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Blue Oval SK Battery Park Environmental Impact and Community Guide

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The document mentioned above has been reviewed and accepted by the student's advisor, on behalf of the advisory committee, and by the Director of Graduate Studies (DGS), on behalf of the program; we verify that this is the final, approved version of the student's capstone including all changes required by the advisory committee. The undersigned agree to abide by the statements above.

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CPH-608 – Capstone Project Paper

Blue Oval SK Battery Park Environmental Impact and Community Guide

Submitted: 04/27/2023

Warren Rummage

CPH 608 - Capstone Introduction

The Ford Motor Company, and its partner SK On, recently broke ground on a 1,500 acre project called the BlueOval SK Battery Park in the small town of Glendale, KY. [1] There are plans for two enormous battery manufacturing facilities to be constructed there. [1] BlueOval SK Battery Park (herein referred to as the “mega-site”) is where the partners plan to develop and distribute advanced batteries that will power Ford’s line of electric vehicles (EVs). [1] SK On, a South Korean energy corporation, will contribute subject-matter expertise, proprietary manufacturing techniques, and provide various elements (Nickel, Manganese, Cobalt, and Lithium to name a few) from their partnered global mining operations for Ford’s EV batteries. [2] The partners expect to create 5,000 jobs to support the mega-site. [1]

Figure 1: Construction at BlueOval SK Battery Park, 11/2022 (Photo Credit: Self)

Due to construction at the site, hired crews have moved enough soil to pack 200 American football stadiums, poured enough concrete “to fill 356 backyard swimming pools,” and installed nearly 8,000 tons of structural steel at the mega-site as of December 5, 2022. [1] On February 2, 2022, Ford was awarded a permit enabling the company to “permanently discharge approximately 94,000 cubic yards [or about 19 million gallons] of clean fill” into streams spanning up to 28,275 linear feet and, in addition, into 16.1 acres of wetland at the mega-site. [3] The “mass grading,” a recent culvert installation, and a stream relocation project have fully uprooted what once was a naturally formed area, in part used for farming. [13, 14, 25]

A system of wetlands, streams, and rivers in and surrounding the mega-site play an important role as ecosystems for aquatic and terrestrial life and supply drinking water for the community. [4] The habitability of these waters is at-risk of becoming compromised because of planned construction and operations at the mega-site. Further, the local ecosystem has permanently been altered. The effect of the mega-site on the ecosystem must be considered.

One of the purposes of this presentation is to outline the “pre-construction” water quality conditions at the mega-site. Community members can access this information and take action towards environmental restoration in case water quality conditions become a concern. In order to provide the full context of conditions “pre-construction,” a review of Ford's plans will be included. Then, we

will explore the question: How might this project impact the local ecosystem and environment in Glendale -- and perhaps beyond?

Now seems like a good time to mention the co-authors of this paper. I would not have made the mega-site the focus of my Capstone presentation had it not been for an enriching experience I had in the Master's of Public Health (MPH) program back in April of 2022. That spring, I enrolled in an Environmental Health course within the College of Public Health's MPH program at the University of Kentucky (UK). The class was assigned a group project -- a "rapid" Health Impact Assessment (HIA). I had never worked on an HIA before. My colleague, Aaron Charles, came to my classmate, Megan Damico, and I with an idea to make our group's HIA project about the "Ford Plant" being built in Hardin County, Kentucky. It was purely Aaron's idea from the start, and I did receive his permission to make my crowning achievement of my MPH here at UK this presentation about the mega-site. Megan and I both became very interested in the BlueOval SK project early on, despite neither of us ever having heard of the mega-site to this point.

Our group's HIA project was originally presented to our class around this time last year (April, 2022). The three of us considered it a success, given we received high marks from Dr. Fulk for the presentation. Fast forward a few months, and Dr. Fulk reached out to our group to see if we would be interested in presenting our HIA to the very community of people that the BlueOval SK project

was set to impact. I was honored to be considered and was lucky enough to find time to present the group's HIA, alongside my colleague, Aaron Charles, to representatives from Hardin County in December of 2022. I am including this version of our HIA as an aside for this presentation because it contains important background, impacts, and recommendations for Ford and SKOn that are still worthy of consideration today.

This presentation can be thought of as an outgrowth of the group's rapid HIA. Because of the volume of water being filled and/or displaced due to Ford and SK On's project, a main focus of this presentation is the mega-site's impact to the watershed in the area -- briefly mentioned in the HIA. It is well documented that maintaining healthy water quality is an essential part of promoting community health and ecosystem conservation. [5-10] The "Clean Water Act" (CWA) of 1948, amended in 1972, establishes federal standards for surface water pollutant tolerances. [17] The CWA also requires permitting for entities that discharge into "navigable" waters. [17] Drinking water standards are set in the "Safe Drinking Water Act (SDWA)," passed in 1996. [11] Most Americans rely on community water treatment facilities adhering to the SDWA standards to ensure tap water stays safe to drink. As these treatment facilities age and water sources react to various external pressures -- for example, climate change, ecological evolution, and land use -- there is growing concern among scientists and researchers that water quality could suffer. [5, 10]

Land use and development apply a significant amount of external pressure that affects water quality and local ecological function. [5,10] As civilization expands and urban spaces sprawl into areas that were previously undisturbed, construction projects cause environmental degradation and surface water quality suffers. [5] This, in turn, affects aquatic life that call these waters home -- including microorganisms critical to biogeochemical processes that help maintain healthy water quality via nutrient cycling and bioremediation of chemical hazards. [12,16] Subsequently, habitats depending on the water for sustenance experience disruption and disturbances that can permanently alter the ecosystem equilibrium. [15]

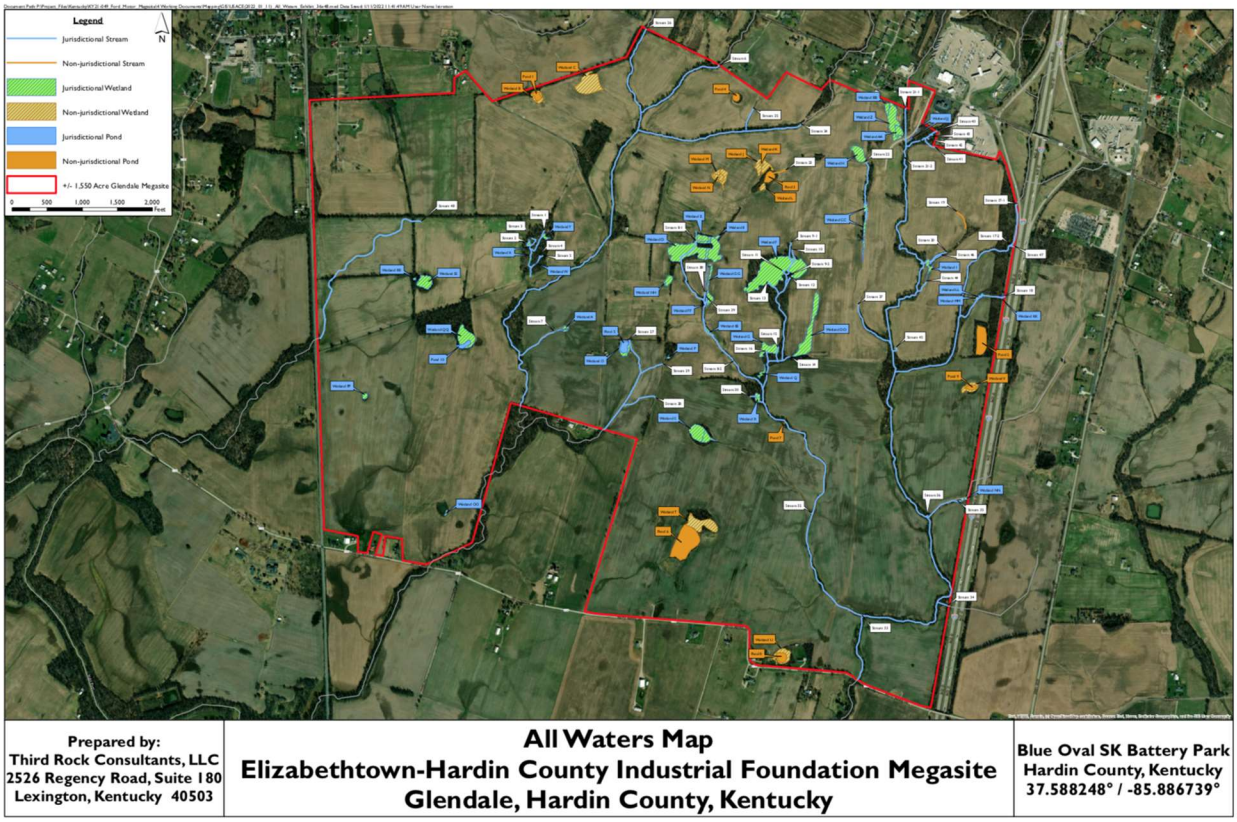
Land use projects that could impact critical natural resources, native ecosystems, and the local community, such as construction of the mega-site, should be highly publicized. Local citizens should be well-informed of potential risks involved and methods of recourse before work begins. Unfortunately, citizens are often given little information and direction for edification. A framework for community empowerment is needed -- one that outlines discovery of entities involved, means of connecting with those responsible for oversight, and exploration of opportunities for remediation. Based on my experience uncovering information about mega-site development, a Community Guide "roadmap” for community members to educate themselves and, if necessary, seek remediation for environmental degradation will be provided.

Warren Rummage

CPH 608 - Capstone Materials & Methods

The materials and methods used for this presentation were chosen to help answer the question: How might this project impact the local ecosystem and environment in Glendale -- and perhaps beyond? This presentation is focused on water quality since the project at the mega-site will affect a large volume of protected waters. To ensure a comprehensive understanding of the water quality conditions at the mega-site, a review of Ford's plans is required.

Figure 2: All Waters Map for the Mega-Site, by Third Rock Consultants [58]



Drawing from my experience in uncovering information about mega-site plans and environmental conditions, I will provide a Community Guide “roadmap” in the Results/Main Findings section for community members to educate themselves and, if needed, take action to address environmental degradation. Keep in mind - my process of learning about the mega-site, if it were a road, would best be described as bumpy and shaped more like a serpentine than a straight line. As you read through this section, I will try to connect the dots for you so that you understand why I decided to use or include these tools, and how these resources will help accomplish the goals of this presentation as described above.

The Freedom of Information Act (FOIA) and the Kentucky Open Records Act (KORA) were integral to accessing mega-site information. [36-38] The FOIA and KORA are federal and state laws, respectively, that enable individuals to request records held by governmental agencies. [36-38] Any governmental documents (federal, state or public authority) must be made available upon request in complete or partially redacted form within a specified time period. [36,37] The ability to use the FOIA and KORA processes to search for and request documents online guided information discovery for this project. [36-38] For example, one FOIA search query led to the finding of an environmental assessment that included details on how the partners (Ford in particular) planned to develop the mega-site. [25,36-38]

This FOIA website has a search bar, much like any other search engine (Google, Bing, etc). [37] I included key terms “Glendale” and “Ford.” [37] This is how I found the US Department of Energy’s (DOE’s) Environmental Assessment (EA) of the mega-site. [25] In December of 2022, the DOE set out to determine the impact the mega-site could have on biological resources in Glendale and Hardin County. [25] The DOE's involvement in the Glendale mega-site is related to a request made by Ford and SKOn for federal government loans to support the development of their battery manufacturing facilities. [65] NEPA, or the “National Environmental Policy Act,” which was signed into law in 1970, sets “environmental review requirements (e.g., National Historic Preservation Act, Endangered Species Act, Fish and Wildlife Coordination Act, and others) that are necessary prior to [federally funded] project implementation.” [65] Pertinent findings from DOE’s EA and additional information regarding its funding will be included in the subsequent section.

Ford, acting on behalf of their partner SKOn and themselves, was initially compelled to disclose its plans for the mega-site because of Section 404 of the CWA. [18] Section 404 requires that an Army Corps of Engineers (ACOE) permit be approved before any fill materials are discharged into “waters of the US, including wetlands.” [18] Before approval, a summary of the project’s prospectus must be made available for public review and comment for a minimum of 30 days. [3,19]

The Louisville ACOE posted “Public Notice No.LRL-2021-443-sea” on their website for review on February 2, 2022 (closed March 4, 2022). [3] The Public Notice presented details on the mega-site coordinates (latitude and longitude), plans to use clean fill soil/sediment to perform a mass grading, relevant maps (with a footprint for the battery manufacturing facilities attached), and waters to be impacted -- including additional actions to be taken by the Applicant (Ford). [3] For example, the ACOE required the Applicant to acquire a “Water Quality Certificate” from the Kentucky Division of Water (KDOW) prior to permit approval. [3,13,14] Additionally, the Public Notice identified Ford’s proposal to purchase credits from the Kentucky Department of Fish and Wildlife to “compensate for the unavoidable impacts" to Kentucky waters. [3,13,14] This is discussed further below.

The KDOW Water Quality Certificate for the mega-site, hosted on the state of Kentucky’s Energy and Environment Cabinet (KEEC) website, included details regarding specific requirements that must be met by the partners in order to begin construction. [13] The certificate described a stream relocation project and the permanent impact of tens of thousands of linear feet of streams and more than sixteen acres of wetlands that would be filled with native soil and sediment at the mega-site. [13] The unnamed streams at the mega-site were known to be tributaries to the Nolin River. [4,13,23] The Nolin River is an important body of water for Glendale and the Hardin County area -- acting as a drinking water source, classified as a Warm Water Aquatic Habitat (WAH), Cold Water Aquatic

Habitat (CAH), recognized as an Outstanding State Resource Water (OSRW), and linked to downstream waters used for recreation. [4,13, 23, 31,33] The certificate called for the Applicant to address concerns regarding erosion, sedimentation control, pollution, and water quality with “Best Management Practices” (BMPs). [13]

BMPs are referred to in the context of a “Stormwater Pollution Prevention Plan” (SWPPP) and sometimes these terms are used interchangeably. [20] The planned grading that includes pouring up to 19 million gallons of clean fill at the mega-site will likely lead to sediment-laden runoff that could pick up harmful debris or pollutants that are carried into downstream water sources. [5-10] Ford was compelled to apply for a “General Permit for Stormwater Discharges Associated with Construction Activities” (KYR100000) because of the size of their project (>1 acre disturbed). [24] Guidance for BMPs are provided by the Kentucky Pollutant Discharge Elimination System (KPDES) -- a program established by KDOW to regulate discharge of pollutants from point sources. [20] The general permit that Ford applied for during their construction phase at the mega-site includes a plan for illicit discharge detection, construction site stormwater runoff control, post-construction stormwater management, and pollution prevention methods. [20,24] Additional details will be included in the results/main findings section to come.

Referring back to the ACOE Public Notice, a purchase of credits was proposed to offset the “unavoidable” impacts to state waters. [3,13,14] KDOW’s “Water Quality Certificate” included verbiage that required that Ford purchase wetland and stream Adjusted Mitigation Units (AMUs) before construction at the mega-site. [14] The Kentucky Department of Fish and Wildlife has a “Stream Team” that works with the ACOE to set the fee schedules for stream and wetland mitigation. [23] Calculations for the total AMUs that were purchased by Ford will be presented in the Results section.

Here we take a sharp turn to discuss the state of Kentucky’s Energy and Environment Cabinet (KEEC) website. [14] On the website, there is a search option that “provides general information about … permitting and compliance activities" that are “of interest to the [KY Department of Environmental Protection (KDEP)].” [14] KDEP’s mission is to protect Kentucky's air, land, and water resources through enforcement, education, and public outreach. [55] The mega-site is listed as “Agency Interest ID 170550.” [14] On the website there are many downloadable documents, including documents related to air (air quality), wastewater, and water quality (broadly) at the mega-site. [14] Of note, one document details a planned “temporary culvert” being built at the mega-site. [14] This culvert will modify the flow of multiple streams near the Interstate and near local infrastructure. [14] Third Rock Consulting, who was retained by Ford to meet the requirements of the CWA (Section 404), used a software called, “HEC-

RAS" to model some environmental data for the stream relocation. [61,62] The potential environmental impact will be discussed.

Switching gears one last time … The "mass grading" that has occurred at the mega-site, totally altering the mostly undeveloped land in the area, has resulted in the filling of a vast amount of streams and wetlands. [3,13] KDOW expressed concerns regarding erosion, sedimentation control, pollution, and water quality. [13] What follows are explanations of tools and resources that will be relied on to establish "pre-construction" conditions at the mega-site.

