Water Supply Study Summary Memorandum

River's Edge 2-1×1 Combined-Cycle Project

Vermillion County, Indiana | November 2026

Executive Summary

The River's Edge Generating Station (River's Edge, or the Project) is a proposed 2-1×1 combined cycle gas turbine power facility in Vermillion County, Indiana. Sargent & Lundy (S&L) was retained by the Project to evaluate potential sources for firm water supply. These efforts identified three supply options as most suitable (listed in order of preference):

1) Purchasing water from the existing Vermillion Rise (Newport Chemical Depot Reuse Authority) groundwater well system (which is located within the Wabash River and Tributaries Outwash Aquifer);
2) Developing a new groundwater wellfield in the Wabash River and Tributaries Outwash Aquifer (Wabash River Outwash Aquifer);
3) Constructing a new surface intake on the Wabash River.

Preliminary water mass balances estimate a Project raw water demand of approximately 5,700 to 8,750 gallons per minute (gpm), or 8.2 to 12.6 million gallons per day (MGD). Raw water demand varies seasonally and with plant operating conditions. The annual average demand is estimated at approximately 7,300 gpm, or 10.5 MGD.

Potential to purchase water from the existing Vermillion Rise groundwater well system is subject to negotiating a water supply agreement with the Newport Chemical Depot Reuse Authority. Historical information indicates that the former installation once withdrew about 90 MGD from the outwash aquifer, significantly less than the average expected Project withdrawal of 10.5 MGD. Today, three of the original six wells are associated with Vermillion Rise, and the state's combined permitted withdrawal limit (i.e., registered capacity) for those wells is 43.57 MGD.

A new groundwater wellfield in the Wabash River Outwash Aquifer appears technically feasible, as the formation is highly productive and resilient, with existing high-capacity wells supplied from the formation elsewhere in the county. However, siting any new wells in the Wabash River Outwash Aquifer requires investigating potential drawdown effects to nearby wells. A detailed well siting and hydrogeologic modeling effort is in progress, and the findings are essential before confirming suitability of new groundwater wells in the Wabash River Outwash Aquifer to supply the Project.

A new surface intake on the Wabash River is likewise technically feasible, and permitting review identified no apparent fatal flaws. Though a new surface intake is expected to require increased agency coordination and longer permitting timelines than the other identified options. As part of its investigation, S&L completed a low-flow analysis for the Wabash River using established 7Q10 methodology. The 7Q10 is the annual minimum seven-day average streamflow with a 10-year recurrence interval, corresponding to a 10% annual probability of being equaled or undershot. The lowest annual seven-day mean in the study's Montezuma record scales to approximately 526 MGD at the intake; the Project's 12.6 MGD peak demand is about 2.4% of that value. Note, the reported 7Q10 is a low-flow statistic, not the lowest flow that can occur. Regulatory context for the use of 7Q10 comes from Indiana's Water Shortage Plan, which describes 7Q10 as a historic minimum-flow reference. Additionally, 7Q10 analysis is a common IDEM resource for NPDES permitting. 327 IAC 5-2-11.1(b)(2) directs use of the receiving stream's 7Q10 with the mixing-zone guidelines in 327 IAC 2-1-4 for applicable chronic aquatic and

taste-and-odor criteria when site-specific mixing-zone data are absent. Note, use of 7Q10 in a discharge analysis does not establish a surface-water withdrawal limit or guarantee supply and other criteria may require different design flows.

Based on the studies completed by S&L, all three identified supply options appear technically suitable to supply the Project, though they differ in third party reliance, cost, land use/footprint, environmental review, and schedule. Efforts completed to date affirm the two most preferred water supply sources are (1) purchasing water from the existing Vermillion Rise groundwater well system and (2) developing a new groundwater wellfield in the Wabash River Outwash Aquifer.

