STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

PETITION OF AMERICAN SUBURBAN UTILITIES, INC. FOR APPROVAL OF COMPLIANCE FILING AND PHASE III RATES	**)))**	**CAUSE NO. 44676 S1**

PUBLIC'S EXHIBIT NO. 2

TESTIMONY
OF
JAMES T. PARKS
ON
BEHALF OF
THE INDIANA OFFICE OF UTILITY CONSUMER COUNSELOR

February 24, 2021

Respectfully submitted,

Daniel M. Le Vay, Attorney No. 22184-49
Deputy Consumer Counselor
Scott Franson, Attorney No. 27839-49
Deputy Consumer Counselor
115 W. Washington St., Suite 1500 South
Indianapolis, IN 45204

CERTIFICATE OF SERVICE

This is to certify that a copy of the foregoing ***Public's Exhibit No. 2, Testimony of James T. Parks on Behalf of the Indiana Office of Utility Consumer Counselor's*** has been served upon the following counsel of record in the captioned proceeding by electronic service on February 24, 2021.

Nicholas K. Kile
Hillary J. Close
BARNES & THORNBURG LLP
11 South Meridian Street
Indianapolis, Indiana 46204
Email: nicholas.kile@btlaw.com
hillaryclose@btlaw.com

Robert Johnson
2454 Waldon Drive
Greenwood, IN 46143
Email: rjohnson@utilitylaw.us

Daniel M. Le Vay
Deputy Consumer Counselor

INDIANA OFFICE OF UTILITY CONSUMER COUNSELOR
115 West Washington Street
Suite 1500 South
Indianapolis, IN 46204
infomgt@oucc.in.gov
317/232-2494 – Phone
317/232-5923 – Facsimile

TESTIMONY OF OUCC WITNESS JAMES T. PARKS
CAUSE NO. 44676-S1
AMERICAN SUBURBAN UTILITIES, INC.

Q: Please state your name and business address.

A: My name is James T. Parks, P.E., and my business address is 115 W. Washington Street, Suite 1500 South, Indianapolis, IN 46204.

Q: By whom are you employed and in what capacity?

A: I am employed by the Office of Utility Consumer Counselor ("OUCC") as a Utility Analyst II in the Wastewater/Wastewater Division. My qualifications and experience are described in Appendix A.

Q: What relief does American Suburban Utilities, Inc. ("ASU") seek in this Phase of ASU's authorized rate increase (Phase III)?

A: In Cause No. 44272, the Commission pre-approved ASU's CE-III plant expansion for up to $10 million pursuant to an approved settlement agreement with the OUCC. Subsequently, ASU filed a rate case proposing to include that plant expansion as an addition to its rate base at the conclusion of its proposed forward-looking hybrid test year, which the commission authorized. Of that approved amount, ASU has already included in its Phase II rate increase $1,975,200 of the rate base addition leaving $8,024,800 remaining to be added. Including an additionally authorized $1.5 million standby chemical phosphorus removal system, ASU seeks to add an additional $9.52 million to rate base for improvements it asserted were completed by its affiliate, First Time Development Corporation ("FTDC"), and placed in service at its Carriage Estates wastewater treatment plant ("WWTP") on or before

October 18, 2019. These improvements are for the Phase 2 (CE III Expansion) and Phase 3 (Phosphorus Removal) facilities.

Q: What is the purpose of your testimony?

A: I testify that ASU did not construct the Carriage Estates III wastewater treatment plant expansion for which it had received preapproval as it lacks many of the components on which the preapproval was based. In addition, I testify that ASU did not construct the $1.5 million standby chemical phosphorus removal system it had been authorized in the rate case to add to its rate base because it is materially different than what it had used to justify the cost of that project. I explain the deletions and changes ASU made to both the CE-III WWTP project and the standby chemical phosphorus system project are significant and material. I recommend rate base findings that reflect a decrease in the value of components parts and that are based on ASU's own cost estimates. Finally, I testify about various matters affecting ASU's operations and compliance with various Commission requirements.

Q: What did you review to prepare your testimony?

A: I reviewed portions of ASU's Phase III Compliance Filing dated November 7, 2019 and the Completion Filing dated September 30, 2020. I reviewed sections of the Final Orders from Cause No. 44272 (April 9, 2014) including ASU's Stipulation and Settlement Agreement with the OUCC (February 11, 2014) and Cause No. 44676 (November 30, 2016). I reviewed Edward J. Serowka's testimonies detailing the four expansion Options for the Carriage Estates WWTP. I reviewed Construction Permit No. 20788 and the IDEM approved design drawings and specifications for Option 4 (expansion to 4.0 million gallons per day ("MGD") with tanks expandable to 6.0 MGD) that I obtained from IDEM's web based Virtual File Cabinet.[1] I reviewed ASU's revised design drawings which ASU/FTDC President Scott Lods indicated to me on December 4, 2019 constituted what FTDC actually constructed.[2] I reviewed IDEM's Construction Permit No. 22977 and permitted design drawings and specifications for the Phosphorus Removal Improvements.[3] I compared the permitted design drawings (Permit Nos. 20788 (2014) and 22977 (2019)) to the As-Built drawings (2020) and to the actual facilities at the Carriage Estates WWTP.