Ford, via their hired "head" contractor, Barton Marlow, recruited engineering consultants Wade Trim and DMZ Corporation to survey the area at the mega-site. [62] These companies utilized various techniques to develop recommendations for Ford's construction of the mega-site in Glendale. [62] Wade Trim performed runoff calculations using AutoCad 2020 software to inform Ford's erosion and sediment control measures and included a USDA National Resource Conservation Service (NRCS) soil survey report of a defined area of interest that included the mega-site. [62] The details of the soil survey and recommended erosion and sediment controls will be included in the results section of this presentation. DLZ performed several rounds of soil boring and stress tests from samples recovered to determine the content and structural integrity of the proposed mega-site foundation. [62] Pictures and suggestions will be included in the results section.

“Watershed Watch in Kentucky” is “a collaborative venture by [KDOW], the Cumberland Chapter of the Sierra Club and Kentucky Waterways Alliance” that trains citizen volunteers to collect water samples throughout the state and provides the materials necessary to do so. [29] Water quality sampling results are posted on their website, in addition to rainfall, stream flow, and field turbidity estimates based on meteorological projections and volunteer observations. [30] This data set will be relied on for Nolin River water quality data.

The United States Geological Survey (USGS) provides “Hydrological Unit" monitoring, which includes location metadata and historical statistics related to water quality for each unit. [26] Hydrologic units are “geographic areas representing part or all of a surface drainage basin or distinct hydrologic feature and are delineated on the State Hydrological Unit Maps.” [26] Relevant USGS data for portions of the Nolin River will be added to the Results section, including data stored in the USGS’ “Water Quality Samples for the Nation" portal. [28]

An “Advanced Hydrologic Prediction Service” is offered by the National Weather Service. [27] Flood risks, river forecasts, historical data, and other observations are measured. [27] The reporting location nearest the mega-site will be included for analysis.

The Environmental Protection Agency (EPA) has two valuable online tools for measuring stormwater discharge and control. [31,32] The “Stormwater Discharge Mapping Tool” will help to generate information regarding the waters where the mega-site will discharge. [31] The “Gray Tool” will help to demonstrate how stormwater runoff can be mitigated through the use of detention basins, etc at the mega-site. [32] Additionally, the EPA hosts a “How’s My Waterway?” website, where pertinent information is provided for given waters “at a glance.” [33] All three of these tools will be used to some extent in the Results section.

In summation, the materials/methods described above will be used to generate a Community Guide. The purpose of this guide is to help citizens of Glendale, and Hardin County, in case this project causes a negative environmental impact. The most recent population data for the area and some demographic information will be included to give a better idea of the number of people that are most likely to be impacted by the planned construction and operations at the mega-site. [55-57]

Warren Rummage

CPH 608 - Capstone Results / Main Findings

This results / main findings section follows along my (the presenter's) path of information discovery using the tools and documents discussed in the previous section. The path was hardly linear. This process involved extended FOIA request delays, required cross-referencing of non-standardized reports produced by multiple third party contractors hired by Ford, and -- with construction at the mega-site currently underway -- included unexpected changes in plans (see: culvert installation, for example) that were studied "on-the-fly." [14, 25] Much like an actor in an improv class, in deciding to make this presentation about the mega-site, I accepted a role that required quick thinking and collaboration in real-time with others. I had a lot of help with direction for this presentation from colleagues, professors at the University of Kentucky, and my mentor, Dr. Florence Fulk.

Based on my lessons learned throughout this process, a roadmap for community empowerment has been generated. Details on the governmental entities involved, monitoring requirements, and details that concerned citizens can use to take action and enact change in their communities are included in the Community Guide at the end of this section. It may help guide the reader through this section to know that there are four Main Parts: 1. Funding For Site, 2. Site

Plans Developed and Regulatory Process Begins, 3. Site Conditions Prior to Construction, and, finally, the 4. Community Guide.

The BlueOval SK project started with Ford and SKOn choosing a suitor among a group of competing cities across the US. [39] After much deliberation, Glendale was declared the city where their battery park would be built. [39,42] Shortly thereafter funding for the mega-site was publicly announced. [39,43]

Information Discovery Process: Main Findings

Part 1: Funding for Site

The process of finding information about the “Ford plant,” as we initially referred to it in our HIA group, began with simple Internet search queries with the terms “Ford Battery Factories being proposed in Kentucky.” These terms yielded a small assortment of regional news articles that provided our first insights as to how the mega-site might impact Hardin County. [39-42] One article discussed a $400 million state-sponsored investment that the Kentucky house and senate overwhelmingly voted in favor of in order to “lure” Ford and their partner, SKOn, to develop their battery manufacturing facilities in Glendale. [40]

Following an “Extraordinary” KY Senate Session in September of 2021 prompted by the COVID19 pandemic, representatives voted on Senate-Bill 5 and elected to convert $350 million from the state’s “Budget Reserve Trust Fund" into forgivable loans (“Kentucky Economic Development Finance Authority” (KEDFA) loans)) to

be used as economic incentive to entice Ford and SKOn to choose Glendale as its site for EV battery manufacturing. [40,43] In addition to $350 million in forgivable KEDFA loans, the state agreed to pay off an existing $10.6 million property loan for the mega-site that was previously the responsibility of Hardin County; appropriated $20 million in grants for the expansion of the “Bluegrass State Skills Corporation" (BSSC) to offer “state income tax credits for companies to offset the costs for approved training programs”; and assigned $25 million to the Kentucky Community and Technical College System (KCTCS) to “construct an on-site training center” at the mega-site. [40,43,44]

Table 1: 2021 Special (“Extraordinary”) Session, Senate-Bill 5: Incentives for Mega-Site

Incentives	Funding	Details
KEDFA Loans	$350 Million	Forgivable Loans
Property Loan	$10.6 Million	Paid-In-Full, Previous Responsibility of Hardin Co
BSSC Training	$20 Million	Tax Credits Offered by the State to Expand Training
KCTCS Center	$25 Million	Construction: KCTCS Training Center at Mega-Site
Total Funding*	$400 Million	*Approximately

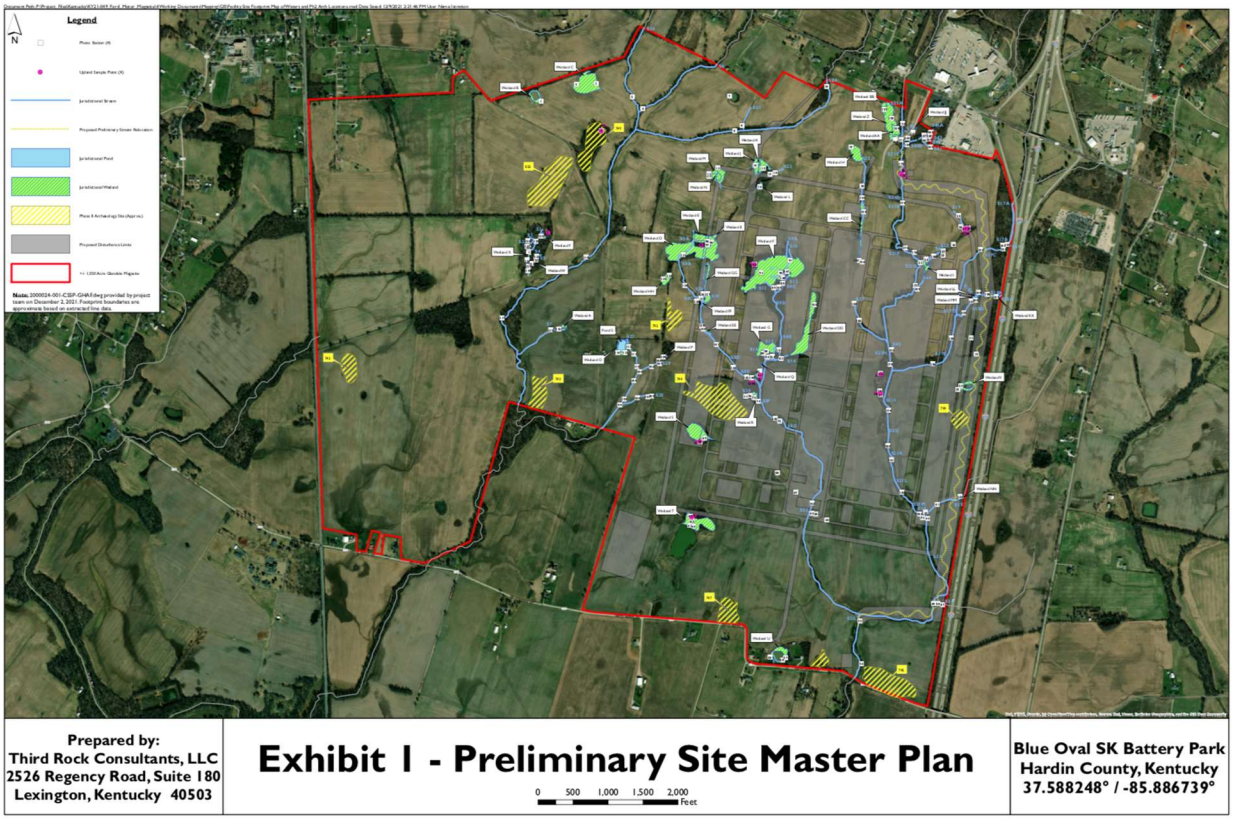
Ford and SKOn are pursuing additional funding from the federal government, under the NEPA and through the DOE. [25] A decision on this additional funding is pending, despite the DOE’s site assessment having been completed (see details below). [25, 66] Once the state funding had been assigned, it was shortly thereafter announced that Ford and SkOn would be building their battery manufacturing facilities in Glendale. [47] At this point, construction plans were

submitted, and regulatory processes at the federal and state level began. This meant that environmental assessments of the site and evaluations of the partners' plans were required and that the public must be notified.

Part 2: Site Plans Developed and Regulatory Process Begins

After funding was secured, plans for the mega-site were submitted to the state and the regulatory process began. The plans that Ford submitted required approvals under the CWA and other policies. The public had to be notified of this project because of its plans to disturb protected waters.

Figure 3: Exhibit I - Preliminary Site Master Plan, by Third Rock Consultants



Using a similar search pattern as we initially did in our HIA assignment, the Louisville ACOE's "Public Notice," posted online in February 2022, was the first regulatory/governmental document finding and served as a source of inspiration for our group -- the three of us, Megan, Aaron, and I. [3] In a sense, this singular document served as motivation for all of my subsequent findings. The table below summarizes the details of the Public Notice.

Table 2: Louisville ACOE "Public Notice No. LRL-2021-443-sea" (Online)

Finding	Units/Designation	Details
Clean Water Act Prompts Posting of "Public Notice"	Section 404 CWA	This public notice was posted online on 02/02/22 and closed on 03/04/22. The following entities are involved: - Ford Land - Third Rock Consultants - Louisville ACOE - KDOW - KY Fish & Wildlife - US EPA
Precise Coordinates and Topographic Maps of Mega-Site are Provided	Glendale, Kentucky Latitude: 37.588248°N Longitude: 85.886739°W	Project boundaries are clearly set, including impacted waters.
"Clean Fill" will be "Permanently Discharged"	94,000 Cubic Yards, or 19 Million Gallons (apprx) of "Native soil & rock" [57]	Land use changes are "required" for mega-site construction
Streams will be Impacted	- Perennial: 18,751 linear ft - Intermittent: 7,581 "" - Ephemeral: 1,944 ""	Streams are referred to as "Unnamed Tributaries" of Nolin River.
Wetlands will be Impacted	- Wetlands: 16.1 acres	Open water ponds and wetlands are mentioned.
Purchase of Mitigation "In-Lieu" Fee Program Credits is Proposed	- Streams (total): 28,276 linear ft - Wetlands (total): 16.1 acres	"Unavoidable impacts" to waters of the U.S. are anticipated. The Applicant (Ford Land) proposes purchasing credits from KY Fish & Wildlife to compensate.

Our group HIA project recommended that Ford and SKOn take several steps to minimize harmful impacts that the mega-site could have on the Glendale community. These recommendations were heavily based on the information included in the “Public Notice.” [3] This Capstone presentation required additional details that weren’t available in the document distributed to the public by the ACOE. To get detailed information, an open records request was needed. An FOIA request was submitted to the Louisville ACOE on January 23, 2023. [36,37,45] Included below are the details.

Table 3: FOIA Request Submitted to the Louisville ACOE on 01/23/23

Required Information for FOIA Request:	Full Name, Affiliation, Mailing Address, Phone Number, Email Address, Description of Request* (Below), Fee Agreement
Louisville ACOE FOIA Email Address:	FOIA-LRL@usace.army.mil
Louisville ACOE FOIA Mailing Address:	USACE Louisville District Attn: CELRL-OC (FOIA) PO Box 59 Louisville, Kentucky 40202
Turn-Around-Time:	20 Working Days
Results:	As of 03/13/23, the FOIA request has NOT been fulfilled by the Louisville ACOE. It has been forty-nine days.

*Below is a description of the request submitted to the Louisville ACOE FOIA office:

º Description of records you are seeking:

This is related to Public Notice No.: LRL-2021-443-sea

See here: [URL Included - see Source #3]

Construction for the BlueOvalSK Battery Park in Glendale, KY began (somewhat) recently. I would like to know what environmental impacts are anticipated as a result of the construction. I am most interested in any anticipated issues with water quality. I am also interested in knowing any anticipated environmental concerns once operations at the Battery Park begin -- for example, could there be heavy metal from the lithium-ion batteries in the plant's waste stream that ends up contaminating the nearby environment? What safeguards are in place to prevent environmental degradation/contamination? I would like to know about the full scope of issues associated with the Battery Park that the Army Corps of Engineers (ACOE), Environmental Protection Agency (EPA), and others discussed before the permit above was approved -- not limited to water quality. How will living organisms in the surrounding ecosystem be affected? What sort of impact will the Battery Park have on local residents? Feel free to reach out for questions/concerns.

A KORA request was made on March 6, 2023. [38] At this point, it had been forty-two days since the FOIA request was sent to the Louisville ACOE and I had not received the documents that I requested. Details of the KORA request are included below.

Table 4: KORA Request Submitted to the Kentucky Energy and Environment Cabinet

Information Requested:	Contact Name, Phone Number, Description of Request* (See Below)
KORA Email Address:	EEC.KORA@ky.gov
KORA Mailing Address:	Office of Administrative Services Division of Information Services - Public Records Branch 300 Sower Blvd 1st Floor Frankfort, KY 40601
Turn-Around-Time:	5 Business Days
Results:	The KORA request was fulfilled 03/08/23, two days after the request was formally made via email.