1. Study Purpose and Basis

The Water Supply Study completed by S&L assessed potential water sources and the systems needed to deliver, treat, use, and discharge water for the proposed River's Edge facility. It considered the existing Vermillion Rise supply, new wells in the Wabash River Outwash Aquifer, and direct withdrawal from the Wabash River via a new surface intake. It also reviewed public well records, facility information, mapped aquifer data, a regional aquifer study, a site-specific design low flow estimate for the Wabash River (using established 7Q10 methodology), relevant permitting pathways, preliminary water balances, and potential groundwater well performance and impacts.

S&L Qualifications and Relevant Expertise

Founded in 1891, Sargent & Lundy is one of the longest-standing full-service architect engineering firms in the world. The firm is a global leader in power, energy and decarbonization with expertise in nuclear power, grid modernization, renewable energy, carbon capture, environmental services and conventional power.

S&L integrates power-generation engineering, water resources analysis, water and wastewater treatment design, and environmental permitting. Its water resources services include hydrologic site characterization, water availability and low-water evaluations, and intake and outfall siting and design. S&L also supports water balances, water supply systems, treatment-system evaluations, wastewater discharge permitting, and local siting approvals. For River's Edge, these disciplines were applied together to evaluate supply alternatives, plant water requirements, low-flow conditions, aquifer records, and implementation requirements.

Key team members for this study are described below.

- Mehrdad Salehi, Ph.D., P.E., prepared the 7Q10 Evaluation. He holds a Ph.D. in Civil Engineering from the University of Houston, with research in hydrodynamic modeling, hydraulics, hydrologic analysis, and sediment transport, and an M.S. in Civil Engineering (Hydraulic Structures). Salehi is a licensed professional engineer and has more than 20 years of experience in hydraulic, hydrologic, and coastal engineering. His work includes water-withdrawal and discharge evaluations, river systems, flood-hazard studies, and intake and outfall systems for power projects. His S&L responsibilities include technical leadership for hydrology, hydraulics, marine, and coastal engineering.
- Nikhil Patel, P.E. (Wisconsin), reviewed the 7Q10 Evaluation. He holds bachelor's and master's degrees in civil engineering, including graduate study in Water Resources. Patel's experience includes hydraulic and hydrologic design and analysis for fossil and nuclear power facilities; water availability and water-quality studies; drought and flood hydrology; groundwater analysis; and the selection and design requirements for river, lake, and reservoir intake and discharge structures. Before joining S&L, he designed and supervised hydraulic and hydrologic work for flood-control and water-supply projects, including service as an Executive Engineer in the Gujarat State Water Resources Department in India.

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- Erich V. Zorn, Ph.D., P.G., prepared the River's Edge Well Study. Zorn holds a Ph.D. in Geology from the University of Pittsburgh and is a licensed Professional Geologist in Pennsylvania. His résumé describes 19 years of progressively responsible geoscience experience, including leading investigations, fieldwork, analysis, and project management. For River's Edge, he prepared the groundwater and aquifer assessment, which reviewed local aquifers and existing wells, considered the potential of the Wabash River Outwash Aquifer to meet project demand, and evaluated groundwater-user considerations.

Existing Vermillion Rise Supply

The Water Supply Study treats purchase of water from the existing Newport Chemical Depot Reuse Authority (NCDRA), also known as Vermillion Rise, system as its base case. Vermillion Rise operates a legacy Ranney, or radial collector well field near the Wabash River. Instead of a single vertical well, a collector well uses a large caisson with horizontal screened laterals that draw groundwater from surrounding sand and gravel. Where the laterals extend toward or beneath the river, river water can filter through the riverbank and aquifer before reaching the well.