I reviewed IDEM Inspection Summary / Noncompliance letters detailing violations at the Carriage Estates WWTP due to FTDC not constructing the improvements per the permitted design drawings and ASU's responses to IDEM's noncompliance letters. I reviewed ASU's requests for a time extension to complete construction and IDEM's approval granting an extension to June 30, 2020. I participated in writing data requests and reviewing ASU's responses. Along with Carl Seals of the OUCC, I visited the Kimberley Estates Lift Station which appears

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[1] Construction Permit No. 20788 for the *Carriage Estates III Wastewater Treatment Plant Expansion* project, issued by IDEM's Facility Construction and Engineering Support Section on February 21, 2014, was to expand the Carriage Estates WWTP to 4.0 MGD (with tanks for 6.0 MGD based on Option 4 (Cause 44272 preapproval). The design drawings included 41 plan sheets and revised plan sheets which also showed the supernatant and standby chemical phosphorus removal system.

[2] *Phase 2 Construction, Carriage Estates III Wastewater Treatment Plant* design drawings prepared by Lakeland Innovatech, Laguna Hills, CA, August 23, 2017. These 14 drawings deviated from the permitted design drawings approved by IDEM in Construction Permit 20788 on February 21, 2014.

[3] Construction Permit No. 22977 for the *Carriage Estates III Wastewater Treatment Plant Improvements, Phosphorus Removal* project, issued by IDEM on February 21, 2019, included new influent flow meters, a new Plant Control, Laboratory and Chemical Feed Building, and chemical phosphorous removal facilities.

to still be in service, the Big Oaks Lift Station, and the Carriage Estates WWTP construction site on December 4, 2019.[4] I also toured the Carriage Estates WWTP on March 5, 2020 with Scott Bell, Shawn Dellinger, and Carl Seals of the OUCC, and on October 8, 2020 with Scott Bell.

I. PHOSPHORUS REMOVAL

Q: How does phosphorus removal relate to this compliance filing?

A: In Cause No. 44272, the Commission pre-approved Petitioner's CE-III plant expansion for up to $10 million. At that time, all options were designed to provide for biological treatment and removal of phosphorus. It appears that by late 2013, ASU accepted that it would need to add a standby chemical phosphorus removal system to meet IDEM requirements. In this Cause, Petitioner requested that $11.5 million be included in rate base related to this project ($10 million in pre-approved costs plus the $1.5 million for a standby chemical phosphorous removal project). Of that approved amount, ASU has already included in its Phase II rate increase $1,975,200 of the rate base addition leaving $8,024,800 plus $1.5 million rate base additions to be addressed in this phase (Phase III). This section of my testimony addresses the $1.5 million requested rate base addition for the standby chemical phosphorus removal project.

[4] The Kimberley Estates Lift Station was to have been demolished as part of the Big 3 Interceptor sewer project with flows diverted away from the Carriage Estates WWTP to the County Home WWTP. However, the Kimberley Estates is still pumping and imposing higher flows onto Carriage Estates. ASU President Scott Lods reported that ASU does not document where flows from this station are routed (Dec. 4, 2019).

Q: On what was the $1.5 million proposed rate base addition based?

A: The $1.5 million for standby chemical phosphorus removal was based on evidence ASU provided to the OUCC in discovery in Cause No. 44676 indicating ASU would install an expensive Micro Star phosphorus removal system at a total cost of $1.5 million. During the rate case, the OUCC requested cost support through OUCC DRs 16-52 and 16-53. Specifically, I requested the process flow schematic and design drawings for the standby chemical phosphorous removal system. ASU's response indicated $1,230,000 of the $1.5 million ASU requested it be authorized to include in rate base was to install a Micro Star filter (at a cost of $1,020,000) in a new concrete channel (an additional $210,000).[5] ASU included price information on project features that included modifying the chemical rooms in the existing Blower/Chemical building and installing two 15,000-gallon chemical storage tanks, a 1,500-gallon day tank, and chemical feed lines to the new CSBR tanks.

Q: Did ASU install the chemical phosphorus removal system it indicated it would build during the rate case?

A: No. Through its rate order, the Commission effectively preapproved a rate base addition of up to $1.5 million for the Micro Star chemical standby phosphorus removal system. Most (82%) of that cost was for the brand and model of filter ASU selected and the concrete channel needed to hold it. What ASU's affiliated construction company built materially differs from what it indicated it would install and place in rate base at the end of its hybrid test period. The Commission's 2016

[5] ASU's responses to DRs 16-52 and 16-53 were included in Attachment JTP-2 (pages 249-251) of my testimony in Cause No. 44676 filed on January 13, 2016. *See* Attachment JTP-1 for ASU's responses to DRs 16-52 to 16-55, dated January 7, 2016 under Cause No. 44676.

approval of that amount no longer applies because ASU's affiliate built a standby chemical phosphorus removal system that is not the same in price or quality that the Commission approved. Moreover, ASU incurred its standby phosphorus removal costs through its affiliate and the actual costs incurred by that affiliate, by which a reasonable estimate of the fair value of the standby system may be determined, have not been provided.