*Below is a description of the request submitted to the KORA Open Records Dept:

º Description of records you are seeking:
This is related to the KDOW Water Quality Certificate that was issued to Ford Land for their project in Glendale, KY called "BlueOval SK Battery Park." See here: [URL Included -- see Source # 13]

Construction for the BlueOvalSK Battery Park in Glendale, KY began (somewhat) recently. I have been able to access many records online, but one that I am particularly interested in that I cannot find is the Louisville Army Corps of Engineers' (ACOE) Environmental Assessment and the Louisville ACOE Permit that was approved for construction of the Battery Park. I would like for you to please provide me with a copy of each:

1. Louisville Army Corps of Engineers Permit granted to Ford Land for construction of the BlueOval SK Battery Park
2. Louisville Army Corps of Engineers Environmental Assessment provided to Ford Land for construction of the BlueOval SK Battery Park

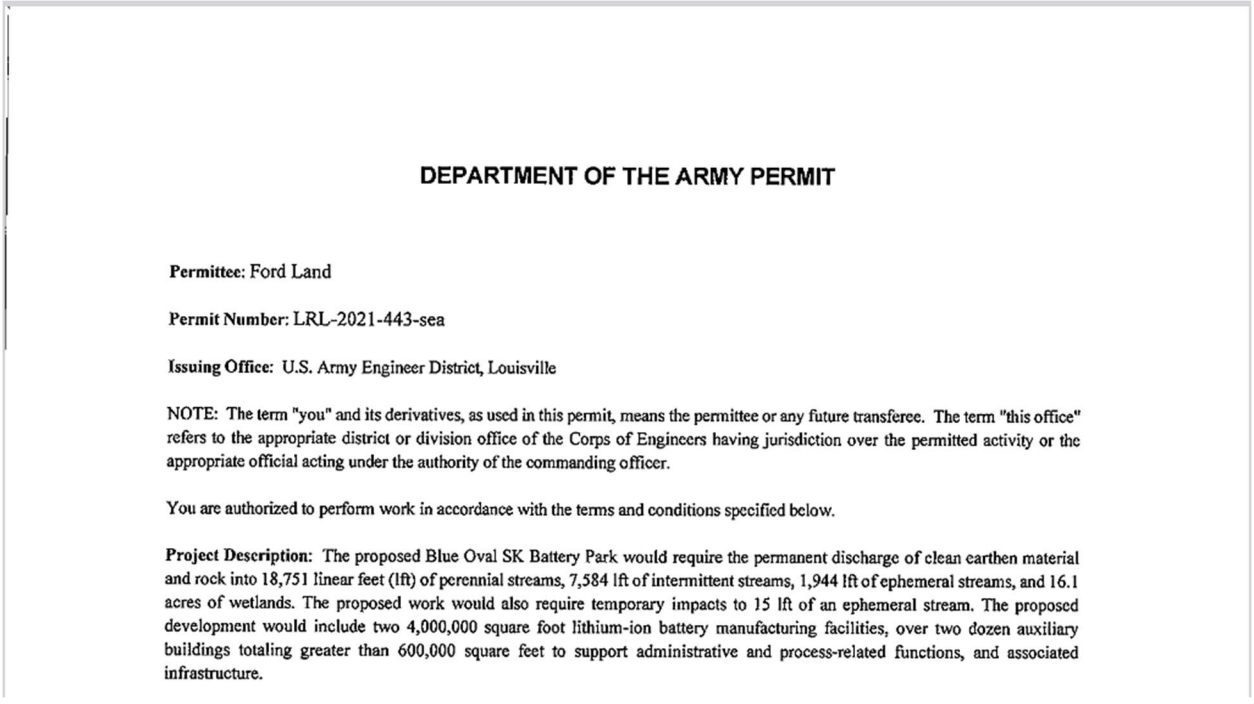
The KORA request yielded 3.0GB worth of files that included: Word documents, pdf's, Excel sheets, e-mail (.msg) files, a ".kmz" (Google Earth) file, photos, and HTML files related to the mega-site. Seventy-seven files total were downloaded. These files were attained via the state of Kentucky's "MOVEit System." KORA representatives included detailed information via email on how to access the online "MOVEit System" to download the files. I was provided a username and temporary password, a URL to click on to access the files, and the instructions below:

A secure message has been posted for you on the Commonwealth of Kentucky's MOVEit File Transfer application.
Email and files are encrypted and both upload and download services are available for doing business with the Commonwealth of Kentucky.
Please note that this is a temporary account and is subject to expire in 30 days. You will receive an email notifying you prior to the account's expiration at which time you can renew the subscription. Files on all Commonwealth MOVEit applications are retained for 90 days unless otherwise requested by your Agency contact.
Please use the following URL and your username/password to login and view this package. You will also be given the opportunity to compose a secure reply to this package. You will be required to change your password at first login.
FOR TECHNICAL ASSISTANCE
Contact the Commonwealth Service Desk. In the request for assistance, please include the following; username (shown above), telephone number, and a detailed description of any errors or messages received.
Email - Commonwealthservicedesk@ky.gov and cc: COTMOVEITFTP@ky.gov
Phone - 502-564-7576.

Unfortunately, document review for these files is incomplete, as there was inadequate time to thoroughly review and summarize findings from every document that was included before the scheduled presentation date. Among the documents that were reviewed and included notable findings were an ACOE permit for construction approval and the KDOW Water Quality Certificate, which cascaded into discovery of additional documents based on the requirements included in the certificate (permit). [13,55]

The ACOE permit for construction approval, along with other ACOE documents, is not currently available online. [55] I had a very hard time acquiring it. The version I got appears to be photo-copied. See below:

Figure 4: ACOE Permit for Construction Approval Appears Photo-Copied



DEPARTMENT OF THE ARMY PERMIT

Permittee: Ford Land

Permit Number: LRL-2021-443-sea

Issuing Office: U.S. Army Engineer District, Louisville

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: The proposed Blue Oval SK Battery Park would require the permanent discharge of clean earthen material and rock into 18,751 linear feet (lft) of perennial streams, 7,584 lft of intermittent streams, 1,944 lft of ephemeral streams, and 16.1 acres of wetlands. The proposed work would also require temporary impacts to 15 lft of an ephemeral stream. The proposed development would include two 4,000,000 square foot lithium-ion battery manufacturing facilities, over two dozen auxiliary buildings totaling greater than 600,000 square feet to support administrative and process-related functions, and associated infrastructure.

This approval document required that Ford and SKOn implement pollution prevention plans, best management practices (BMPs), and monitoring schedules for water quality. [55] Below are documents resulting from the KORA request related to these plans, practices and schedules.

The KDOW Water Quality Certificate (Permit) referenced in the KORA email request was hosted online. [13] The KDOW Permit included information that led to other discoveries for the mega-site. [4,13,24] Below is a summary of findings.

Table 5: KDOW Water Quality Certificate, Permit Number: WQC2022-026-7

Finding	Units/Designation	Details
"Conditions [of State and Federal Water Quality] Are Met" by Ford Land for Mega-Site (03/28/22)	Sections 301, 302, 303, 304, 306, and 307 of the CWA Kentucky Administrative Regulations Title 401, Chapter 10	This certificate was granted on 03/28/22. The following entities are involved: - Ford Land - Third Rock Consultants - Louisville ACOE - KDOW - US EPA
Annual Monitoring Reports and Construction Notifications are Required (Beginning March 1, due December 31st)	Monitoring Reports are Required for a Minimum of Two Years; Construction Notifications are Required within 90 Days of Completion	Any changes to plans must be approved by KDOW. [See Stream Relocation]
Approved Work and Limitations	A. Fill and Grading of Mega-Site B. Construction of Buildings C. Relocation of an Unnamed Tributary to Nolin River	Work will occur subsequently (A>B>C) and as set forth in documents provided to KDOW. Stream relocation will occur "in the dry." Ford land is responsible for preventing degradation of waters from soil erosion.
Erosion and Sediment Pollution Control Plans, Best Management Practices Are Required	Kentucky Pollution Discharge Elimination System (KPDES) "Stormwater / Wastewater / Surface Water" Permit - see below	Applicant must contact the Surface Water Permits Branch (502-564-3410 or SWPBSupport@ky.gov)
Purchase of Mitigation "In-Lieu" Fee Program Credits is Required	44,030 Stream Adjusted Mitigation Units (AMUs) 38.5 Wetland Adjusted Mitigation Units (AMUs)	"Prior to any construction activity" or impacts, Ford must purchase KY in-lieu fee credits as "compensatory mitigation for losses of aquatic resources."

The KDOW Certificate mentioned that a KPDES Surface Water Permit may be required. [13] Indeed a KPDES Permit is/was required and an additional request for coverage was made by KPDES. [20,24] In general, a KPDES permit can be broken up into three sections: (1) The Scope, or "Applicability" of the project -- that is, what types of discharges, stream flow diversions, landscape irrigation, etc are authorized and what types are unauthorized; (2) Reporting Requirements --

KDOW requires an annual report be delivered by April 15 assessing current BMPs and providing a summary of incidents and inspections, among other relevant information; and (3) The SWPPP, which includes a plan for illicit discharge detection, construction site stormwater runoff control, post-construction stormwater management, and pollution prevention methods. [21] See below for details.

Table 6: Construction Surface Water Permit - KPDES No.: KYR10Q116 & Update

Finding	Units/Designation	Details
February 10, 2022: Mega-site Construction Discharges are "approved for coverage"	"KPDES General Permit for Storm Water Discharges Associated with Construction Activities (KYR100000)" master general permit	This certificate was granted on 02/11/22. The following entities are involved: - Ford Land - KPDES - Louisville ACOE - KDOW
Master General Permit Required	KYR100000	Sets effluent limitations, monitoring requirements, and other conditions for construction activities discharge. Requires a "Preliminary" Stormwater Pollution Prevention Plan (SWPPP), and full "Industrial" permit before operations.
Best Management Practices (BMPs) and the "Preliminary" SWPPP will guide construction activities "to reduce the impact the construction… will have on site soil erosion and pollutants in the storm water coming off the site." [62]	Erosion and Sediment Pollution Control Plans are Required, as is a Site Map	Permitting process ongoing; full permit approval prior to operations is required. [25] Sediment control devices should be maintained at no more than 1/3 capacity to allow for sediment capture. Regular maintenance is required.
Update: May 12, 2022 - Change of Existing Coverage	Nondescript	No specific changes are identified in the document, but a letter was issued by KPDES.

The KDOW Permit (Table 5) also mentioned the required purchase of Adjusted Mitigation Units (AMUs) for losses of aquatic resources. [13] The Army Corps of

Engineers calculated estimates for the total cost for mitigation to be around $20 million -- which Ford paid in a lump sum to the Kentucky Department of Fish and Wildlife Resources (KDFWR) Stream and Wetland Mitigation Fund. [46,49] Below are the details.

Table 7: ACOE Estimations and Ford's Payments to KDFWR for AMU Costs

Stream Impact (feet): 28,275	Wetland Impact (acres): 16.040
AMU's: 44,030	AMU's: 38.49
Stream Mitigation Cost: $ 17,612,045.12	Wetland Mitigation Cost: $ 2,367,386.00
Total Mitigation Cost (Combined)*: **$ 19,979,431.12***	

The US Department of Energy's (DOE's) Environmental Assessment (EA) and its Appendices for the mega-site total 294 pages. [25] There are many references to "The Corps" and "USACE" (ACOE) throughout the assessment. [25] DOE worked closely with ACOE on this EA. [25] Notable findings are included below and will be discussed in the following section.

Table 8: Main Findings (Summary) DOE EA, Published in March 2023

Finding	Units/Designation	Details
"Impacts on [treated] water resources would not be significant."	2.4 MGD (Millions of Gallons per Day) of Water Needed for Mega-Site	DOE cooperated with ACOE (aka "USACE") for Section 404 of the CWA compliance. Mega-site will rely fully on the Hardin Co Water District No. 2 for their supply of treated potable water.
Groundwater and Surface Water: a Spill Prevention Control and Countermeasures Plan (SCCP), a Groundwater Protection Plan (GPP), and a SWPPP are required	Estimated Wastewater Discharge: 0.66 MGD Capacity of Municipal Wastewater Treatment Facility: 8.1 MGD	"Permit is pending and will be issued within 6 months after the storage threshold is exceeded." GPP must be reviewed every three years. There is "significant overlap with the elements of SWPPP and SPCC plans." [25]

Finding	Units/Designation	Details
"Impacts on air quality as a result of the Project would not be significant." All operations would be in compliance with the requirements of 401 KAR 63:010, Fugitive Emissions, & the EPA's PSD permitting program. *See Discussion section for a brief commentary on this. Also, refer to "CPH-622 Topic Paper" attachment.	Emission Limitations are set for… Carbon Monoxide (CO) Nitrogen Oxides (NOx) Volatile Organic Compounds (VOC) Carbon Dioxide (CO2) CO2 equivalents (CO2e)	During construction, air emissions would be generated from mobile sources (trucks, construction equipment), dust, and on-site rock-crushing. During plant operations, notable point source VOC emissions come from the fossil fuel boilers (250 MMBtu/hr of heat input). Engineering controls include: internal equipment controls, dust collectors (HEPA filters), activated carbon adsorbers, etc. [See sources: # 25, 49 & 50]
Stream quality of all onsite streams were evaluated through the use of the EPA Rapid Bioassessment Protocols (RBP). *See "Third Rock" data tables included below, and Discussion.	Habitat and physical characterization information from RBP assessments indicate that 47/48 of these streams are within the 'POOR" narrative habitat rating.	The nearest monitoring location (Nolin River at White Mills) was considered in "GOOD" condition by EPA as recently as 2020. However, the on-site tributaries, which flow into the Nolin River were found to be in "poor" condition. [25,31,33]
Impacts to Endangered Species	There are impacts to 65.6 acres of "potential" bat habitat used for foraging and migrating along 5 perennial streams that would be impacted as a result of the proposed project. Both the DOE and ACOE determined that the project is likely to adversely affect the Northern Long Eared Bat (NLEB) and the Indiana Bat, due to tree removal and site filling/grading	After consultation with USWFS, Ford made contributions to the Imperiled Bat Conservation Fund (IBCF). Snuffbox Mussel: The Corps and the DOE have determined that the proposed project would have no effect on the snuffbox mussel due to lack of suitable habitat. The USFWS did not provide any comments related to general fish and wildlife value concerns.

Table 9: Third Rock Data Detailing Stream Conditions Prior to Construction [25]

Stream ID	County	12-Digit HUC	Total Length (ft)[1]	Upstream End Point		Stream Type	RBP		Mitigation Ratio	Length (ft)[2]	
				Latitude	Longitude		Score	Rating		Impacted	Avoided
Stream 10	Hardin	51100011005	190.54	37.59169	-85.88094	Ephemeral	89	Poor	0.5	190.54	0.00
Stream 11	Hardin	51100011005	106.08	37.59088	-85.88141	Ephemeral	91	Poor	0.5	106.08	0.00
Stream 12	Hardin	51100011005	149.97	37.59061	-85.88099	Ephemeral	95	Poor	0.5	149.97	0.00
Stream 13	Hardin	51100011005	238.54	37.59041	-85.88213	Ephemeral	79	Poor	0.5	238.54	0.00
Stream 14	Hardin	51100011005	136.82	37.58750	-85.88102	Ephemeral	78	Poor	0.5	136.82	0.00
Stream 15	Hardin	51100011005	222.21	37.58792	-85.88191	Ephemeral	109	Poor	0.5	222.21	0.00
Stream 20	Hardin	51100011005	392.64	37.59160	-85.87335	Ephemeral	104	Poor	0.5	392.64	0.00
Stream 30	Hardin	51100011005	154.05	37.58595	-85.88300	Ephemeral	93	Poor	0.5	154.05	0.00
Stream 32	Hardin	51100011005	11.84	37.58289	-85.88148	Ephemeral	65	Poor	0.5	11.84	0.00
Stream 39	Hardin	51100011005	125.99	37.58984	-85.88517	Ephemeral	80	Poor	0.5	125.99	0.00
Stream 44	Hardin	51100011005	214.85	37.59047	-85.87434	Ephemeral	66	Poor	0.5	214.85	0.00
			1,943.53			***Length of Ephmeral Stream Impacted***				**1,943.53**	**0.00**
Stream 16	Hardin	51100011005	166.79	37.58773	-85.88223	Intermittent	97	Poor	1	166.79	0.00
Stream 18	Hardin	51100011005	819.01	37.58988	-85.87047	Intermittent	102	Poor	1	755.22	63.79
Stream 22	Hardin	51100011005	858.66	37.59514	-85.87735	Intermittent	68	Poor	1	858.66	0.00
Stream 24	Hardin	51100011005	2,392.76	37.59660	-85.88052	Intermittent	115	Poor	1	809.43	1,583.33
Stream 25	Hardin	51100011005	330.25	37.59723	-85.88284	Intermittent	80	Poor	1	330.25	0.00
Stream 34	Hardin	51100011005	197.93	37.57774	-85.87314	Intermittent	101	Poor	1	197.93	0.00
Stream 35	Hardin	51100011005	517.70	37.58241	-85.87217	Intermittent	99	Poor	1	517.70	0.00
Stream 36	Hardin	51100011005	25.64	37.58130	-85.87426	Intermittent	133	Fair	1.5	25.64	0.00
Stream 37	Hardin	51100011005	802.25	37.58956	-85.87769	Intermittent	117	Poor	1	802.25	0.00
Stream 38	Hardin	51100011005	104.19	37.59003	-85.88523	Intermittent	85	Poor	1	104.19	0.00
Stream 45	Hardin	51100011005	99.11	37.58787	-85.87583	Intermittent	55	Poor	1	99.11	0.00
Stream 46	Hardin	51100011005	213.21	37.59149	-85.87360	Intermittent	85	Poor	1	213.21	0.00
Stream 8-1	Hardin	51100011005	2,133.82	37.59203	-85.88569	Intermittent	95	Poor	1	2,133.82	0.00
Stream 9-1	Hardin	51100011005	567.14	37.59198	-85.88100	Intermittent	118	Poor	1	567.14	0.00
			9,228.46			***Length of Intermittent Stream Impacted***				**7,581.34**	**1,647.12**

Table 9 (continued): Third Rock Data Tables Detailing Stream Conditions … [25]

Stream ID	County	12-Digit HUC	Total Length (ft)[1]	Upstream End Point		Stream Type	RBP		Mitigation Ratio	Length (ft)[2]	
				Latitude	Longitude		Score	Rating		Impacted	Avoided
Stream 17-2	Hardin	51100011005	2,952.21	37.59187	-85.87021	Perennial	111	Poor	1.5	2,797.10	155.11
Stream 21-2	Hardin	51100011005	9,036.33	37.59529	-85.87540	Perennial	89	Poor	1.5	9,036.33	0.00
Stream 33	Hardin	51100011005	975.46	37.57737	-85.87744	Perennial	115	Poor	1.5	160.98	814.48
Stream 8-2	Hardin	51100011005	4,814.85	37.58733	-85.88383	Perennial	116	Poor	1.5	4,814.85	0.00
Stream 9-2	Hardin	51100011005	1,941.30	37.59066	-85.88121	Perennial	114	Poor	1.5	1,941.30	0.00
			19,720.15			***Length of Perennial Stream Impacted***				**18,750.56**	**969.59**

[1] Total length of stream identfied within the EHCIF Megasite Study Area.