The state registration for three Vermillion Rise collector wells lists a combined maximum permitted withdrawal of 30,260 gpm (43.57 MGD), which is well above the Project's estimated peak demand of 12.6 MGD. The legal withdrawal limit does not prove the wells, pumps, or older conveyance system can deliver that quantity today. The U.S. Army Corps of Engineers indicates the recommended groundwater withdrawal rate from the glaciofluvial deposits along the Wabash River, presumably from one well with one pump operating, range from about 7.2 to 8.6 million gallons per day (USACE, 2010), though reported use in 2022–2025 was only about 0.06 MGD. Only one registered Vermillion Rise collector well is reported in service. If purchase of water from the existing Vermillion Rise groundwater well system is desired to be utilized, the Project must verify capacity, condition, treatment, delivery, reliability, and commercial availability.

New Groundwater Wellfield

A preliminary Well Study completed by S&L for the Project reviewed mapped aquifers and State well records in Vermillion and Parke Counties. It concluded that the Wabash River and Tributaries Outwash Aquifer System is the only mapped aquifer that appears capable of supporting the Project's groundwater demand. The Wabash River Outwash Aquifer consists of glacial sand and gravel deposits along the Wabash River. Records for 62 high-capacity Wabash River Outwash Aquifer wells in Vermillion and Parke Counties show listed capacities of 70–2,000 gpm (average 819 gpm) and an average depth of 107 feet. These records do not predict a new well's yield as local conditions, construction, and testing control actual capacity.

At a peak requirement of 8,750 gpm, the study estimates that a conventional wellfield could require at least 12 large diameter vertical wells. On site water storage could help meet short duration peak needs while lowering the maximum pumping rate, pipeline size, or number of wells.

Key takeaway: Existing high-capacity well records support the expectation that a conventional wellfield on the order of 12 large-diameter vertical wells could meet the Project's water needs. The outwash aquifer offers areas in Vermillion County for further siting evaluation; the number of viable sites, sustainable well yields, spacing, reserve capacity, and acceptable effects on existing users must be established through site-specific investigations.

Collector Wells and Regional Evidence

Collector wells are designed for much larger individual flows than ordinary vertical wells and have been used historically near the Wabash River. The six legacy wells near the former Newport Chemical Depot were built in the early 1940s. Historical information indicates that the former installation once withdrew about 90 MGD from the outwash aquifer, significantly less than the average expected Project withdrawal of 10.5 MGD. Today, three of the original six wells are associated with Vermillion Rise, and the state's combined permitted withdrawal limit (i.e.,

registered capacity) for those wells is 43.57 MGD. Historical or registered capacities demonstrate that high flows have been achieved in this aquifer, but they do not prove that a new well at a different location can deliver the same rate or that all effects on neighboring users were assessed under historical operating conditions.

During the investigation, S&L reviewed a 2023 investigation by INTERA, Inc. for the State of Indiana near Lafayette, roughly 50 miles upstream. INTERA conducted subsurface investigations and 72-hour pumping tests, then modeled three proposed collector wells. Under a summer low river stage scenario, the modeled combined yield was 57 MGD, including a 17 MGD case for one well site. The River's Edge study used that 17 MGD scenario as a regional comparison because it is closer to the Project's estimated demand of about 12.6 MGD. This comparison shows substantial withdrawals are possible in some locations, but it is not a site-specific prediction, and local geology may differ.

Key takeaway: Existing collector-well operations and the INTERA investigation support the expectation that a suitably located and designed collector-well system could meet the Project's water needs. The required number and configuration of collector wells remain subject to site-specific testing, modeling, and permitting.

Wabash River Surface Intake

No registered surface water withdrawals were identified in the immediate Project vicinity in Vermillion County; however, the study identified the nearby Duke Energy Cayuga Generating Station as an example of an existing large Wabash River withdrawal and discharge. This precedent supports further evaluation of a new Project intake but does not establish the Project's water rights, available capacity, or permit eligibility. The low-flow analysis and comparison with Project demand are presented separately in Section 3.