Q: Should ASU's request to include the $1.5 million rate base addition in Phase III rates be granted?

A: No. Instead of installing the Micro Star system on which it had based its requested amount, ASU installed a different and much less expensive standby chemical system. ASU never installed the $1,230,000 major cost items (i.e., Micro Star filter and concrete channel) it used to justify the $1.5 million phosphorus cost to the OUCC and the Commission.[6] It also did not modify the chemical rooms in the existing Blower/Chemical building. It did not install the two 15,000-gallon chemical storage tanks or the 1,500-gallon day tank. Instead, ASU installed smaller chemical tanks (315-gallon day tank and 5,000-gallon bulk tanks). It also appears ASU did not install the chemical feed lines to the new CSBR tanks' Flow Divider Box. Moreover, I did not see any chemical piping at the new CSBR tanks during the OUCC's October 8, 2020 site visit. I saw no evidence of the chemical feed lines that were to be connected to the original CSBR tanks. Except for a schematic

[6] *See* Cause No. 44272, Serowka Supplemental Rebuttal Testimony, December 11, 2013, page 17. Mr. Serowka indicated ASU would justify the phosphorus cost testifying: "The choice between chemical and biological removal obviously remains uncertain at this time and needs to continue to be studied. One of the two methods will ultimately be chosen and <u>ASU will be prepared to explain and justify its choice and the dollars</u> invested in a later rate case." (Emphasis added by the OUCC)

layout on Drawing 20-005-33, the As-built drawings do not show chemical feed lines to the six CSBR tanks (four original and two new CSBR tanks) or to the macerator structure. (However, the As-Built Drawings still include errors and are incomplete, including with respect to the standby chemical phosphorus system.) Table 1 sets forth the cost estimate ASU provided during its rate case to the OUCC as support for ASU's requested authorization of $1.5 million for its standby chemical phosphorus removal system. Table 1 also identifies items not constructed or installed in whole or in part and the associated cost of those items.

Table 1 – Cost Justification for the Micro Star Filter
ASU response to DR 16-52 (Cause No. 44676 - January 7, 2016)[7]

Component	Unit	Qty	Unit Cost	Amount	Built?
Building Modifications of Blower/Chemical Building	SF	288	$300	$86,400	No
Chemical Metering Pumps	Ea.	3	$18,000	$54,000	2 units
Chemical Transfer Pumps	Ea.	2	$10,200	$20,400	2 units
1,500 Gallon Day Tank	Ea.	1	$9,600	$9,600	No (1)
15,000 Gallon Tanks	Ea.	2	$48,000	$96,000	No (1)
Micro Star Tertiary Filter	Ea.	1	$1,020,000	$1,020,000	No
Equip. Installation & Concrete Channel for Micro Star Filter	LS	1	$210,000	$210,000	No
Fittings, Pipe & Accessories	LS	1	$42,000	$42,000	Yes
Electrical Equip. Installation	LS	1	$90,000	$90,000	(2)
Install Chemical & Drain Lines	LS	1	$150,000	$150,000	(3)
Total				$1,778,400	

[7] Notes: (1) ASU installed one - 315-gallon day tank and three - 5,000-gallon tanks (only one was permitted). (2) It is unknown if all electrical and instrumentation was installed. (3) Chemical feed lines to the new CSBR tanks' Flow Divider Box may not be installed.

Q: What remains unfinished that related to chemical phosphorus removal under Construction Permit No. 22977 (February 21, 2019)?

A: As of the OUCC's on-site inspection conducted on October 8, 2020, ASU had not installed the wastewater laboratory, safety shower & eyewash, the laboratory office, rest room, utility room, access stairs to the bulk storage tank area, two exterior doors, and five interior doors. Also missing are lighting fixtures (commercial fluorescent with 4 lamps), 115-volt (some with GFI) and 240-volt duplex wall receptacles, and four exit signs with emergency lights with battery backup. These items are not part of the $1.5 million costs I am addressing in this section. However, these items were identified in the plans.

Q: Was a wastewater laboratory one of the reasons costs increased significantly in the 2013 redesign to allow biological phosphorus removal?

A: Yes. ASU said it had to build the onsite laboratory for process control to guarantee it could meet the phosphorus limits.[8] ASU included building costs twice in this project. First, it included a new Control / Laboratory Building in all Options at a cost of $355,600 (construction only) and $477,635 (with prorated share of mobilization, contractor profit, bonds, insurance, design and inspection). Second, modification costs for the existing blower building were embedded in the Micro Star costs. This amounts to double recovery of building capital costs. ASU has not produced any documentation that the new Control / Laboratory Building was deleted from FTDC's Affiliate Contract No. 2017-3 (CE-III Expansion). ASU built neither the new Control / Laboratory Building nor the laboratory it separately permitted under the phosphorus project. In response to discovery asking what steps

[8] *See* Cause No. 44272, Serowka Supplemental Testimony, July 19, 2013, page S7.

needed to be taken to complete the wastewater laboratory, bathroom, and utility room in the Chemical Feed Building, ASU responded:

> Due to the construction cost limits imposed on ASU by the OUCC and IURC, it was necessary to eliminate the new plant laboratory, bathroom, utility room and offices in the Chemical Feed Building and these were not shown in Plan Sheet 20-005-32, nor included in ASU's Affiliate costs for construction.[9]

In response to discovery asking when the wastewater laboratory, bathroom, and utility room would be completed, ASU responded: "The engineering and construction cost required to complete the Chemical Feed Building may be included in the next expansion to the Carriage Estates III Wastewater Treatment Plant."[10] These laboratory facilities should have been constructed by ASU. Instead, like many other changes, ASU did not complete the facilities but made no adjustment to the amount the Commission had authorized be included in rate base. Likewise, ASU has not provided transparent information about actual costs.