[2] Length of stream measured within the project limits of disturbance.

At any point in the construction process, changes can happen. Here's a notable change… The DOE EA refers to a "letter of permission" issued by KDOW for a

temporary culvert that is subject to Section 404 of the CWA. [25] This temporary culvert is designed to help with traffic flow in/out of the mega-site. [14, 25] Installation of the culvert will cause stream disruption and, so, stream relocation is necessary. [14,25] Ford hired Third Rock Consulting to model data "to assess the stream response to the proposed relocation and restoration measures." [61] Verification was needed to ensure the relocation did "not create a rise in 100-year flood levels." [61] Third Rock used USACE software called "HEC-RAS" to predict changes to surface water levels over time. [61,62] To offset increased flow, Ford Below are details.

Table 10: Temporary Culvert Installation, Stream Relocation Project (12/2022)

Finding	Units/Designation	Details
KDOW determines proposed project will comply with water quality requirements included in KDOW's Water Quality Certificate (WQC2022-026-7).	- Site visit by ACOE on 12/02/22 - Sit visit by KDOW on 12/20/22	Sediment loads were high. Ford was reminded that stream flow must be maintained at all times.
Ford acquired KDOW approval for a temporary culvert to provide additional entrance during construction.	- 84" Culvert - Two (2) 36" Culverts near Flood Plain @ "Stream 33" - Stream relocation is necessary	Location of the culvert falls within the land previously approved for construction by KDOW's Water Quality Certificate (WQC2022-026-7). Culvert is designed to assist with sedimentation filtration efforts.
Restoration to "designed conditions" is required after a period of approximately two (2) years.	Required Restorations: - Contours - Seeding - Planting	Monitoring of this area is required during the two (2) year period.

Table 11: Water Surface Elevation Predictions (100-yr Storm), by Third Rock …

Drainage Delineation Reach	Existing Upstream STA[1]	Proposed Upstream STA[2]	Existing 100-yr Water Surface Elevation (ft)	Proposed 100-yr Water Surface Elevation (ft)
Reach 1	108+00	110+08	719.95	715.82
Reach 2	62+00	80+08	700.69	696.15
Reach 3	62+00	73+08	697.42	693.67
Reach 4	37+00	43+08	682.85	682.85
Reach 5	23+00	22+08	677.78	675.31
Reach 6	9+00	8+08	674.17	673.97

[1] Stationing represents existing drainage delineation reach locations relative to the proposed alignment stationing.
[2] Stationing is in descending order from upstream to downstream.

Figure 5: Images of Pre-Construction Conditions, by Third Rock Consulting [60]

PS17 - Pond 3 DSC04195.jpg

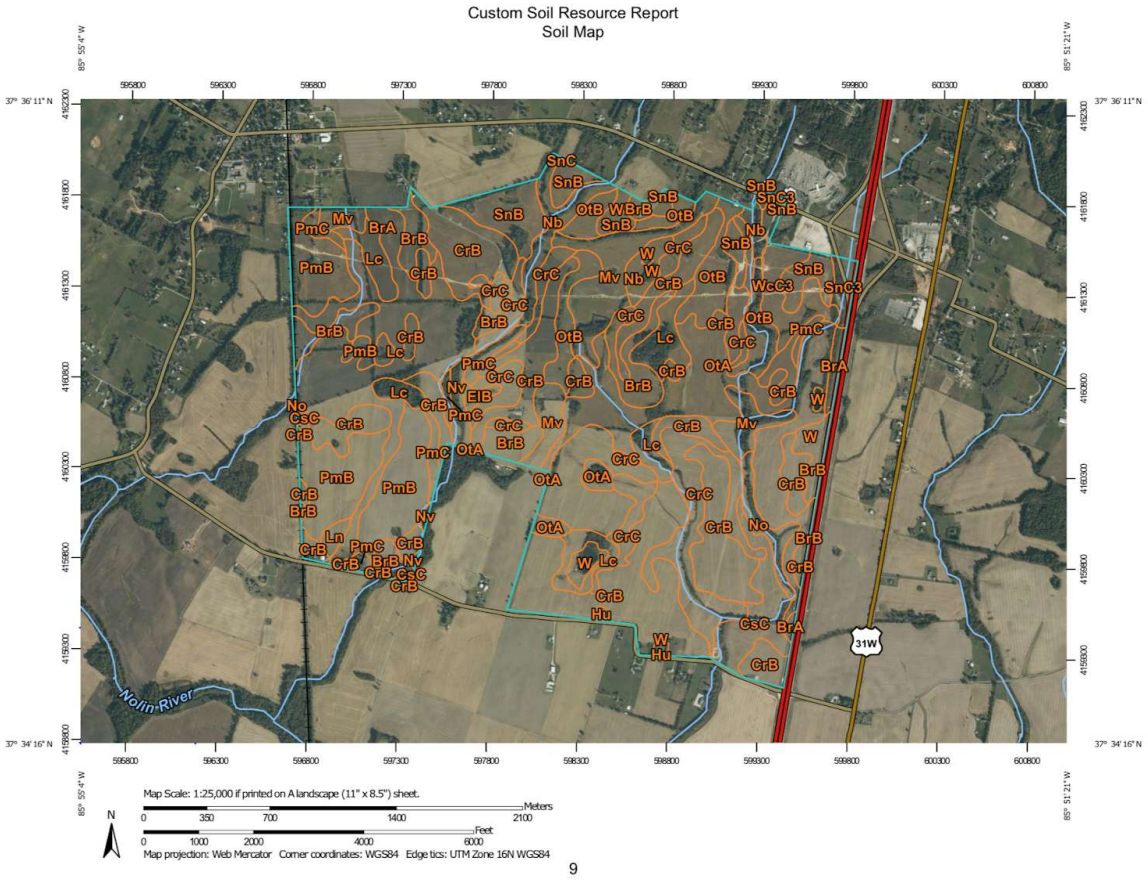
PS35 - Pond 9 and Wetland V DSC06254.jpg

Part 3: Site Conditions Prior to Construction

At this point, we've covered regulations and the plans that Ford and SKOn have in-place for controls. However, what happens if these controls fail? Learning about mega-site conditions prior to construction is critical since it provides a baseline to measure against for impacts.

Engineering consultants Wade Trim and DLZ Corporation performed surveys and environmental evaluations at the mega-site that were included in the "Preliminary" SWPPP. [62] A NRCS soil survey report was included, as well. [62] Details for all of these surveys, evaluations, and reports are included below.

Figure 6: USDA National Resource Conservation Service (NRCS) Soil Survey



The figure above shows the different types of soil present on the grounds of the mega-site. [62] Wade Trim included a summary of the findings from the soil survey. [62] The mega-site consists of "silt loam soil groups, [with] the majority of the site being soil group B." [62] Silt loam soils are generally considered good for

construction because they have good load-bearing capacity and provide good drainage. [62] Group B is considered to have moderate water holding capacity, moderately low runoff potential, and is thought of as moderately susceptible to erosion. [62,63] More details are included in the tables below.

Table 12: USDA (NRCS) Classification of Hydrologic Soil Groups (General)

Criteria for assignment of hydrologic soil groups when a water impermeable layer exists at a depth between 50 and 100 centimeters [20 and 40 inches]

Soil property	Hydrologic soil group A	Hydrologic soil group B	Hydrologic soil group C	Hydrologic soil group D
Saturated hydraulic conductivity of the least transmissive layer	>40.0 µm/s (>5.67 in/h)	≤40.0 to >10.0 µm/s (≤5.67 to >1.42 in/h)	≤10.0 to >1.0 µm/s (≤1.42 to >0.14 in/h)	≤1.0 µm/s (≤0.14 in/h)
	and	and	and	and/or
Depth to water impermeable layer	50 to 100 cm [20 to 40 in]	50 to 100 cm [20 to 40 in]	50 to 100 cm [20 to 40 in]	<50 cm [<20 in]
	and	and	and	and/or
Depth to high water table	60 to 100 cm [24 to 40 in]	60 to 100 cm [24 to 40 in]	60 to 100 cm [24 to 40 in]	<60 cm [<24 in]

Criteria for assignment of hydrologic soil groups when any water impermeable layer exists at a depth greater than 100 centimeters [40 inches]

Soil property	Hydrologic soil group A	Hydrologic soil group B	Hydrologic soil group C	Hydrologic soil group D
Saturated hydraulic conductivity of the least transmissive layer	>10 µm/s (>1.42 in/h)	≤10.0 to >4.0 µm/s (≤1.42 to >57 in/h)	≤4.0 to >0.40 µm/s (≤0.57 to >0.06 in/h)	≤0.40 µm/s (≤0.06 in/h)
	and	and	and	and/or
Depth to water impermeable layer	>100 cm [>40 in]	>100 cm [>40 in]	>100 cm [>40 in]	>100 cm [>40 in]
	and	and	and	and/or
Depth to high water table	>100 cm [>40 in]	>100 cm [>40 in]	>100 cm [>40 in]	>100 cm [>40 in]

Wade Trim's recommendations for erosion and sediment control at the mega-site are based on the soil survey and their runoff calculations, modeled in AutoCad

2020 using “Hydrographs.” [62] Their model predicted that the planned mass grading and final surface conditions would “increase the peak discharges from the project site.” [62] Additional discussion will follow.

DLZ Corporation’s soil boring drilling and sample stress tests provided insight as to the content and consistency of the rock under the soil top at the planned site of construction. [62] Between October 27 - December 21, 2021, DLZ drilled a total of 219 bore holes at depths of between 23.5-95.4 feet below the surface. [62] See Figure 7 below.

DLZ found that under the foot or so of topsoil at the mega-site, the majority of the bedrock is of the “St. Louis Limestone” variety. [62] This bedrock is “known to be highly karstic.” [62] DLZ stress tested intact rock core specimens to ascertain the relative stability of the grounds at the mega-site. [62] See Figure 8 below. [62] Discussion will follow in the next section.

Figure 7: Bore Holes Drilled at Mega-Site by DLZ (2021) [62]

Figure 8: Stress Test of Rock Core Specimen from Mega-Site [62]

DLZ

CLIENT Barton Malow | DLZ JOB NUMBER 2150-9519.50
PROJECT BMC: Ford Willow | SHEET NO. 1 OF 11
SUBJECT | TEST COMP. BY TM DATE 12/2/21
EQUIPMENT Concrete Load Frame | CHECKED BY SR DATE 12/22/21

Unconfined Compressive Strength of Intact Rock Core Specimen (ASTM D7012)

Boring No.: B-010 Rock Description: Limestone
Run No.: R-1 Moisture Condition at Test: As Received
Depth: 62.7'-63.4'

	D_1	D_2	D_3	D_4	D_5	D_6	D_{AVG}
Diameter:	1.978	1.982	1.982	1.983	1.982	1.983	**1.982** in

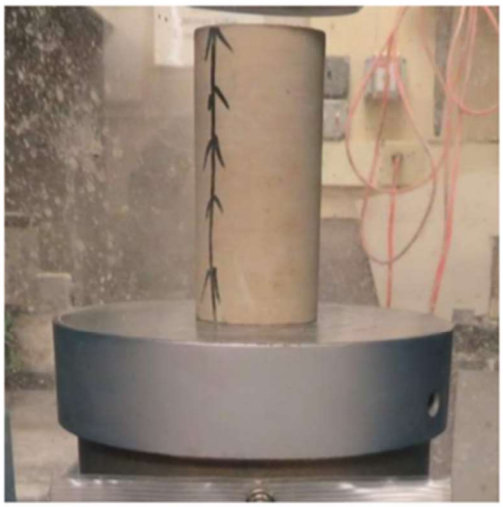
	L_1	L_2	L_3	L_{AVG}	$\frac{L}{D}$
Length:	4.554	4.560	4.569	**4.561** in	= 2.302

Volume: 0.008136994 ft^3 Mass: 517.76 g Unit Weight: **140.28** pcf

Failure Load: 16,862 lbs

Strength: 5,467 psi

Original Specimen



Fractured Specimen

Remarks:

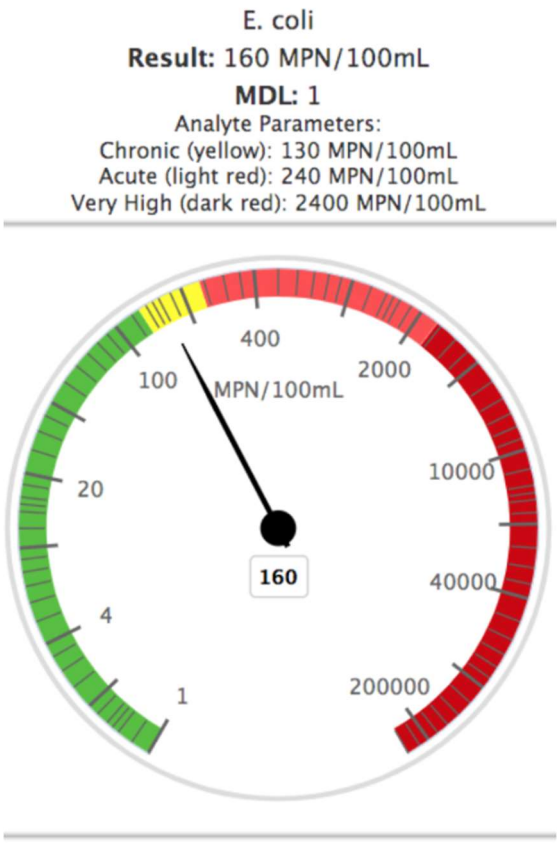
6121 Huntley Road * Columbus, Ohio 43229-1003 * (614) 888-0040 * FAX (614) 431-4024

Moving on to a related point regarding existing conditions… Sedimentation control was a noted concern after site visits from ACOE and KDOW. [52] "Watershed Watch in Kentucky" reports water quality data (including turbidity estimates) for nearby waters that predate construction of the mega-site. [29,30] See below for measures and estimates based on site sampling that was conducted on 09/25/20. [30]

Table 13: Watershed Watch in Kentucky Water Quality for Nolin River (Site #639)

Finding	Units/Designation	Details
Rainfall Estimate (48hr Prior to Sampling)	0.1 inches	On the Watershed Watch field reporting forms, rainfall can be recorded as: zero, 0.1, 0.5, 1.0, 1.5 or > 1.5 inches.
Stream Flow Info (Estimate)	2	Refers to the volume of water flowing through a point in the stream per second (aka "discharge"). Options include: 0 - Dry; 1 - Ponded; 2 - Low; 3 - Normal; 4 - Bank Full; 5 - Flood
Field Turbidity Info (Estimate)	0	Based on a scale of 0 (clear) to 3 (turbid).
Water Temperature (Measured)	17 C°	"Temperature affects the metabolic processes of aquatic biota and the solubility and toxicity of other parameters. Generally, the solubility of solids increases with increasing temperature, while gasses tend to be more soluble in cold water. …Temperature is also a factor in determining allowable limits for other parameters, such as ammonia." [30]
Dissolved Oxygen (Measured)	7.4 ppm	Provides insight for stream health, aerobic organism activity (fish, insect larva, etc), and metabolic processes underway.
Conductivity (Measured)	369 umhos	"Recent studies conducted by the EPA show that when the conductivity in central Appalachian streams rises to about 300 micromhos/cm… plants, insects and animals begin to be affected" [30]
pH (Measured)	7.8 SU	A measure of a "waterbody's ability to support aquatic life, as well as the water's usefulness for domestic or industrial purposes." [30]
E. coli Analysis (Lab Results)	160 MPN/100mL* *See Figure 9 below	Indicates the level of fecal contamination and potential for waterborne disease.

Figure 9: E. coli Analysis of the Nolin River (samples nearest the mega-site) -- see source # 30



The USGS “Hydrological Unit Code” for an area of the Nolin River near the mega-site is 05110001. [28] The USGS website’s “Water Quality Samples for the Nation” portal includes some historical data for this area. [26,28] See the figures and table below.