3. Wabash River Low-Flow Analysis

Study Purpose and Methodology

As part of its investigation, S&L completed a low-flow analysis for the Wabash River using established 7Q10 methodology. The 7Q10 is the annual minimum seven-day average streamflow with a 10-year recurrence interval, corresponding to a 10% annual probability of being equaled or undershot. It is a low-flow statistic, not the lowest flow that can occur. Indiana's Water Shortage Plan describes 7Q10 as a historic minimum-flow reference. Indiana has used it in water shortage guidance, but it is not a binding statewide minimum flow allocation rule. With no gage at the intake, the Project estimate transfers records from nearby USGS gages using a drainage area ratio method. The intake watershed covers about 9,998 square miles and Montezuma is the recommended comparison gage, with Covington records also available. The report identifies river permitting as feasible, with federal authorization and supporting studies as major schedule considerations.

For NPDES permitting outside the Great Lakes system, 327 IAC 5-2-11.1(b)(2) directs use of the receiving stream's 7Q10 with the mixing-zone guidelines in 327 IAC 2-1-4 for applicable chronic aquatic and taste-and-odor criteria when site-specific mixing-zone data are absent. Other criteria may require different design flows. Use of 7Q10 in a discharge analysis does not establish a surface-water withdrawal limit or guarantee supply.

Comparison with Project Demand and Historical Withdrawals

As stated above, the 7Q10 is the annual minimum 7-day average flow with a 10-year recurrence interval, equivalent to a 10% annual probability of being equaled or undershot. Here, daily gage records were screened for stationarity, annual 7-day minima were fit with a Log-Pearson Type III distribution, and gage estimates were transferred to the intake by drainage-area ratio. The resulting intake estimates are 1,140 cfs (about 737 MGD)

from StreamStats, 2,703 cfs (about 1,747 MGD) from Montezuma (recommended because the reach is regulated and this is the nearest gage), and 3,028 cfs (about 1,958 MGD) from Covington.

The Project's estimated annual average demand of 10.5 MGD and peak demand of 12.6 MGD (approximately 19.5 cfs) are about 0.60% and 0.72%, respectively, of the reported 1,747 MGD Montezuma-based intake estimate. These percentages are illustrative pending verification of that estimate. As a separate historical comparison, the Montezuma annual minimum 7-day flows range from 905 cfs (585 MGD) to 4,277 cfs (2,765 MGD). Notably, 52 of 57 annual minima are below the reported gage 7Q10 of 3,006 cfs (1,943 MGD), so the frequency analysis or tail convention should be checked before using that 7Q10 as a historic-flow benchmark. Additionally, Duke's Cayuga station is registered to withdraw 907 MGD, withdrew about 610 MGD in 2023, and has coal-unit retirement planned for 2031 with combined-cycle replacement units. Cayuga's historical withdrawal provides context, but the retirement plan should not be assumed to eliminate future site withdrawals because replacement-unit water needs may continue. Applying the study's drainage-area ratio of 9,998/11,118 gives approximately 814 cfs, or 526 MGD, at the intake; the Project's peak demand is about 2.4% of that scaled historical flow. This is an area-scaled comparison, not an observed intake flow or a validated 7Q10, and lower daily flows can occur.

Key takeaway: The historical-flow comparison supports continued evaluation of the Wabash River as a potential supply. It does not establish firm yield, an available allocation, or an absence of effects on other users. The reported 7Q10 must be verified before design or permitting reliance.

4. Water Source Considerations

Permitting and Implementation Considerations

Indiana generally requires registration and annual reporting for significant water withdrawal facilities (SWWF) capable of withdrawing more than 100,000 gallons per day. For new conventional vertical wells in the Project area, the study found no state groundwater withdrawal permit requirement because the area is not in a designated restricted use area and is not subject to a groundwater withdrawal permit program. Use of licensed contractors, well records, applicable construction rules, and SWWF registration still apply. Radial collector wells require prior design approval from the Indiana Department of Natural Resources (IDNR). The report identifies county zoning approval as a key preconstruction step for above ground pumping facilities while floodplain development can also trigger state and local authorizations.