Q: What amount should be added to rate base for its standby chemical phosphorus removal system?

A: In its rate order, the Commission accepted ASU's request to include $1.5 million in rate base for standby chemical phosphorous removal upon the equipment being placed in service.[11] However, the equipment described and used to support that authorized rate base addition to the OUCC and ultimately the Commission was not the equipment ASU installed. Because ASU has not installed the equipment it used

[9] ASU response to DR 9-10.

[10] ASU response to DR 9-11.

[11] Cause No. 44676-44700, Final Order, November 30, 2016, page 30.

to justify its rate base addition or even make comparable improvements to the improvements it was authorized to include in its rate base, ASU should not be permitted to include that value in its rate base. As such, any improvements it may have made to secure standby chemical phosphorus removal should be evaluated for addition to rate base in its next rate case. Support for those improvements should be consistent with the Commission's directive with respect to transparency of costs whether incurred directly by ASU or its affiliate.[12] The Commission should deny recovery of the asserted $1.5 million value for installation of standby chemical phosphorous removal, which the Commission described as supplemental removal. In the alternative, the increase to Phase III rates for the standby chemical phosphorus removal system should be based on the value of the standby chemical phosphorus removal system improvements ASU installed. This means subtracting from the $1.5 million authorized amount the $1.23 million for the Micro Star filter and concrete housing for the filter, neither of which was purchased or installed.

Q: What is the value of the standby chemical phosphorus removal rate base additions ASU did install?

A: Based on my review of the equipment that was installed and my engineering knowledge and experience, my estimate of the system's costs is $263,000 shown below which is essentially the same as the $270,000 value I calculated above.

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[12] *See* Cause No. 44676-44700 Final Order, November 30, 2016, page 41. "Therefore, Petitioner shall require First Time or any other affiliated company to submit detailed invoices for all costs including unit costs for structures, materials, labor, equipment, and engineering, which should be compared to the cost estimate or contract entered into by Petitioner to complete the work. We expect to receive this level of detail regardless of whether the work performed was done so under a lump sum or time and materials contract."

New building (one-third of the claimed $180,000)		$60,000
Transfer and Metering Pumps		$14,000 (rounded up)
Chemical tanks		$26,000 (rounded up)
Chemical Feed Lines		$47,000
Metering / Controls / Electrical		$75,000
Installation at 25%		$41,000
	Total	$263,000

In Appendix C, I show how I calculated the value of the standby chemical phosphorus removal system ASU installed instead of the Micro Star system. I obtained cost information from equipment suppliers available from the internet for the chemical transfer and feed pumps and storage tanks.

Q: What costs did ASU provide in the Schedule of Values for the Phosphorus Removal project included with its Payment Verification on November 7, 2019?

A: ASU included a payment verification and Schedule of Values ("SOV") for the standby chemical phosphorus removal project in its Submission of Compliance Filing and Phase III Rates on November 7, 2019. *Every* dollar amount for the SOV's six-line items vastly differed from the amounts in the SOV in Affiliate Contract No. 2017-2 (Phosphorus Removal) filed with the Commission. The only consistent amount is the $1,500,000 total ASU indicated should be put into rate base.[13] The OUCC pointed out the discrepancy as follows:[14]

> Instead of the Micro Star filter, Petitioner has an unfinished Plant Control, Laboratory, and Chemical Feed Building, a portion of which contains the phosphorus tanks, pumps, and feed equipment. Though it was included in Mr. Lods' verification of the costs ASU incurred and paid, this new building was not part of ASU' s design for phosphorus removal provided to the OUCC in Cause No. 44676.

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[13] ASU submitted Affiliate Agreement 2017-2 (Phosphorus Removal) with a Schedule of Values to the IURC on January 13, 2017 for review and finalized on May 2, 2017 with no changes to the SOV.

[14] *See* Cause No. 44676, OUCC Reply to ASU's Response to the OUCC's Objection to ASU's Phase III Tariff Compliance Filing, December 23, 2019, page 4.

> Mr. Lods verified that the new building's scheduled value is $900,000 of which 95% or $855,000 has been completed.[15] Complicating matters further, in its response to the OUCC's Objection, Petitioner submitted a second Schedule of Values that contradicts its Verified Schedule of Values.[16] This second Schedule of Values lists a much lower $180,000 cost for the new building and costs for all other phosphorus components that are more than double Mr. Lods verified costs of $600,000. The only cost that is the same between these two Schedules of Values is the total cost of $1,500,000.
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> (Emphasis added by the OUCC)

On January 24, 2020, ASU filed a payment verification correction with a new Schedule of Values matching the SOV in Affiliate Contract No. 2017-2.[17]

Q: How do the Standby Chemical Phosphorus cost estimates ASU used to justify the rate base addition compare with the schedules of values ASU provided on November 7, 2019 and January 24, 2020?