Figure 10: Gage Height (ft) of Nolin River at White Mills, KY (near Mega-Site)

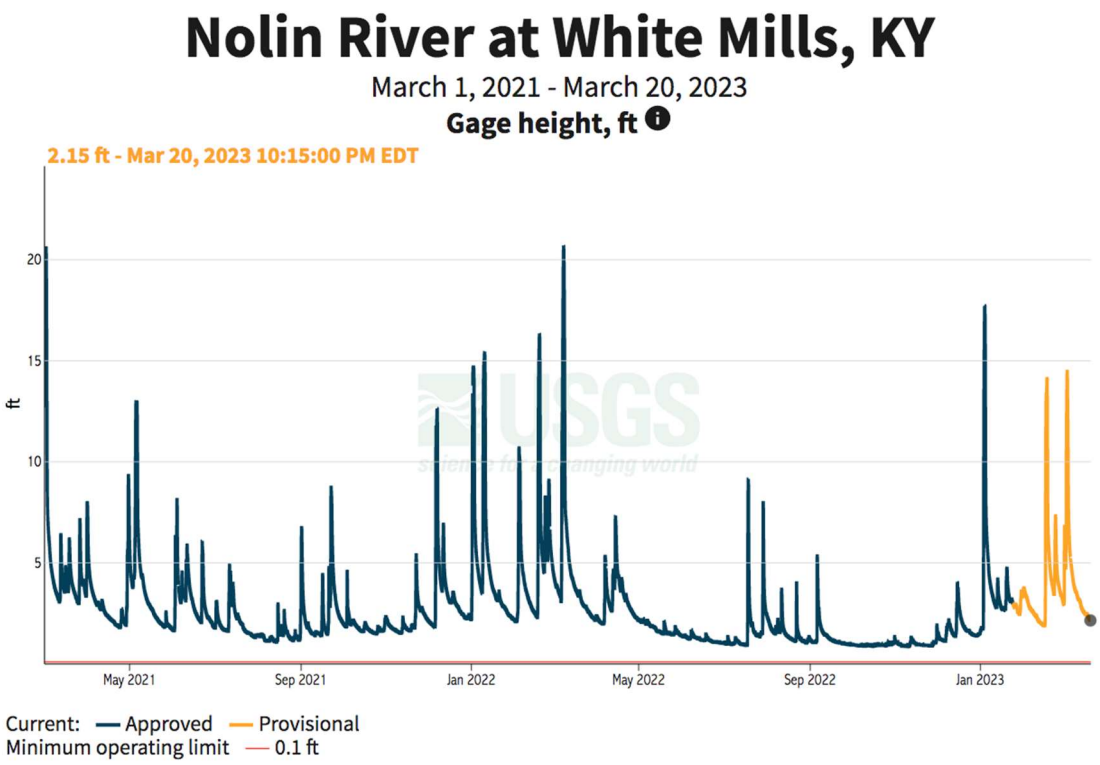


Figure 11: Stream Flow (ft3/s) of Nolin River at White Mills, KY (near Mega-Site)

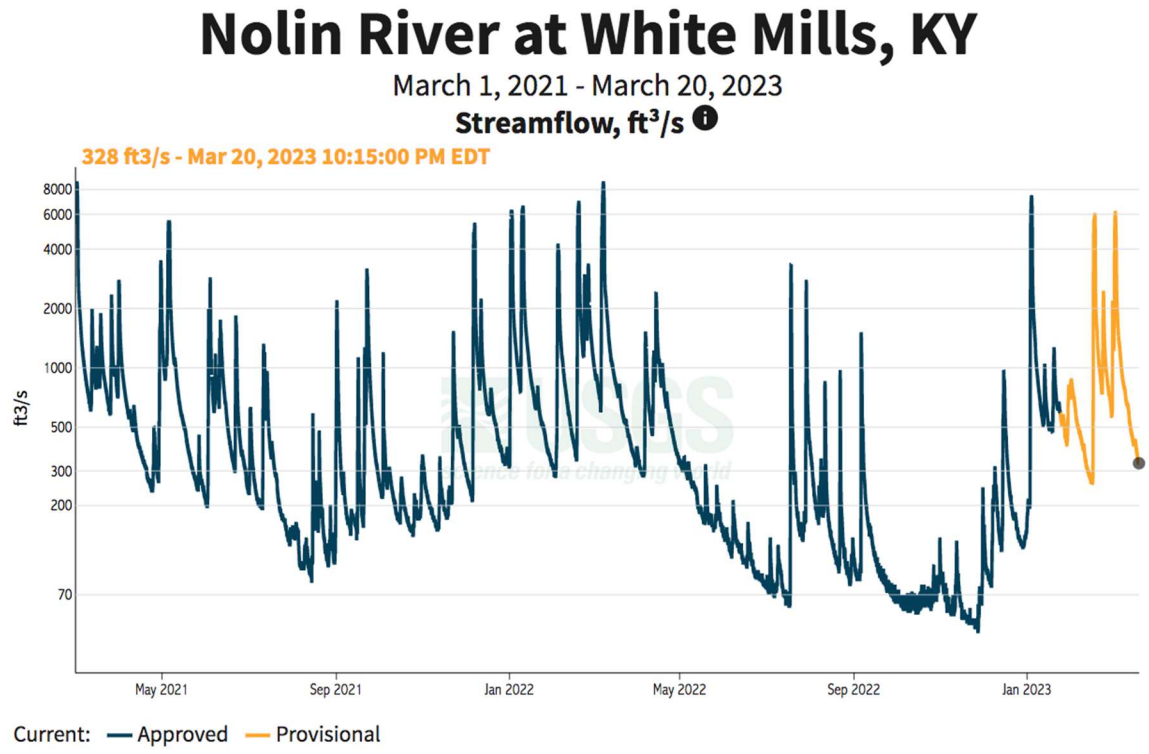


Table 14: Water Quality Samples for the Nation, Hydrologic Unit Code 05110001

NOTE: Measures below were recorded on the most recent USGS sampling, 06/27/95.

Finding	Units/Designation	Details
Water Temperature (Measured)	21.5 C°	"Temperature affects the metabolic processes of aquatic biota and the solubility and toxicity of other parameters. Generally, the solubility of solids increases with increasing temperature, while gasses tend to be more soluble in cold water. …Temperature is also a factor in determining allowable limits for other parameters, such as ammonia." [30]
Instantaneous Discharge (Measured)	228 ft3/s	Refers to the volume of water flowing through a point in the stream per second (aka "discharge").
Conductivity (Measured)	175 wat unf uS/cm @25 degC	"Recent studies conducted by the EPA show that when the conductivity in central Appalachian streams rises to about 300 micromhos/cm… plants, insects and animals begin to be [negatively] affected" [30]

The National Weather Service offers an "Advanced Hydrologic Prediction Service" and includes environmental data for reporting sites across the country. [27] Environmental data for the reporting location nearest the mega-site is shown below. [27] It is important to note that, unfortunately, no forecast data or flood risks are available for this location specifically. [27] Instead, a map of the US is included that shows "precipitation observations" for 2022. [27] The mega-site is located in an area where precipitation observations for 2022 indicate rainfall was between 50-60" for the calendar year. [27]

Figure 12: National Weather Service, USGS Hydrograph, near Mega-Site

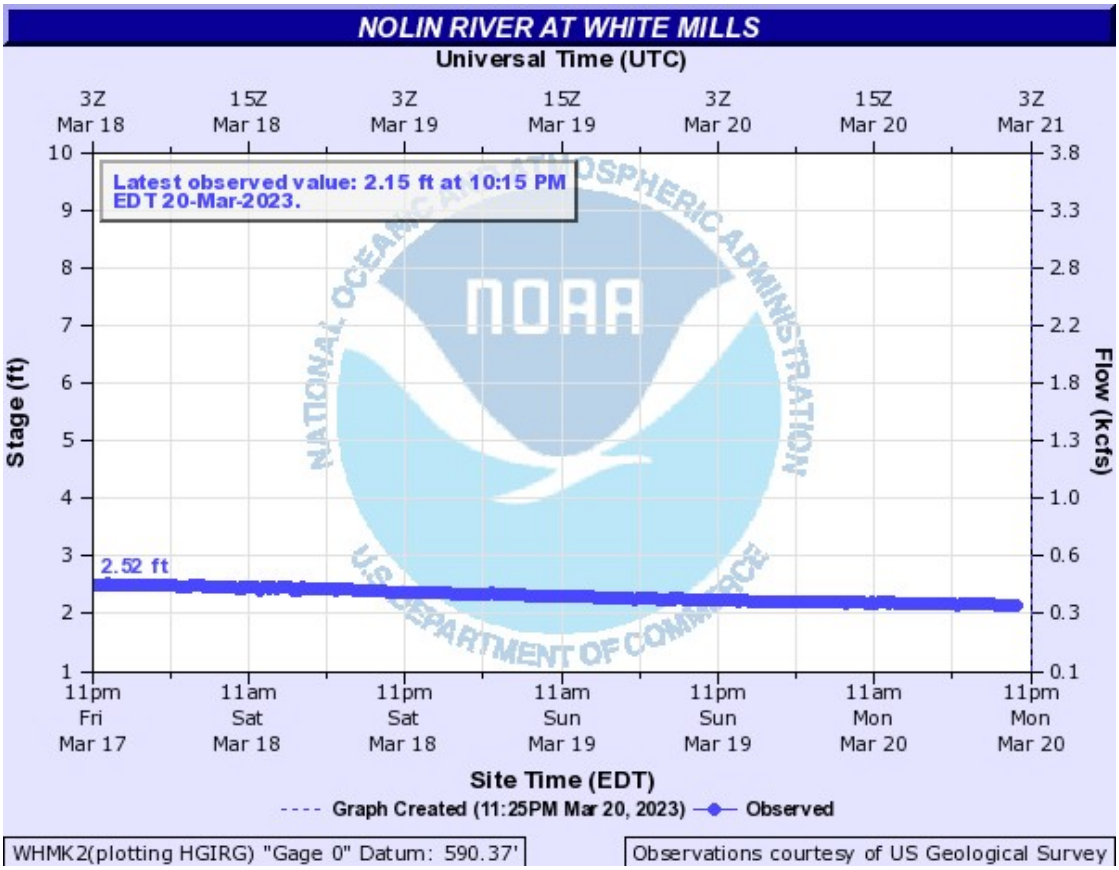
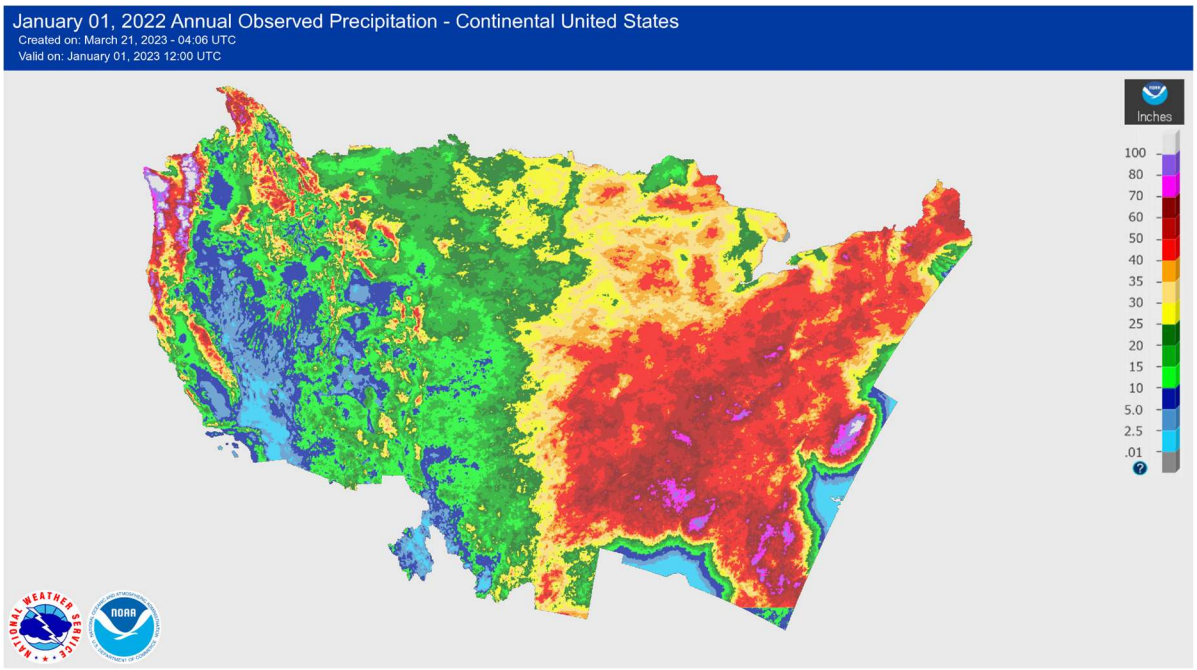


Figure 13: NWS Map of Regional Precipitation Observations (2022)



Results from the EPA's tools mentioned in the Materials and Methods section are included here. [31-33] Unfortunately, the "Gray Tool" was last updated 2015-08-27 and runs on an outdated Java platform that currently prevents access. [32] There is, however, some data available from the "Stormwater Discharge Mapping Tool" and the "How's My Waterway" website. [31, 33] See below.

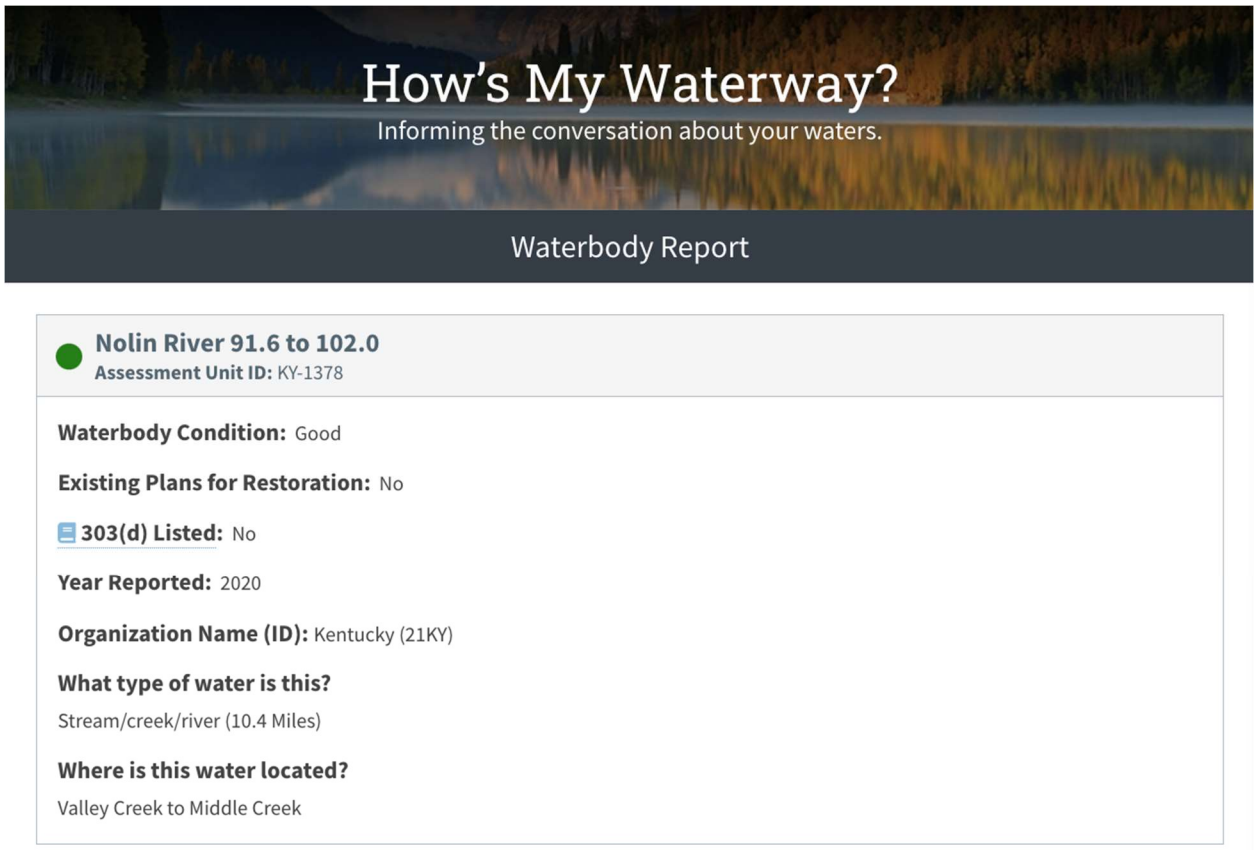
Table 15: EPA's Discharge Mapping Tool Report for Specified Areas

