region. In the proposed rule there is no indication of any Action Plan to address a worst-case scenario.

The average bromide concentration in the 13 samples of fracwater collected by WV DEP in Wheeling was 170.8mg/l. The average bromide concentration in 5 samples of brinewater collected by the Ohio Department of Natural Resources was 917.6mg/l. The industry supported study by Hays (2009) measured bromide concentrations in the range of 15.8-1,600mg/l in flowback water from multiple wells. I note that ORSANCO requires an inventory of barge traffic carrying hazards that may impact the 32 municipal water intakes on the Ohio River in order to protect the approximately 3 million households whose primary drinking water source is the Ohio River. The proposed rule in its current form makes no indication of how that will be done. Rather, the rule implies that barge inventory information could be withheld from the public as "proprietary information." That is absurd. There are too many people involved in the water supply industry that need acute access to information for the USCG to be selectively disclosing barge contents in case of an emergency.

See also <u>Terry Lodge's July 28 comments</u>⁹ on the GreenHunter permit application for extensive legal analysis of the necessity for an EIS based on the facility being a federal project with significant cumulative impacts on the region, including potential air and water pollution, negative economic impacts, and greenhouse gas emissions. These effects would continue at least as long as the project-related infrastructure is in place. This development would be permanent and would pose recurring threats from these detrimental effects for decades or centuries. It will foster a large increase in both

acfan.org/wp-content/uploads/2014/08/TLodge-Comments-re-dock-to-Corps-sign-ons.pdf

injection well and landfill disposal of fracking waste within a radius of several counties. There will be greatly increased truck traffic. There will be a heightened potential for routine as well as non-routine spills of fracking waste into the Ohio River and its tributaries. There will be significant air emissions of the constituent chemistry of the waste, including volatile organic chemicals (VOCs) and polyaromatic hydrocarbons (PAHs). There will be greater potential for toxic industrial fires for which emergency responders have incomplete information to address safely. Fracking waste is also radioactive and contains troublesome quantities of water-soluble radium.

Federal Executive Order 12898 requires that the Corps consider potentially "disproportionately high and adverse human health or environmental effects of its decisions on minority and low-Income populations." The order emphasizes the importance of NEPA's public participation process, directing that "each Federal agency shall provide opportunities for community input in the NEPA process." Agencies are further directed to "identify potential effects and mitigation measures in consultation with affected communities, and improve the accessibility of meetings, crucial documents, and notices." As summarized in the U.S. Corps of Engineers April 2014 Upper Ohio Navigation Study, adverse effects include "the totality of significant individual or cumulative human health of environmental effects, including interrelated social and economic effects, which may include, but are not limited to: bodily impairment, infirmity, illness or death; air noise, and water pollution and soil contamination; destruction or disruption of man-made or natural resources; destruction or diminution of aesthetic values; destruction of community cohesion or a community's economic vitality; destruction or diminution of the availability of public or private facilities or services; vibration; adverse employment effects; displacement of persons, business, farms or non-profit organizations; increased traffic congestion, isolation," (Corps, April 2014, p. 3-59) among other impacts.

2. I also object to the issuance of a permit for the GreenHunter project due to defective Public Notice and premature consideration of this project

A) <u>The Public Notice is defective</u>. There are several serious inadequacies in the Public Notice as explained by Terry Lodge in his comments of July 28, 2014. Environmental justice also demands better outreach to potentially affected minority and low-income communities on an issue of such magnitude for public health and safety. Based on any of these defects, the Public Notice must be corrected, re-issued, and given an extended comment period. Also of particular importance, 1. Corps regulations at 33 C.F.R. § 325.3(f)(8) require the Notice to contain a "list of other government authorizations obtained or requested by the applicant, including required certifications relative to water quality, coastal zone management, or marine sanctuaries..." A federal Clean Water Act NPDES [National Pollutant Discharge Elimination System] permit appears likely to be required for this project, as well as a federal Clean Air Act permit, but neither is mentioned. Failure to apprise the public via the Notice that GreenHunter may not be operating the facility in compliance with environmental laws

is of critical significance to the public's opportunity to give meaningful comments. 2. *The Ohio EPA may decline to issue a §401 Water Quality Certification for an unlawful reason*. The Public Notice indicates that the Ohio Environmental Protection Agency [OEPA] must be contacted by GreenHunter to determine whether a water quality certification is required. If OEPA does not respond within the 30-day time limit, the certification is deemed waived. Although OEPA was delegated Clean Water Act enforcement responsibility by the USEPA decades ago, Ohio law has recently been drastically altered to exclude OEPA from exerting any regulatory authority over an oil and gas drilling waste treatment or disposal facility without a formal invitation from the Ohio Department of Natural Resources.¹⁰ If OEPA does not respond, neither the Corps nor the public will know if the nonresponse is because OEPA is declining to answer based on current Ohio law, in which case an important state government regulatory responsibility is being abrogated, or whether the agency has made a considered determination based on federal Clean Water Act standards.

3. *The public should be informed of the Corps' decision to allow submission of comments via electronic mail.* Although in response to communications from the public, Corps project head Teresa Spagna e-mailed a member of the public (7-16-14) that she will be accepting emailed public comments for the Corps' record, the Corps' Public Notice as amended with the new comment period extension still only instructs the public to use the Corps' physical address. The acceptability of electronic submissions must be specified in a new Public Notice and the comment period extended again.

B. It is not presently lawful to ship oil and gas drilling wastes by barge on inland waterways such as the Ohio River. The U.S. Coast Guard is considering, but has not added such materials to the permissible list of cargoes. There is likely to be litigation¹¹ in the event that fracking wastes are added to that list. GreenHunter's application is premature and could improperly pressure or bias the Coast Guard's determination.

III. Request for another extension of time to comment

I request another extension of time for the submission of public comments due to serious insufficiencies of the June 27 and July 25, 2014 Public Notices on this matter, in which this complex, dire issue has been inadequately described and the public inadequately informed.

Please notify me of all opportunities to comment further and participate in a public hearing. Thank you for your attention to this grave matter, NAME COUNTY and STATE

¹⁰Ohio Revised Code § 1509.22 states, in part: "In order to assist the division [of Oil and Gas in the Ohio Department of Natural Resources] in the furtherance of its sole and exclusive authority..., the chief may enter into cooperative agreements with other state agencies for advice and consultation, including visitations at the surface location of a well on behalf of the division. Such cooperative agreements do not confer on other state agencies any authority to administer or enforce this chapter and rules adopted under it. In addition, such cooperative agreements shall not be construed to dilute or diminish the division's sole and exclusive authority as established in this section."

¹¹ See Delaware River Keeper and Center for Biological Diversity's extensively referenced comments on the Coast Guard proposal's illegality at <u>.delawareriverkeeper.org/resources/Comments/CG%20Policy%20Letter%20Comment_Final.pdf</u>