A: Other than coincidentally reaching the same total approved for the Phase III rate base addition, neither the November 7, 2019 SOV nor the revised January 24, 2020 SOV conform to the values used to justify the $1.5 million rate base addition. The listed components and the costs for the same class of items varied widely.[18] Table 2 below compares various schedules for standby chemical phosphorus removal projects presented by ASU from 2013 through ASU's corrected compliance filing.

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[15] Undated First Time Development Corp. CEIII Phase 3 Construction Schedule of Values ("SOV") for the Phosphorus Removal System, - page 3 of 3 of the Verification by Scott Lods, dated 24-Oct-19, which was part of Petitioner's Submission of Compliance Filing and Phase III Rates, November 7, 2019.

[16] Petitioner's response to the OUCC's December 9, 2019 Objection to the Phase III Tariff Compliance Filing, filed on December 19, 2019 includes a different, undated Schedule of Values that does not match any of Petitioner's Verified costs on page 3 of 3 of the Verification by Scott Lods, dated 24-Oct-19 which was part of Petitioner's Submission of Compliance Filing and Phase III Rates, November 7, 2019.

[17] *See* Attachment JTP-2 for copies of ASU's Payment Verification filed on November 7, 2019 and ASU's revised Schedule of Values for the Phosphorus removal project filed on January 24, 2020.

[18] Mr. Serowka testified in Cause No. 44676 that the standby chemical phosphorus cost would be $1.5 million yet listed $1,778,000 in ASU's response to DR 16-52.

Table 2 – Changing Costs for Supernatant-Standby Chemical Phosphorus Removal

Component	44272, Item 15 Cost Estimate Options 1-4 12/11/2013	44676, DR 16-52 Costs 01/07/2016	Phosphorus Sched. of Values 11/07/2019	Revised Phosphorus Sched. of Values 01/24/2020
Building Modifications	$42,000	$86,400		
New Building			$900,000	$180,000
Chemical Metering Pumps	$4,000	$54,000		
Chemical Transfer Pumps	$8,500	$20,400		
Chemical Equipment			$160,000	$275,000
1,500 Gallon Day Tank		$9,600		
5,000 Gallon Tanks	$8,000		$100,000	$285,000
15,000 Gallon Tanks		$96,000		
Micro Star Tertiary Filter		$1,020,000		
Equip. Installation & Concrete Channel-Micro Star Filter		$210,000		
Piping, Valves & Fittings	$75,000	$42,000	$150,000	$170,000
Chemical Control Panel	$40,000			
Metering Instrumentation			$82,000	$292,000
Electrical Equip. Installation		$90,000		
Chemical Equip. Installation			$108,000	$298,000
Chemical & Drain Lines Install		$150,000		
Total	$177,500	$1,778,400	$1,500,000	$1,500,000

Q: What caused the dramatic cost changes between the two Schedule of Values?

A: ASU has never explained why the initial payment verification it filed on November 7, 2019 listed every cost wrong except to say it was a mistake by FTDC.[19] Later, in response to OUCC DR 5-5, ASU stated that Mr. Lods was the source of the

[19] *See* Attachment JTP-3 for ASU's responses to DR 1-1, DR 3-10 DR 5-5, and DR 5-6 pertaining to the listed costs in the Schedule of Values for the Phosphorus Removal project.

incorrect values and was the one who prepared the incorrect Schedule of Values. In either case, we do not have invoices for materials, equipment and labor that support the component costs in the Schedule of Values.

Q: Did the Micro Star design make it into any permit application to IDEM?

A: I could not find any record of ASU submitting the Micro Star design to IDEM. [20]

Q: Was the Micro Star filter design ASU described to the OUCC via discovery responses on January 7, 2016 different than the phosphorus design IDEM permitted ASU to build?[21]

A: Yes. IDEM permitted all needed phosphorus facilities (biological, supernatant, and standby) in 2014 and a separate standby phosphorus removal system in 2019.[22]

Q: Does the Affiliate Contract No. 2017-2 (Phosphorus Removal) ASU submitted to the IURC General Counsel on January 13, 2017 reference any permitted design, bid, or documents?

A: No. It also lacks basic details such as number, sizes, capacity, and materials of pumps, tanks, controls, electrical systems, buildings, etc. on which FTDC was to base its "bid." Moreover, in response to discovery, ASU stated it did not even submit a design to IDEM for the phosphorus facilities until October 30, 2017 and that it then resubmitted to IDEM on January 25, 2019.[23]

The Commission's 2016 approval of the $1.5 million rate base addition for this Phase is not applicable because ASU's affiliate built a standby chemical

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[20] It appears ASU never submitted design drawings to IDEM for the $1.5 million Micro Star system. ASU has not submitted any affiliate bid for the Micro Star system linked to any set of design drawings or IDEM construction permit. It also appears that ASU's affiliate never requested and ASU never issued a Change Order deleting the biological phosphorus removal system and the supernatant/standby chemical phosphorus removal system that were permitted by IDEM.