EPA Catchment ID	Related Waters
3997658	Rose Run, Unidentified Water
3997702	Unidentified Water
3997704	Unidentified Water
3997716	Unidentified Water
3997722	Unidentified Water
3997724	Unidentified Water
3997734	Unidentified Water
3997758	Unidentified Water
3997772	Unidentified Water
3997794	Unidentified Water
3997802	Nolin River, Unidentified Water
3997808	Cox Run, Nolin River, Unidentified Water
3997814	Nolin River (KY-1378), Unidentified Water *

*NOTE: A "How's My Waterway" Assessment is available for EPA Catchment ID 3997814. [33]

Figure 14: Specified Area for Discharge Mapping (EPA)

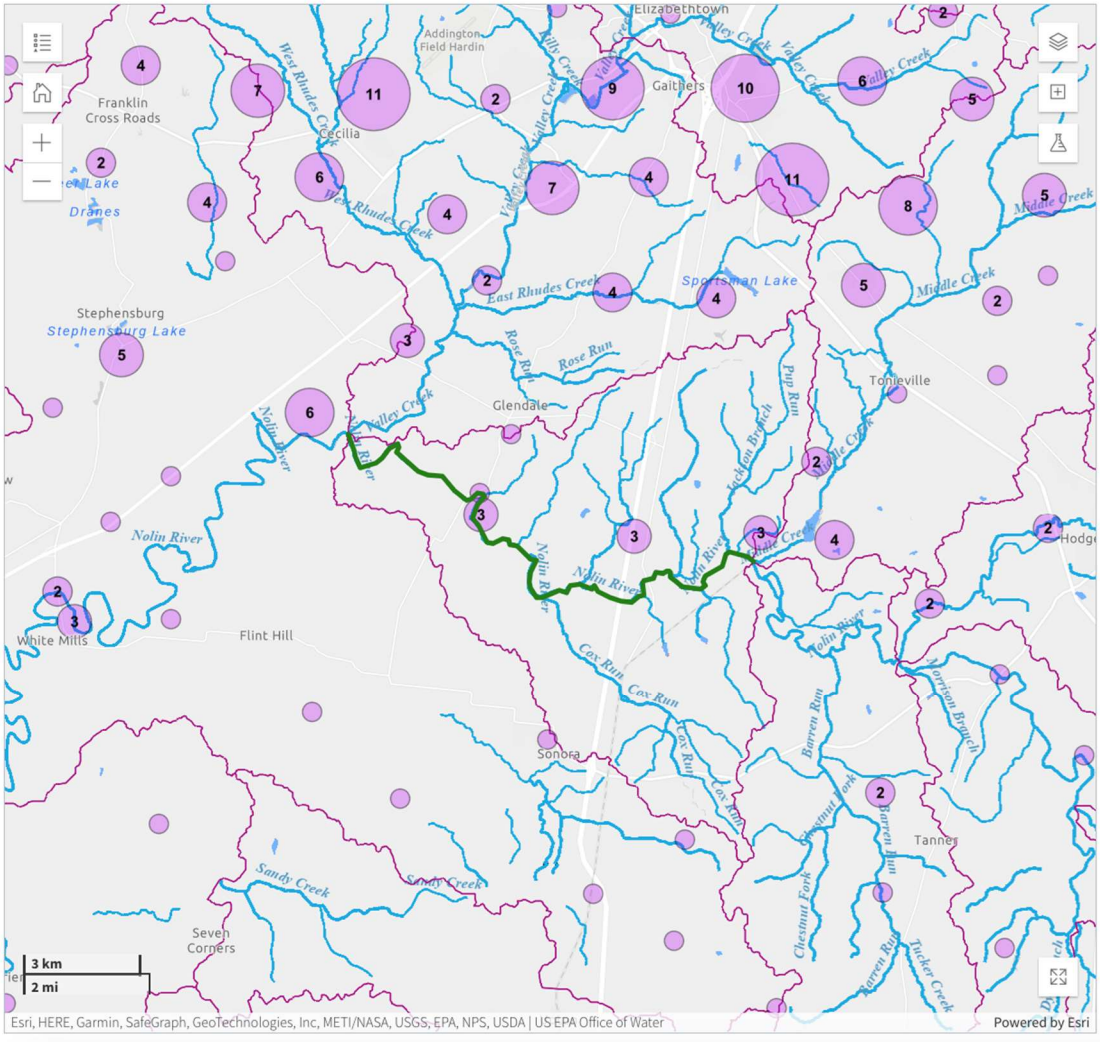
Figure 15: “How My Waterway” for Nolin River (Hardin Co, near Mega-Site)



NOTE: This section of the Nolin River is considered a warm water aquatic habitat and its condition was assessed as “Good” by EPA in 2020. [31,33]

The EPA's "How's My Waterway" website included a section of the Nolin River (KY-1378) and "Unidentified Water" (EPA ID 3997814). [33] This section is colored green below. The image includes all "Mapped Water" (colored blue) near the mega-site and "Past Water Conditions" noted by the EPA (see pink bubbles). [33] The "Past Water Conditions" refer to sampling and monitoring measurements that have been recorded in the surrounding area. [33]

Figure 16: How's My Waterway - Nolin River and "Unidentified Water" (EPA ID 3997814)



Part 4: Community Guide

Before the Community Guide is unveiled, it is important to understand the community it is designed to serve. Population estimates for Hardin County from 2020-2022 are included below. These numbers are based on Census data. [55] This gives the reader a general idea of the number of people in Hardin County that could be impacted by this project. Additionally, an Ethnic and Racial Composition report from the DOE's EA is also included to paint a fuller picture of the good people of Hardin County, near the mega-site.

Table 16: Census Population Estimates for Hardin County, KY (2020-2022)

Geographic Area	April 1, 2020 Estimates Base	Population Estimate (as of July 1)		
		2020	2021	2022
Hardin County, Kentucky	110,694	110,816	111,766	111,862

Table 17: Ethnic and Racial Composition of Hardin County and Kentucky [25]

	Hardin County	Kentucky
Total population	110,702	4,624,047
Race/Ethnicity		
White	74.94%	82.37%
Black or African American	11.59%	8.04%
American Indian and Alaska Native	0.44%	0.28%
Asian	2.06%	1.65%
Native Hawaiian and other Pacific Islander	0.38%	0.08%
Hispanic or Latino	6.05%	4.61%
Poverty	11.1%	16.5%

Note: All population and ethnicity data were gathered from the U.S. Census Bureau web page. Accessed September 15, 2022.

Ford identified thirty-three addresses that adjoin the "jurisdictional streams" that will be filled and/or altered at the mega-site. [55,57] See the table below for

details. This information was found in the application to the ACOE submitted by Ford on 01/24/2022 for a construction permit. [55,57]

Table #18: Property Owners, Lessees, etc Whose Property Adjoins Water Bodies

	Owner Name	Physical Address	Tax Address (If Different From Physical Address)
1	Redacted	241 HIGH ST, GLENDALE, KY 42740	
2		293 HIGH ST, GLENDALE, KY 42740	
3		389 HIGH ST, GLENDALE, KY 42740	
4		7800 NEW GLENDALE RD, GLENDALE, KY 42740	PO BOX 1449, SHEPHERDSVILLE, KY 40165
5		2010 GILEAD CHURCH RD, GLENDALE, KY 42740	
6		1141 GILEAD CHURCH RD, GLENDALE, KY 42740	
7		1908 GILEAD CHURCH RD, GLENDALE, KY 42740	
8		1838 GILEAD CHURCH RD, GLENDALE, KY 42740	461 MILE LN, CAMPBELLSVILLE, KY 42718
9		1700 GILEAD CHURCH RD, GLENDALE, KY 42740	
10		1678 GILEAD CHURCH RD, GLENDALE, KY 42740	
11		1408 GILEAD CHURCH RD, GLENDALE, KY 42740	
12		1663 JAGGERS RD, GLENDALE, KY 42740	
13		1141 GILEAD CHURCH RD, GLENDALE, KY 42740	
14		933 GILEAD CHURCH RD, GLENDALE, KY 42740	
15		911 GILEAD CHURCH RD, GLENDALE, KY 42740	
16		739 GILEAD CHURCH RD, GLENDALE, KY 42740	
17		597 GILEAD CHURCH RD, GLENDALE, KY 42740	
18		633 GILEAD CHURCH RD, GLENDALE, KY 42740	
19		495 GILEAD CHURCH RD, GLENDALE, KY 42740	700 HOWE VALLEY RD, CECILIA, KY 42724
20		283 GILEAD CHURCH RD, GLENDALE, KY 42740	113 CHESTNUT GLEN DR, LOUISVILLE, KY 40245
21		473 GLENDALE HODGENVILLE RD W, GLENDALE, KY 42740	951 WITHROW CT, BARDSTOWN, KY 40004
22		671 GLENDALE HODGENVILLE RD W, GLENDALE, KY 42740	
23		689 GLENDALE HODGENVILLE RD W, GLENDALE, KY 42740	
24		801 GLENDALE HODGENVILLE RD W, GLENDALE, KY 42740	197 PEERCE LN, GLENDALE, KY 42740
25		883 GLENDALE HODGENVILLE RD W, GLENDALE, KY 42740	
26		1055 GLENDALE HODGENVILLE RD W, GLENDALE, KY 42740	400 ASPEN CT, ELIZABETHTOWN, KY 42701
27		1175 GLENDALE HODGENVILLE RD W, GLENDALE, KY 42740	
28		1209 GLENDALE HODGENVILLE RD W, GLENDALE, KY 42740	3384 ROUNDTOP RD, ELIZABETHTOWN, KY 42701
29		1299 GLENDALE HODGENVILLE RD W, GLENDALE, KY 42740	215 ROBEY DR, GLENDALE, KY 42740
30		1677-2085 GLENDALE HODGENVILLE RD, W GLENDALE, KY 42740	PO BOX 172, GLENDALE, KY 42740
31		567 JAGGERS RD, GLENDALE, KY 42740	
32		126 SHIPP LN, GLENDALE, KY 42740	140 CRICKET LN 2A, ELIZABETHTOWN, KY 42701
33		137 SHIPP LN, GLENDALE, KY 42740	

Additionally, the EPA completed an “Environmental Justice Screening” using software called, “EJScreen.” [25] The results indicate percentile scores for “Persons of Color” and “Low Income” criteria for given Census blocks (600-3,000 people per block, typically) at and surrounding the mega-site. [25] The EPA’s National Air Toxics Assessment (NATA) was also used to provide background or those living nearby. [25] See below for details.

Table 19: Census Block Percentile Scores from DOE EJScreen [25]

Location	POC (Persons of Color)	Low Income
Proposed Site	15th percentile	17th percentile
North of Mega-Site	44th percentile	85th percentile
East of Mega-Site	10th percentile	66th percentile
South of Mega-Site	3rd percentile	75th percentile

Table 20: Additional Details for Those Living Near the Mega-Site [25]

	Value	Average	in State	Average	in U.S.
NATA* cancer risk (lifetime risk per million)	30	29	99	29	80-90th
NATA* respiratory hazard index	0.3	0.36	46	0.36	<50th
People of color population	7%	15%	41	40%	14
Low-income population	26%	37%	34	31%	47

Notes: Selected Variables – Tract 21093001600, Kentucky, EPA Region 4. Approximate Population: 9,496.
** More information on the NATA can be found at https://www.epa.gov/national-air-toxics-assessment.*

Now that we've established the community that stands to be impacted, it's time to reveal the Community Guide that was generated based on my experience uncovering information about the mega-site. Please refer to the attached "Community Guide, final.pptx" file. This infographic is designed to be shared online or in-person, and may be provided to any interested parties.

BlueOval SK Battery Park Community Guide

What you need to know …

YOU ARE HERE

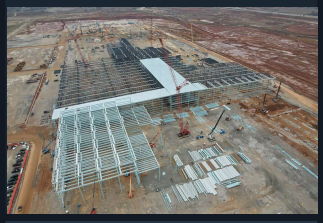
- [x] Site Approved
- [x] Construction
- [ ] Operations

Environmental Protections [4,5]

- *Federal* - CWA, Section 404 (Issuing Agency/Office: ACOE); Endangered Species, Section 7 (FWS)
- *State* - CWA, Section 401 (KDOW); NPDES/SWPPP "Preliminary" Permit (KDOW); Title V Operating Permit (KDAQ)
- *Permit Pending* - RCRA (KEEC); SPCC (KEEC); NPDES/SWPPP, Industrial Permit (KDOW); GPP (KDOW); Drinking Water System Permit (KDOW); Wastewater Discharge Permit for Operations (KDOW)

Site Proposal, and Funding:

- 2 gigantic EV battery manufacturing facilities on a 1500-acre plot[1]
- Approval from 2021 KY State Senate Special Meeting[2]
- $350 million awarded in forgivable business loans to Ford and SK On to recruit new business to KY [2]



Scan the code below to learn more about the **Public Notice** issued by the Army Corps of Engineers online…

Mega Site Information and Impact:

Site Plans:

- Two large electric-vehicle battery manufacturing plants are being built at the "mega-site" in Glendale
- The construction will impact endangered species' habitats and protected waters, including the Nolin River -- an "outstanding" source water for Hardin County. [3]

Downstream Flow:

Nolin River →
…Green River →
…Ohio River

Environmental Assessments:

- The US Army Corps of Engineers and Department of Energy conducted environmental assessments of the "mega-site." [4]
- Ford hired contractors Wade Trim and DLZ to survey the soil and assess the geological conditions underground at the mega-site. [5]

How Land Use Impacts Water Quality:

- When it rains, water runs off the land and carries with it sediment, nutrients, and pollutants. This is referred to as "Stormwater Runoff" and impacts water quality. [7]
- Urbanization increases runoff. When natural areas are substituted with pavement and buildings that do not allow water to penetrate the ground, water retention decreases and erosion occurs, which increases runoff[7]
- Increased runoff can have downstream effects, including ecological disruption, habitat loss, and flooding. All of these effects impact water quality. [7]
- Monitoring is key to prevent issues with water quality[7]

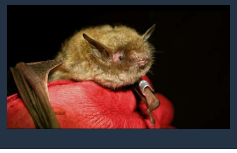
Concerns?

Scan the code above for Local, State, and Federal Representative contact information.

Endangered Species

Northern Long-Eared Bat

Indiana Bat

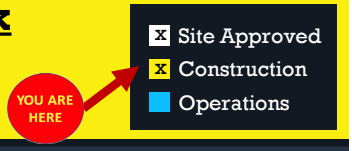


Follow-Up/Monitoring:

- Annual monitoring for stream relocation is due to KDOW by December 31st for a period of two years (minimum). [6]
- Once per week, and within one day of a storm, qualified personnel must complete an inspection of the site to ensure sediment control and erosion prevention measures are effective, per the SWPPP. [5]
- A bi-annual summary report must be submitted to KDAQ "on January 30th and July 30th" to detail any air quality issues. [4]
- Completed inspection forms will be retained at the contractor's office. [5]

BlueOval SK Battery Park Community Guide

What you need to know …



Take Action:

If you are concerned, speak up… You can reach out to your local representative, KDAQ, KDOW, and/or ACOE. Use FOIA/KORA, if needed.

You have a right to know about monitoring frequency and results.

Watch for Public Notices – ACOE and other entities are responsible for notifying the public when things change. Operations start in 2025.

Definitions:

ACOE: Army Corps of Engineers

CWA: Clean Water Act

DOE: Department of Energy

FWS: Fish and Wildlife Services

KDAQ: Kentucky Division for Air Quality

KDOW: Kentucky Division of Water

NPDES: National Pollutant Discharge System

SWPPP: Stormwater Pollution Prevention Plan

References:

[1] Anderson, M. (2021, October 26). Julie Raque Adams on passage of SB 5 during recent KY Special Session. Spectrum News 1: In Focus. Retrieved April 7, 2022, from https://spectruminfocus.com/section/in-focus/in-focus-shows/2021/10/26/julie-raque-adams-on-ford

[2] Kentucky General Assembly. (2021, September 23). 2021 Special Session Senate Bill 5 (21SS SB 5). Kentucky Legislative Research Commission. Retrieved March 12, 2023, from https://apps.legislature.ky.gov/record/21SS/sb5.html

[3] US Army Corps of Engineers, L.D., Public Notice No. LRL-2021-443-sea. 2022. Available from: https://www.lrl.usace.army.mil/Portals/64/docs/Regulatory/Public%20Notices/LRL-2021-443%20Public%20Notice.pdf?ver=CbDNf_sxA6pI0Y5j_PdZOA%3D%3D

[4] Department of Energy (DOE). (2022, December). ENVIRONMENTAL ASSESSMENT: BlueOval SK Battery Plant (Stanton, TN) / BlueOval SK Battery Park (Glendale, KY). Retrieved February 21, 2023, from https://www.energy.gov/lpo/environmental-assessment-and-draft-fonsi-blueoval-sk-battery-plant-stanton-tn-blueoval-sk

[5] Wade Trim Consulting. (2022). Blue Oval TE1 & EXP Battery Plant Site Preparation and Construction (Preliminary Storm Water Pollution Prevention Plan). Cincinnati, OH.