A direct river intake, or collector well laterals extending beneath the riverbed, would require a more extensive review. The Wabash River is treated as a navigable waterway. Depending on final location and design, state approvals may address construction in the floodway, occupancy of the riverbed, water quality, and floodplain development. Federal review by the U.S. Army Corps of Engineers (USACE) may include Clean Water Act authorization and River's and Harbors Act authorization. Federal review can trigger environmental analysis and consultation on protected species and cultural resources.

Every alternative also needs a pipeline from the source to the Project parcels, which are not contiguous with the river, the candidate wellfields, or the Vermillion Rise facilities. The corridor may cross streams, wetlands, floodways, roads, railways, and private property. The final route will determine which federal, state, county, transportation, railroad, and landowner approvals are needed. Wetland and stream delineation and stormwater planning should follow route selection. Source selection and corridor definition are therefore linked schedule decisions.

Potential Groundwater Withdrawal Effects on Existing Wells

When a well pumps, the water table around it is lowered. This lowering is called drawdown. It is greatest near the pumping well and typically diminishes with distance, but the extent depends on the aquifer's ability to transmit

and store water, the pumping rate, the well's construction, and the presence of other pumping wells. When several wells draw from connected parts of an aquifer, their drawdown zones can overlap and interfere. The affected area is sometimes called the radius of influence. The effect of drawdown in surrounding existing wells can be reduced or mitigated by maximizing the distance between a new well field and the existing wells.

Siting any new wells in the Wabash River Outwash Aquifer requires investigating potential drawdown effects to nearby wells. A detailed well siting and hydrogeologic modeling effort is in progress. The findings are essential before confirming suitability of new groundwater wells in the Wabash River Outwash Aquifer to supply the Project.

Indiana's well interference law (IC-14-25-4) may require reasonable compensation if IDNR determines Project withdrawals caused a protected small capacity well to fail. Remedies can include temporary potable water, restoring the well, an equivalent permanent supply, or limiting Project pumping. Protection generally applies to properly functioning wells drilled before January 1, 1986, and later wells that meet state pump setting and aquifer penetration standards. Lack of state registration does not mean a well is unprotected. IDNR also has authority if withdrawals exceed an area's groundwater recharge, but the law sets no recharge threshold or preconstruction determination process. The study recommends surveying residents and businesses in the vicinity of any planned new groundwater wells to document registered and unregistered wells and their condition, water level, yield, and quality to establish baseline conditions before well construction.

5. Conclusion

Based on the studies completed by S&L, all three identified supply options appear technically suitable to supply the Project, though they differ in third party reliance, cost, land use/footprint, environmental review, and schedule. The decision among existing supply, new collector wells, vertical wells, and a direct river intake should follow confirmation of actual deliverable capacity, source water quality, cost, schedule, environmental requirements, and potential effects on neighboring users. Efforts completed to date affirm the two most preferred water supply sources are (1) purchasing water from the existing Vermillion Rise groundwater well system and (2) developing a new groundwater wellfield in the Wabash River Outwash Aquifer. The study finds plausible supply pathways and no preliminary permitting fatal flaw for a Wabash River intake, though that supply option is least preferred.

The historical-flow comparison supports continued evaluation of the Wabash River as a potential supply. It does not establish firm yield, an available allocation, or an absence of effects on other users. The reported 7Q10 must be verified before design or permitting reliance.

For each potential groundwater supply option, the key next step is site-specific well capacity, drawdown, and water-quality characterization. Test borings should establish bedrock depth, aquifer thickness, water level, and sediment grain size. A test well, monitoring wells, and an extended duration pumping test would estimate capacity and drawdown while nearby private and industrial wells should be monitored with permission. If Vermillion Rise is selected, engineering and commercial diligence should distinguish the state registered withdrawal limit from the capacity of the operating wells and delivery system.

6. Basis documents and references

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