[21] Construction Permit 22977 – Phosphorus Removal, February 21, 2019. *See* Attachment JTP-4.

[22] Construction Permit 20788 – Carriage Estates Wastewater Treatment Plant Expansion, Feb. 21, 2014.

[23] ASU response to DR 4-16.

phosphorus removal system that is not the same in price or quality that the Commission approved. ASU should not be permitted to place in rate base a different chemical phosphorus removal system built by an affiliate at an undisclosed cost to the affiliate.

Q: Does the corrected schedule of values support the rate base addition?

A: No. The schedule of values is neither transparent as to the affiliate's costs; nor does it conform to the improvements ASU indicated in the course of the rate case that it would build for standby chemical phosphorus removal. The costs or values were not the costs, values, and components the OUCC had an opportunity to review during the rate proceeding. Secondly, based on my evaluation of the project components, the cost of building that system should be considered much lower than the value ASU claims.

Q: Did ASU provide any cost information that contradicts your proposal to allow in rate base less than the $1.5 million?

A: No. Despite our requests for information from ASU about what it cost ASU's affiliate to construct the system improvements, ASU persisted in declining to provide that information. As such, the OUCC is left with two reasonable options for recommendation – (1) ask the Commission to accept the OUCC's recommended valuation for inclusion in Phase III rates, or (2) ask the Commission to deny all recovery in Phase III of an unapproved version of the standby chemical phosphorus removal system. In the latter case, ASU would be permitted to propose its improvements in any of its rate base additions not already included in rates. Whether the Commission authorizes Phase III rates based on $270,000 for the standby chemical phosphorus removal system or authorizes no Phase III rate base addition, the Commission should not consider any additional rate base addition unless and until ASU presents the actual costs it or its affiliate incurred acquiring the materials and equipment and installing the system (i.e., invoices from all third-party contractors, material invoices, labor records, etc.).

Q: Did ASU install the enhanced biological phosphorus removal system as proposed, designed, and permitted?

A: No. ASU testified that EBPR would be the primary method of phosphorus removal with the standby chemical phosphorus removal system required by IDEM as the secondary system. However, ASU made a unilateral decision to delete EBPR. In response to discovery, ASU stated its consulting engineer made the determination (to delete EBPR) sometime around the fourth quarter of 2017. ASU stated that no records (of the decision) were maintained and that "ASU and its consulting engineer discussed the advantages and disadvantages of both phosphorus removal options and the consulting engineer's final recommendation to use the chemical phosphorus removal system was accepted by ASU.[24] This was a significant change of course, as the EBPR system was the primary reason costs nearly doubled for the CE-III expansion project.

[24] ASU response to DR 12-3

Q: When did you find out EBPR (i.e., biological phosphorus removal) had been eliminated from the project?

A: I did not know of this until 2020. On February 27, 2020 ASU stated in response to discovery:

> After further study, it was determined that a biological phosphorus removal coupled with standby chemical was much more operator-intensive and that switching [to] primary chemical phosphorus was preferred.

Q: Did ASU provide any supporting documents to justify its decision to delete EBPR (i.e. biological phosphorus removal)?

A: No. In discovery, the OUCC requested copies of studies or reports establishing operator requirements (e.g. labor hours, training level, on-site staffing requirements, etc.) for the two phosphorus removal options (biological with standby chemical or chemical only) and if no studies or reports existed, for ASU to identify the parameters ASU evaluated in its phosphorus removal system selection analysis. The OUCC also asked ASU to provide copies of documents and communications ASU relied on to support its decision not to install the biological phosphorus removal system as designed and permitted in favor of a chemical phosphorus removal process only. ASU failed to provide any such studies, reports or documents.

Q: The Commission previously noted inadequate project inspections on the Big 3 Sewer project. Did ASU address its inspection shortcomings on the Carriage Estates projects?

A: No. In Cause No. 44676, the Commission faulted ASU for unsupported dewatering claims on the Big 3 sewer project, limited monthly inspections and lack of detailed daily inspections, ultimately disallowing $908,000 in claimed dewatering costs. The Commission also faulted ASU for lack of details on project costs. Ultimately, ASU proposed to address these concerns in part by engaging TBird Engineering to provide daily reports that should at a minimum provide documentation of what work was performed, what personnel were onsite, what materials were delivered, and what equipment was used. ASU suggested that requiring T-Bird Engineering to provide the aforementioned details would protect ASU's project interests and provide the additional documentation directed by the Commission's order in Cause No. 44676.[25]

Q: How often did TBird Engineering inspect the phosphorus project?

A: It appears TBird Engineering prepared only a single inspection report dated October 24, 2019 and one payment verification for the entire Phosphorus project. Details about the construction are lacking. As such, the inspection report does not provide support to determine that the $1.5 million cost claimed by ASU was actually incurred.[26]

Q: Did ASU build the phosphorus project on utility owned land?

A: No. For unknown reasons, ASU constructed the new Chemical Feed Building on land owned by Scott Lods north of the Carriage Estates property. This land is not included in ASU's Utility Plant in Service.

Q: Are there operational issues associated with the location of the new building?