[6] Vogeler, S. (2022). Water Quality Certification, Permit Number: WQC2022-026-7 (Commonwealth of Kentucky, Energy and Environment Cabinet, Kentucky Division of Water (KDOW)). Retrieved February 06, 2023, from http://dep.gateway.ky.gov/eSearch/agencydetails?agencyid=170550

[7] Cheng, C., Zhang, F., Shi, J. et al. What is the relationship between land use and surface water quality? A review and prospects from remote sensing perspective. Environ Sci Pollut Res 29, 56887–56907 (2022). https://doi.org/10.1007/s11356-022-21348-x

It is important to recall the main foci of this presentation now that we are ready to discuss its findings. I set out to determine the project's potential impacts to water quality (broadly), and to prioritize community empowerment. More specifically:
(1) Define environmental conditions "pre-construction" and study Ford's plans for the mega-site to answer the question: "How might this project impact the local ecosystem and water quality in Glendale -- and perhaps beyond?"
(2) Based on my experience uncovering this information, provide a "roadmap," so to speak, for community members to educate themselves and, if necessary, seek remediation for environmental degradation.

The materials and methods that were used provided the results that will guide discussion of the BlueOval SK Battery Park project in this section of the presentation. This section will essentially be a summation and commentary on my information discovery process and the results, mostly in order of their inclusion from the previous section. To start, it is important to recall how the mega-site project was funded.

Tax-payer dollars in the amount of approximately $400 million were liquidated from state reserves to encourage Ford and SKOn to choose Glendale as a site for expansion of their EV battery manufacturing joint-venture. [40,43,44] Additional federal funding or low-interest business loans for development may

soon be approved. [25,66] Since tax-payer dollars have enabled construction of the mega-site, and its impacts have the potential to be major, it is imperative that Ford and SKOn remain transparent with their plans, stick to the monitoring schedules outlined in the preliminary (and eventual “industrial”) SWPPP and other regulatory documents, and continue to organize community meetings to hear from stakeholders that are already being affected by this project. [13,14,18,19,20,23-25,41,49,50,62,65-68]

The ACOE’s Public Notice was not a great start for mega-site public relations. [3] The document includes units of measurement that are likely wholly unfamiliar to those without a background in geology or construction, including: “94,000 cubic yards, 18,751 linear feet (lft), and 7,581 lft.” [3] Further, the notice mentioned “clean fill” would “permanently” be discharged into waters on-site, but refrained from defining what type(s) of materials the clean fill would consist of -- despite having the information available (as evidenced in the DA Permit issued to Ford for construction approval). [3,57] There is zero mention of the massive grading operation set to occur on site, or the fact that existing waters would be modified to prevent excess stormwater runoff. [3] Since the Department of the Army (ACOE) is a federal agency, the Plain Writing Act of 2010 applies to this public notice posted online. [69] “The Plain Writing Act of 2010 requires federal agencies to write clear Government communication that the public can understand and use." [69] Unfortunately, this document led to more questions than answers for many.

As part of the regulatory process, public comment is permitted and Ford and/or ACOE must respond. The DOE's EA includes a discussion of the comments submitted to the ACOE between when the public notice was posted (02/02/22) and before it had closed (03/04/22). [3,25] Responses are included below. A brief discussion will follow.

Table 21: DOE EA - Public Comments from ACOE Public Notice, posted 02/02/22 [25]

Finding	Units/Designation	Details
As a result of the ACOE's "Public Notice," a public meeting/hearing was requested.	Despite requests, a public meeting/hearing was not held before project approval.	A total of 4 requests for public hearing were received. Six comments were received in response and are included here.
Comment #1: US EPA	The USEPA requested a secondary and cumulative effects analysis including the reasonably foreseeable operational impacts from lithium battery manufacturing and proposed pretreatment program for discharge of process water.	Response: ACOE provided USEPA documentation and EPA had no additional comments, adding that they (EPA) do not foresee water quality effects in a neighboring jurisdiction from the regulated activity. [Documents unavailable/not provided in FOIA or KORA requests.]
Comment #2: The Kentucky Energy and Environment Cabinets' Department for Environmental Protection (KDEP) responded to the public notice with comments from the Kentucky Division of Air Quality (KDAQ) and KDOW.	KDAQ: Project must comply with requirements for the handling of fugitive air emissions, regulations for open burning, and should implement emissions controls and reduce idling times on construction vehicles/equipment. KDOW: The project affects waters within the source water protection area for the Hardin County Water System. Streams being filled are "located upstream of the Hardin County Water District #2 water intake at river mile 78.7 on the Nolin River." BMPs must be implemented to prevent "stormwater runoff, soil erosion, and movement of nutrients and	Response: "The applicant submitted a permit application to the Kentucky Division for Air Quality (KDAQ) for all of the processes and resulting air emissions from the proposed facility." "The applicant (Ford) obtained a 401 Individual Water Quality Certification WQC# 2022-026-7 (AI# 170550) on March 28, 2022, which addresses water quality concerns. The applicant stated that they would develop a GPP or Source Water Protection Plan if required by state law/regulation."

Finding	Units/Designation	Details
	contaminants into unprotected waterways and contingency planning strategies for accidents and emergencies." [25]	
Comment #3: Caroyln Bow, resident of Glendale, KY	Carolyn Bow "responded to the public notice in an email on February 11, 2022 with concerns about the effects of pollution from the facility on her organic farm, Nolin River, and Nolin Lake."	Response: "The Corps has determined that these concerns were adequately addressed through the 401 [Water Quality Certificate] WQC."
Comment #4: Ms. Lori Howlett	Ms. Lori Howlett responded to the public notice in an email on February 26, 2022 with concerns about the effects of the proposed facility on water quality, flooding, air quality, light and noise pollution, increased property taxes, and crime rate. Ms. Howlett requested a public hearing.	Response: "The facility is designed to avoid any impacts to or contact with underground sources of drinking water. Drinking water quality would not be affected by this project. No process water or stormwater would be discharged to any aquifer or groundwater feature, and no injection wells or infiltration trenches are proposed. All stormwater runoff would be routed through extended detention basins and discharged at the surface within natural stream channels."
Comment #5: Paul Howlett and Houston Howlett	"Paul Howlett and Houston Howlett … expressed concerns regarding hazardous wastes that could be produced by the facility and how the applicant would prevent contamination of groundwater supply. In addition, they expressed concerns about the effects of the facility on the potential conversion of the area from primarily agricultural land to urban development and manufacturing. Additional concerns include logistical considerations for the expected influx of workers in the area during construction and facility operations, the effects of the proposed facility on flooding in the area, and the effects of the facility on local crime …"	Response: Ford will operate according to "best in class environmental practices" and will "develop a GPP or Source Water Protection Plan if required. … Development of the battery park is consistent with the Hardin County Comprehensive Plan and is strongly supported by local and state governments. … Many stormwater features are being added to the site to address any potential impacts to downstream areas. Three stormwater management basins are being developed with a combined capacity of nearly [(52,363,636 gallons)] to control the release of stormwater so that peak flows entering the existing stream channel do not exceed pre-development discharge rates. … Adverse impacts downstream are not expected based on the

Finding	Units/Designation	Details
		assessment of historically-based design storms."
Comment #6: Mr. John Edwards	Mr. John Edwards responded to the public notice in an email on March 1, 2022 and expressed concerns about how stream flow patterns and volume would change after construction of the facility.	Response: "The Corps has determined that these concerns were adequately addressed." See Comment 5 Response.

All of these comments were addressed out of the public eye, and were only found in the DOE's EA published online. [25] No other documents that were reviewed as a part of this presentation included this information -- including the few ACOE documents that were provided, despite multiple requests for additional ACOE docs via FOIA and KORA. [25] It is concerning that the ACOE, despite a clearly worded e-mail request and multiple attempts over the span of ten weeks to contact them, were unable to fulfill their duty and provide the documents

I spoke with two ACOE representatives during the ten week period in which I was seeking documents via FOIA request. My original request for information was on January 23, 2023. One representative explained that there was a backlog of "months" of requests, despite ACOE setting a turn around time of "20 working days to process a request" on their website. [45] I called several times between my first attempt to acquire information and my eventual "giving up" the first week of April. At one point, another representative that I spoke with over-the-phone told me that my request was being processed. However, as I write this portion of the presentation, it has been seventy-six days and I have yet to receive a single document from the Louisville ACOE, despite my calling on a weekly basis and a

string of seven emails -- six of which were sent without a follow-up response from the ACOE.

This process was frustrating, caused me to reconsider my Capstone project entirely because of a lack of data, and made me question the role of the ACOE in sharing information for the betterment of our American society. I recently read about “The Carter Center Access to Information Project.” [70] Former President Jimmy Carter wrote a foreword in the 2002 publication and there’s a paragraph in it that I find sums up my concerns nicely:

> “Public access to government-held information allows individuals to better understand the role of government and the decisions being made on their behalf. With an informed citizenry, governments can be held accountable for their policies, and citizens can more effectively choose their representatives. Equally important, access to information laws can be used to improve the lives of people as they request information relating to health care, education, and other public services.” [70]

I learned, after having waited over forty days for documents from the ACOE, that I could reach out to the Attorney General’s office for assistance with my delinquent FOIA request related to water quality. I also learned that the Kentucky Open Records Act (KORA) office was an option. My experience with the KORA office was a night and day difference to what happened in my dealings with the Louisville ACOE FOIA department. I was able to download and review a slew of documents just two days after my KORA request. However, unfortunately, I was unable to complete a total review of the 77 documents (one of which included over 1,000 pages) before the time of my presentation’s final draft submission.

One of the documents that I was able to download and review was the ACOE's "Department of the Army Permit." [55] This document was unavailable online, based on my multiple search queries using different combinations of a variety of search terms over the course of forty-plus days. The copy that I received appeared photo-copied. [55]

The main findings from the DA Permit were related to its requirements. [55] It called for Ford and SK On to acquire the KDOW Water Quality Certificate that was also included in my KORA request. [13] The Water Quality Certificate most notably included details regarding the purchase of AMU's, which we will discuss shortly; implementation of BMPs designed to minimize erosion and sediment transport from the site ("suspended particulates/turbidity effects must be minimized through appropriate on-site sediment and erosion controls"); and the need for Ford and SKOn to acquire a KPDES discharge permit. [13]

The KPDES permit is a "general" permit to be used for construction activities throughout the state of Kentucky. [20,21] This is a bit concerning because this permit does not offer site-specific procedures and is more of a rule-of-thumb/guidance document. [20,21] Throughout my information discovery process, no specific verbiage was found for the regulation of discharge from construction activities at the mega-site. BMPs are mentioned in several regulatory documents, yet I was unable to find any documents detailing Ford/SK On's site-specific BMPs for the mega-site. [13,20,21,55] Instead, approved permits state things like: A SWPPP is required, and… "The SWPPP shall include

erosion prevention measures, sediment controls measures, and other site management practices necessary to prevent the discharge of sediment and other pollutants that would result in the degradation to waters of the Commonwealth." [20] The "Preliminary" SWPPP includes general statements, as well. [62] During my review of documents, I was unable to confirm the existence of the partners' site-specific BMPs that were called for in the KPDES permit and other regulatory documents.

Now we will return to the aforementioned AMU's -- the $20 million in "mitigation units" that were purchased by Ford, and paid to KDFWR, to offset disruption to habitats and "waters of the US" based on adjustments by KY Dept. of Fish and Wildlife. [3,13,46,49] Critics of compensatory mitigation fees argue that these fees are ineffective in compensating for the environmental damage caused by development projects and can actually lead to greater environmental degradation. [71-73] "Mitigation has, at times and in particular instances, been applied in ways that appear arbitrary, lack transparency, or are seemingly uncoupled from the amount or type of impacts." [71] "In-lieu fee programs also are not operated in ways that encourage active management of ecological risks…" [72] Monitoring of the mega-site is only planned for a period of two years. [13,25,61,62] Given what we know about how land use affects water quality, if monitoring is not conducted regularly, then the federal government could spend a significant more in environmental cleanup than what they charged in mitigation fees, not to mention the incalculable loss of biodiversity should a major pollution event occur at the mega-site. [5,10]

Shifting gears, the DOE's EA posted online discussed water quality issues -- including treated water. [25] One finding indicated: "Impacts on [treated] water resources would not be significant." [25] And that the "Mega-site will rely fully on the Hardin Co Water District No. 2 for their supply of treated potable water." [25] The issue here is that the treated water facility is approaching 40 years of age (1990). [4] Despite recent upgrades in treatment capacity, the aging treatment facility must withstand external pressures -- climate change, ecological evolution, and the mega-site's land use creating changes in the flow, volumes, and composition of pre-treated surface water. [4] There is growing concern among scientists and researchers that water quality could suffer globally due to aging treatment facilities and these stressors. [5,10]

Sticking with analysis of the DOE's EA findings: Third Rock, Ford's hired subcontractor that was paid to assist with the acquisition of a CWA-404 permit to enable construction of the mega-site, found that forty-seven of the forty-eight streams assessed at the mega-site essentially failed the EPA's Rapid Bioassessment Protocols (RBPs) for stream quality. [25, 74] These streams were rated as "POOR" condition. [25,52,53,60,74] Taking a closer look at the RBP criteria for stream health, it is unclear whether region-specific modifiers were used in Third Rock's assessment, or if the scores were based on the "standardized" methodology outlined in the RBP online. [25,52,53,60,74] See below.

Figure 17: Partial Capture of Third Rock Stream Habitat Assessment (RBP)

THIRD ROCK CONSULTANTS, LLC
STREAM HABITAT ASSESSMENT (HIGH GRADIENT)

REACH ID: S1 **PROJECT NO:** KY21-049 **PROJECT NAME:** Blue Oval SK Battery Park, Glendale, KY

INVESTIGATOR(S): R. Storm, J. Storm **COWARDIN CLASS:** R6 **WATERSHED:** Cox Run-Nolin River / Lower Valley Creek

STREAM SIZE:		**STREAM TYPE:**		**IMAGE ID #:**	**IMAGE DESCRIPTION:**
Width (Ft)	1.0	Perennial			*See photo log*
Depth (Ft)	0.5	Ephemeral	x		
Reach (Ft)	100.0	Intermittent			

HABITAT PARAMETER	**CONDITION CATEGORY**			
	OPTIMAL 20 19 18 17 16	**SUBOPTIMAL** 15 14 13 12 11	**MARGINAL** 10 9 8 7 6	**POOR** 5 4 3 2 1 0
1. Epifaunal Substrate / Available Cover *Score* 5	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient.)	40-70% mix of stable habitat; well suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
2. Embeddedness *Score* 8	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
3. Velocity / Depth Regime *Score* 5	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/depth regime (usually slow-deep).
4. Sediment Deposition *Score* 8	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.

The screen capture above includes a portion of Third Rock's stream assessment parameters. [74] However, the date of this assessment is missing. Measures for velocity and sediment deposits are dependent on the timing of the assessment -- i.e. these measures may be higher or lower depending on the season, and, thus, would affect the score rating the stream's health. [74]

The EPA's Rapid Bioassessment Protocol (RBP) is a widely used and recognized method for the assessment of the biological condition of streams and rivers. [33,34,52,53] However, It is worth noting that there are indices specifically designed to assess water quality in the state of Kentucky, as well. There are two state documents related to indices developed to determine the ecological health of waters in Kentucky. One is "The Kentucky Macroinvertebrate Bioassessment Index" (MBI). [34] The other is titled, "Development and Application of the Kentucky Index of Biotic Integrity (KIBI)." [35] See below for additional details.

Table 22: Kentucky's Macroinvertebrate Index (MBI) [34]

Finding	Units/Designation	Details
Macroinvertebrates are a key indicator of stream health.	- Presence - Abundance - Diversity	The MBI uses these measures to determine the biological health of a stream. Macroinvertebrates are sensitive to changes in water quality.
The MBI uses a scoring system. Scores are based on "reference conditions" that take into account the "range of quantifiable ecological elements." Percentiles in both wadeable and headwater streams in given regions are established and a score is assigned.	For example, in a wadeable stream between the 5th and 50th percentile in the "Blue Grass" (BG) region… Excellent Rating = ≥70 Good = 61-69 Fair = 41-60 Poor = 21-40 Very Poor = 0-20	Similar to the EPA Rapid Bioassessment Protocol (RBP) Habitat Assessment, but specific to KY. There are ecoregions, bioregions, and basins that each have their own "regional classification" that includes a modifier for important habitat components.
"Kentucky's revised MBI and its associated metrics appear to be both robust and repeatable in headwater and wadeable streams."	"The aggregate index will be used to rate water quality conditions of streams and also to identify those highest quality waters or "Exceptional Waters" deserving stricter protection under Kentucky's antidegradation regulations."	Additional sampling is encouraged when results "fall close to narrative rating thresholds."

Additional information from the MBI -- and relevant to the KIBI (see below)… [34,35]

Table 23: Kentucky Index of Biotic Integrity (KIBI) [35]

Category	Criterion
1) riparian zone condition*	well-developed providing some canopy over the stream; presence of adequate aquatic habitats in the form of root mats, coarse woody debris and other allochthonous material
2) bank stability*	at least moderately stable with only a few erodible areas within the sampling station
3) degree of sedimentation*	the substrate is 25 percent or less embedded by fine sediment
4) suspended material	the water is relatively free from suspended solids during base flow conditions
5) evidence of nutrient enrichment	the substrate is relatively free from extensive algal mats that could smother benthic habitats
6) conductivity	conductivity is not highly elevated above what naturally occurs (region-specific)
7) aquatic habitat availability*	there is ≥ 70 percent (or >50 percent for low gradient) mix of rubble, gravel, boulders, submerged logs, root mats, aquatic vegetation or other stable habitats available for aquatic organisms
8) presence or absence of trash in the stream	solid waste within the stream and on the streambank is rare or absent
9) evidence of new land-use activities in the watershed	the land use conditions are unchanged compared to most recent topographic maps or aerial photos
10) accessibility of the site for collection	accessible

* Scored using the RBP Habitat Assessment forms (Barbour et al. 1999).

Table 24: Kentucky Index of Biotic Integrity (KIBI) [35]

Finding	Units/Designation	Details
The KIBI sets out to develop criteria for measuring “biotic integrity” of waters using fish as the biological indicator.	- Composition - Abundance	Fish are useful indicators because they have longer generation times than macroinvertebrates, occupy a variety of habitats, and have specific requirements for survival.
The KIBI uses a scoring system. KIBI scores are, much like the KY MBI, based on “reference conditions” in streams of given ichthyo- (fish) regions. Reference sites were chosen based on “least” or “minimal” disturbance. Percentiles are established and a score is assigned.	For example, in a stream between the 5th and 50th percentile in the “Pennyroyal” (PR) icthyo-region… Excellent Rating = ≥67 Good = 53-66 Fair = 35-52 Poor = 17-34 Very Poor = 0-16	There are more “ichthyo-regions” because of the variability of habitats that fish occupy across the state of KY.
The KIBI is designed to gauge stream health.	Sampling protocols are key to ensuring precise, accurate measures.	Additional sampling is encouraged “to help define the condition more clearly.”

These indices are important to consider as state-specific alternatives to the EPA's Rapid Bioassessment Protocol (RBP) that was used to determine the quality of the streams within the boundary of the mega-site, as reported in the DOE's EA. [25,34,35] The RBP uses a set of standardized procedures to sample and identify the presence of aquatic insects and other macroinvertebrates, which are then used to evaluate the overall health of the aquatic ecosystem of streams and rivers. [53] The KIBI is based on a set of metrics that evaluate the presence and abundance of various macroinvertebrates and fish species, as well as physical and chemical measurements, such as stream flow, water temperature, and nutrient levels, to assess stream health. [34] The KIBI is used to determine the overall ecological condition of streams and rivers in Kentucky. [34] The Kentucky MBI is based on the presence and abundance of macroinvertebrates. [35] The MBI is calculated by assigning tolerance values to different groups of macroinvertebrates based on their sensitivity to pollution and then summing these values to produce an overall index score. [35]

The primary difference between the RBP, KIBI, and MBI is the scope and purpose of the assessments. The RBP is a standardized protocol developed by the EPA, while the KIBI and MBI are biotic indices that were developed specifically for use in Kentucky. Critics of the RBP might point to its limited scope – it does not consider physical and chemical measurements that may be important to overall ecosystem health. [52] Additionally, the RBP may not

accurately reflect local or regional conditions since it is a standard protocol developed at the federal level. [52] Further, some may argue that the applicability of the RBP is limited, as some habitats may not support the same types of macroinvertebrates that are used as indicators in the protocol. [52] Third Rock's stream assessments found that only one out of the forty-eight streams assessed scored as better than "POOR." [73] "Stream 36," scored as "Fair," thus presenting a convincing case to KDOW that the water quality and ecological impacts of this project -- in particular filling all of these streams -- would be minimally disruptive at worst. [25,73]

Next, we will discuss another finding from the DOE's EA. This finding is related to endangered species that both the DOE and ACOE agreed would likely be impacted by construction plans at the mega-site. [25] Ford "proposed to remove 65.6 acres of "potential" [Northern Long-Eared Bat (NLEB) and Indiana Bat] habitat" likely used for foraging and migrating along 5 miles of perennial streams. [25] This area was set to be impacted during a certain phase of construction. [25] Another endangered organism that the mega-site project could affect is the Snuffbox Mussel; however, both "The Corps and the DOE have determined that the proposed project would have no effect on the snuffbox mussel due to lack of suitable habitat." [25] I am curious if this lack of a suitable habitat is based on Third Rock's RBP assessments of the streams. Focusing back on the bat habitats that are impacted… Ford made a "voluntary contribution to the Imperiled Bat Conservation Fund (IBCF)" and were subsequently permitted to destroy

those areas of the mega-site during the mass grading event of the facility construction. [25] This is another instance of Ford paying for their environmental/ecological disruption at the mega-site, and we are left to wonder what the true cost of this disruption could be. Like most bat species, the Northern Long-eared bat and Indiana bat species are nocturnal insectivores. [75] They consume large quantities of insects such as moths, mosquitoes, and beetles. [75] This makes them an important natural control on pest populations, helping to protect crops and other plants from insect damage. [75]

A final finding from the DOE's EA that will be discussed here lies just outside of the scope of this presentation -- but is too important NOT to mention. [25] The DOE found that: "Impacts on air quality as a result of the Project would not be significant." [25] Despite this finding, DOE also recognizes that the mega-site -- once operational -- will be considered a "major" emitter of a long list of potentially toxic agents, including "particulate matter, carbon monoxide, nitrous oxides, sulfur dioxide, Volatile Organic Compounds (VOCs), lead, and other Green House Gasses (GHGs)." [25]

I recently wrote a paper for my class, "CPH622-001: Toxic Agents and Public Health." In it, I discuss recommendations for Ford and SkOn to prevent unnecessary morbidity and mortality issues during plant operations -- namely associated with nickel exposure. Additional consideration must be given to potential air quality issues.

Moving on, the temporary culvert and stream relocation project creates concern for both surface water levels at the mega-site potentially rising, and stormwater retention being inadequate despite modeling of environmental data indicating otherwise. [14,25,61,62] The Colorado River drying up is one glaring example of how modeling environmental data has become a bit of a crapshoot. [76] Water levels have become much more difficult to predict due to climate change producing record weather events across the globe. [76] Continuous base flow is vital to the health of aquatic life in streams. [76] If disruption occurs, it could spell the end of the ecosystems surviving in/around the mega-site, and have potential downstream effects.

Ford's hired subcontractor, Third Rock, used ACOE software (HEC-RAS) to model their predicted 100-yr flood levels. [25,61,62] This represents a potential conflict of interest and, further, there are known issues with the software. [77,78] The 100-year storm predictions could be wildly inaccurate, regardless of if a software issue occurred -- due to the unpredictability of weather patterns exacerbated by climate change. [76]

One last issue to note regarding the stream relocation project and water volume modeling… The DOE report indicated that "proposed work would have a minor, short-term effect on the circulation and drainage patterns," while Wade Trim analysis concluded: the planned mass grading and final surface conditions would

“increase the peak discharges from the project site.” [25,62] The fact that contractors’ assessments of the planned construction’s impact on water volume are conflicting underscores the uncertainty regarding the modeling results.

If we assume the worst, then we would anticipate the mass grading and stream relocation project to increase peak discharges from the project site, as Wade Trim predicts, which could then flow through the “moderately” absorbent hydrological soil group B in streams on site and become subsurface water that would impact “highly karstic” bedrock below the surface of the Battery Park. [62,63] The karstic limestone prevalent under the mega-site (based on DLZ findings) is characterized by the presence of sinkholes, underground caverns, and fissures that can allow surface water to infiltrate the subsurface and potentially cause instability or collapse of the rock. [62] Worst-Case Scenario: If subsurface water flow affects the St. Louis Limestone at the construction site, there could be a catastrophic sinkhole collapse. Sinkholes can develop suddenly and without warning, and can cause significant damage to buildings, roads, and other infrastructure. [62]

Additionally, it is important to note that the “Soil Survey” published by the NRCS is subject to change. [62] “As a result of construction and other disturbances, the soil profile can be altered from its natural state and the listed group assignments generally no longer apply.” [63] Although regional sediment and dirt were used for the mass grading and filling of streams, it is within the realm of possibility that,

after the NRCS' assessment, the composition at the mega-site has changed significantly to be less absorbent -- thus potentially increasing the likelihood of a catastrophic event. If a sinkhole were to develop suddenly during plant operations, there could be downstream contamination of the Nolin River, leading to the Green River, and into the Ohio River. Heavy metals, such as lithium (a critical component of the batteries at the mega-site that will be used during operations), could cause serious water quality issues in Glendale, Hardin County, and possibly beyond.

Moving on, the "Watershed Watch" group was formed in 1997 as a collaboration between KDOW and the Cumberland Chapter of the Sierra Club and Kentucky Waterways Alliance. [29] "Watershed Watch in Kentucky is a statewide citizens monitoring effort to improve and protect water quality by raising community awareness and supporting implementation of the goals of the Clean Water Act and other water quality initiatives." [29] Over 4,500 citizen scientists have voluntarily collected "scientifically valid" water quality data that is "used to improve waterways in Kentucky." [29] More than 50 advocacy groups have formed because of these volunteers' efforts. [29]

Based on Watershed Watch's most recent data collected at the Nolin River site nearest the mega-site, turbidity estimates were "clear" (zero) pre-construction. [29] Additionally, dissolved oxygen, pH, and E. coli load measures were sufficient to support aquatic life. [29,30] Finally, in Figure 15 of the results section, the EPA

rated a stretch of the Nolin River nearest the mega-site as in “GOOD” condition. [31,33] These “pre-construction” findings are in contrast to findings from the ACOE, KDOW, and Third Rock, who noted sedimentation control as a concern based on their site visits during construction and scored virtually every single creek acting as a tributary to the Nolin River at the mega-site as in “POOR” condition before operations were set to begin, but after the measures mentioned above. [52] It appears as though the mega-site is already impacting the local watershed, based on this comparison.

Figure 10, Figure 11, and Table 14 in the results section all demonstrate flow over time. [26,28] As discussed above, a “worst case scenario” at the mega-site would involve discharges increasing above previous highs, thus impacting the downstream watershed and ability to contain stormwater as planned. The mega-site stream relocation project, changes in topography, and flow will all impact the peak flow. One must wonder if the “Preliminary” SWPPP will ensure flow remains at an historically acceptable level to prevent ecological disruption. Perhaps after sufficient monitoring, additional changes will be required before approval of the mega-site’s “Industrial” SWPPP.

Last year’s observed rainfall exceeded 50” for the Glendale, KY area. [27] As evidenced by the colorful map (see Figure 13), Glendale is “in the red” for rainfall. [27] This puts stress on the retention ponds that are designed to hold high

volumes of storm-water “overflow” and prevent flooding, erosion, and potential polluting of the nearby area.

Figure 16 demonstrates the number of “Past Water Conditions” near the mega-site. [33] These conditions are not all bad -- some are denoting measurements that were taken by various entities. [33] One can see in the mapped image how the Nolin River’s downstream effects could impact a significant volume and stretch of water.

As we wind down and finalize the discussion of the results presented in the previous section, some themes become apparent. Namely…

- This is a publicly funded project. Transparency regarding site plans (BMPs, etc) and public outreach (community meetings) are important so that stakeholders know this investment of their tax dollars will not be to their detriment.
- Ford and SKOn have paid cash for the environmental disruption this mega-site has caused. Are we sure these mitigation units are “worth it?”
- Independent measurements of water quality at/near the mega-site are limited; however, based on what we do know, there are differences in water quality observed in the lead up to construction at the site.
- The importance of monitoring and the unpredictability of surface water flow and stormwater containment cannot be overstated. Ford and SKOn will work with hazardous substances at the mega-site, so it is critically

important that controls implemented are effective to prevent erosion, flooding, and/or pollution of the watershed on-site and downstream.

An overwhelming amount of water has been displaced at the mega-site. Construction for the BlueOval SK Battery Park project has filled 28,275 linear feet of streams, equivalent to roughly 5.4 miles, and 16.1 acres of wetlands. [3] The ecosystems in the watershed at the site, virtually all of which drained to the south, feeding into the Nolin River, have permanently been altered. [62] Both ACOE and DOE acknowledged that endangered species' habitats along waters filled at the site were "likely adversely affected" by the BlueOval SK project in Glendale. [25]

There's the potential for catastrophic sinkholes, based on DLZ's underground analysis at the Battery Park. And we can't be sure of the soil content at the mega-site, due to the mass grading and construction likely altering the composition "post-soil survey." This can impact the ability of excess water in the retention ponds and streams on-site to absorb and prevent excess flow volumes.

This is why it is critical that Ford and SKOn abide by the sedimentation and erosion prevention controls outlined in the "Preliminary SWPPP." [62] The Preliminary SWPPP also outlines the importance of material storage, spill clean-up (never use water/hose down spills), and waste management to prevent surface water contamination. [62] As discussed in relevant literature, we should expect this land-use project to affect surface water quality. [5,10]

This presentation was most notably limited by time, due to late arrival of data from open records requests. Though this presentation is focused on water quality, there are serious air quality and occupational health concerns for operations at the mega-site. Refer to the attached CPH-622 Topic Paper for details.

Looking ahead, future research in this area should consider the cumulative impact that electric-vehicle battery manufacturing facilities like this will have across the state. Two new electric vehicle battery manufacturing facilities will be built in Hopkinsville, KY. [79,80] Kentucky is becoming a hub for EV battery manufacturing technologies. How might this impact the state?

Throughout this discussion section, I have presented concerns and negative impacts that the mega-site could have. It is important to not lose sight of the positives that this project will likely have on the area. Namely, the creation of good paying jobs in an area that could certainly use it, and significant momentum in the global shift to battery-powered motor vehicles to minimize environmental harm and GHG production.

In conclusion, my information discovery was a complicated, dynamic process, and it proved difficult to get details at many turns. These are things that I found most helpful. For one, don’t give up. Some entities are better equipped/more knowledgeable about certain things. Try to find the ones with helpful, insightful

people that are able to help you get what you need to be informed. It might take you more than one try, but persistence is key. Oh -- it also helps to have a knowledgeable mentor, colleagues, and friends, too! Reach out to classmates, professors, and people you know. If that doesn't help, contact CDC, NIOSH, OSHA, or another governmental regulatory body and see what you can learn.

In addition, I learned that even if no "significant" findings result from your research, your conclusions could still be beneficial down the road. "We as public health officials need to support efforts to rationally deal with environmental issues and recognize that what at the moment may appear "insignificant" may later develop into a public health concern." [81] "Recognition of potential problems and rational approaches to problem solving early on is always preferable and more cost-effective than retrofitting our efforts to a situation that has developed into a global monster." [81]

Also, it was important to know that I was looking at water resources that have not been routinely monitored. This made me question what assumptions were made in site design, water levels/flow, and projected impacts. It helped remind me that there is a community of people that are deserving of having "pre-construction" knowledge to fall back on, should environmental conditions worsen for them or a future generation.

The Community Guide was arrived at as a result of my working with a slew of individuals. What started as a group project evolved into my master's thesis

presentation that included working with a mentor with first-hand knowledge of water quality and HIA's; interviews with subject-matter experts; and opportunities that I never expected. I found out that working with others is one of the best ways for me to learn.

In closing, community involvement is the best way to stay informed and enact necessary change. The Community Guide is there to help. Public feedback will encourage continued compliance with regulatory requirements by Ford and SKOn. Monitoring is necessary at the mega-site to ensure accountability. We know, based on literature available, this project will change water quality. We need to make sure controls are implemented and maximum effort is made to prevent serious environmental issues.

Warren Rummage

CPH 608 - Capstone Bibliography

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