A: Yes. The new building is farther away from the chemical application points (original and new CSBR tanks) and beyond the recommended 100 feet limit for

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[25] *See* the April 21, 2017 letter to Nicholas Kile from IURC General Counsel, Elizabeth Heline

[26] See the TBird construction verifications provided in response to DR 1-1 and the lone Phosphorus project inspection report, originally dated 10/24/2019, provided in response to DR 5-6 in Attachment JTP-3.

chemical feed piping.[27] ASU may have plugging problems with the chemical feed piping long term. This is a design error. A better site for the bulk storage tanks and pumps would have been the existing Blower Building as ASU designed and permitted in 2014. The design was to reuse the existing chlorination/dechlorination chemical rooms in the north end of the building with the bulk storage tanks located adjacent to the building. Based on my review of the As-Built drawings no conflicts are apparent in these areas that would have prevented construction as designed and permitted in 2014. The area west of the Blower Building could also have been enclosed for weather protection or the bulk storage tanks could have been heated. ASU may state on Rebuttal that it is installing the IDEM required additional blowers in the original chemical rooms, but these blowers could be as easily installed in a Blower Building extension to the south. I could not find any conflicts in this area.

Q: Have there been chemical phosphorus removal system problems?

A: Yes. On its Daily Activity Sheets, ASU reported the metering pumps were down and it was instead manually injecting the sodium aluminate chemical.[28] It appears the pumps failed on June 5th and were offline for 50 days. They were back online on July 25th to July 26th and beginning July 29th. ASU did not mention the phosphorus pump failures in its Monthly Reports of Operations ("MROs") to IDEM and did not report any effluent violations. In its October 1, 2019 Inspection

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[27] USALCO 38 Technical Data Sheet, Bulk Storage and Feeding System, Revised 06/14/18.

[28] *See* Attachment JTP-5 for ASU's response to DR 9-9 (b) page 6 of 9 which is the Phosphorus log of chemical usage for June and July 2020 showing the pump outage.

Summary/Noncompliance Letter, IDEM rated plant operation unsatisfactory because of similar temporary phosphorus pump problems:

> Operation was rated as unsatisfactory due to the facility's temporary chemical Phosphorus treatment system being out of service. Part II. B. 1 of the permit requires all waste collection, control, treatment, and disposal facilities to be operated as efficiently as possible and in a manner which will minimize upsets and discharges of excessive pollutants. At the time of the inspection the temporary chemical Phosphorus treatment system was not operating due to chemical feed pump needing repaired. The facility personnel noted that they were dumping in Phosphorus removal chemical. This is not an efficient treatment for Phosphorus or a permitted way to introduce the chemical.
>
> (Emphasis added by the OUCC)

II. PREAPPROVAL CARRIAGE ESTATES EXPANSION WORK NEVER CONSTRUCTED OR INSTALLED

A. Background of Preapproval of Carriage Estates WWTP Expansion Project

Q: Did ASU develop expansion options for the Carriage Estates WWTP?

A: Yes. The Commission pre-approved ASU's CE-III plant expansion for up to $10 million pursuant to an approved settlement agreement with the OUCC in Cause No. 44272. ASU filed its petition in Cause No. 44272 seeking preapproval of improvements to its Carriage Estates Treatment Plant. In that cause, ASU had ultimately presented four options (Options 1 through 4) for rehabilitating and expanding its Carriage Estate Treatment Plant and entered into an agreement with the OUCC, the implementation of which was affected by the option ASU would choose to build. The most modest increase (Option 2) would result in an IDEM permitted plant capacity of 3.0 MGD. At that time, all options were designed to provide for biological treatment and removal of phosphorus. (ASU ultimately determined it would need to add a standby phosphorus system using chemical means.) The OUCC opposed ASU's original 2012 expansion plan due to: 1) concerns the expansion to 6.8 MGD was oversized; 2) lack of adequate cost support for the estimated costs; and 3) concerns ASU's Affiliate, First Time Development Corporation would construct the plant. In response to OUCC opposition to the higher flows and costs and in response to receiving a phosphorus limit, ASU reduced capacity to 4.0 MG with an additional CSBR tank for a future 6.0 MGD capacity and switched to a CSBR system with Enhanced Biological Phosphorus Removal ("EBPR") instead of Extended Aeration. This was Option 4, ASU's preferred option, which it indicated was already designed and submitted to IDEM for approval on July 18, 2013. The other three expansion options ASU presented are as follows:[29]

Option 1	Re-rate the plant to 2.0 MGD and make upgrades needed to replace deteriorated equipment causing operational problems.
Option 2	Upgrade and expand the plant to a capacity of 3.0 MGD.
Option 3	Upgrade and expand the plant to 4.0 MGD, but do not install the additional tanks that would permit the plant to be readily expanded to treat 6.0 MGD.
Option 4	Upgrade and expand the plant to 4.0 MGD, and install the additional tanks that would permit the plant to be readily expanded to treat 6.0 MGD. This option is really a 6.0 MGD plant because nearly all major structures and piping are constructed upfront with some process equipment for one CSBR Tank and one influent lift station pump not installed.

For purposes of my testimony, I will refer to the capacity of ASU's preferred option, Option 4, as 4.0 MGD/6.0 MGD.

Q: Which Options were the focus of the Stipulation and Settlement Agreement?

A: The focus was on Option 2 (OUCC preferred) and Option 4 (ASU preferred). It appears neither Option 1 nor Option 3 were seriously considered. ASU withdrew its extended aeration plan in favor of a complete redesign to CSBR tanks expressly for enhanced biological phosphorus removal ("EBPR"). This switch approximately doubled project costs to $19,918,350 and as I will show in testimony, ASU never installed the EBPR improvements it used to support the higher project cost.

[29] *See* Cause No. 44272, Supplemental Rebuttal Testimony of Edward Serowka, Dec. 11, 2013, pages 12-17 and Attachment JTP-6 for Options 2 and 4 layouts and ASU developed costs.

Q: Please describe Option 2.

A: The OUCC preferred Option 2, as it would have expanded capacity to 3.0 MGD by reusing and rerating the original four tanks to treat 2.0 MGD of wastewater and adding two more CSBR tanks to treat 1.0 MGD. These new tanks would have the same dimensions, elevations and capacities as the four original CSBR tanks.[30] There would have been six CSBR tanks in total with the same nominal 0.5 MGD capacity to provide a total capacity of 3.0 MGD.

Q: Which option did ASU report it was building?

A: ASU consistently indicated it was building Option 4. In Cause No. 44272, the IURC ordered ASU to file annual project status reports for the CE-III Project, beginning April 9, 2015, to include engineering and construction progress, the option being built, current total cost forecast, and the funds expended.[31] In its 2015 and 2016 Project Status reports, ASU reported it was building Option 4. On February 21, 2014, IDEM issued Construction Permit No. 20788 for Option 4 to replace the original CSBR tanks with four new much larger CSBR tanks with enhanced biological phosphorus removal capability, supernatant chemical phosphorus removal, and standby chemical phosphorus removal. The original CSBR tanks were to be retained, rehabilitated and converted to digesters.

Q: Which option did ASU report it was building in Cause No. 44676?

A: ASU's Engineer, Mr. Serowka also reported in that case that ASU was building

[30] ASU rated the four original CSBR tanks at 1.5 MGD and 2,502 lbs./day organic load based on only three of the four CSBR tanks in service. IDEM issued Construction Permit No. 12745 on April 20, 1999.

[31] Annual Project Status reports were required under the Cause No. 44272 Final Order, Item No. 5, page 16. *See* OUCC witness Bell's testimony for copies of ASU's 2015, 2016, 2017, and 2019 Project Status Reports.

Option 4:

> **Q32. Please describe the CETP-III Project.**
>
> A32. I will not repeat in total my testimony from Cause No. 44272, but ASU has decided to build what was described in my Supplemental Testimony in that Cause, and was also referred to as Option 4 in my Supplemental Rebuttal Testimony and the Stipulation and Settlement Agreement. This is the option to expand the existing CSBR plant to 4.0 MGD with additional tankage constructed to allow the expansion to 6.0 MGD with the installation of additional equipment at a later date if needed.[32]

I learned during review of ASU's testimony in 2015 that FTDC had already issued the first invoice on July 3, 2013, two weeks before FTDC/ASU signed the CE-III Expansion contract on July 18, 2013, and seven months before IDEM issued Construction Permit No. 20788 for the CE-III Expansion project.

Q: Did you review ASU's annual Project Status Reports?

A: After the Commission's Order in Cause No. 44676, I read the brief reports ASU submitted in 2015 and 2016 in which ASU stated it was continuing to build Option 4 at an expected cost of "$19,938,273.00 (exclusive of the cost for phosphorus removal)." After the second report in 2016, ASU no longer explicitly stated in its required annual report whether it was or was not building Option 4 or any other particular option. As ASU's last statement on the issue indicated it was proceeding to complete Option 4, ASU continuing to construct Option 4 was a reasonable assumption. I am unaware that the OUCC was informed that ASU had changed course.

[32] Cause No. 44676, Direct Testimony of Edward J. Serowka, September 4, 2015, p. 16, lines 13-20.

Q: Was there another reason you believed ASU was building Option 4?

A: Yes. ASU designed and IDEM permitted Option 4.[33] As such, Option 4 was the only design ASU had a permit to build. The Indiana Administrative Code, 327 IAC-3, requires a valid construction permit be obtained before construction can begin for a new, modified or expanded wastewater treatment plant.[34] Utilities issue change orders to revise designs when encountering varying field conditions, obstructions, or other changed conditions but these are for non-significant changes. More significant changes require permit modifications. Because ASU had not requested modifications from IDEM, the OUCC was unaware ASU's construction was not conforming to the IDEM issued construction permit.

Q: Are significant or material changes allowed by IDEM's permit?

A: No. ASU should have requested a construction permit modification and received a revised construction permit. ASU had ample time in 2017 to revise its design for 3.0 MGD in accordance with Option 2 before it started construction of the new aerobic digesters and new CSBR tanks. Part II – General Conditions of ASU's construction permit requires changes to be authorized by IDEM and based on requests accompanied by detailed statements and revised plans:

[33] IDEM issued Construction Permit No. 20788 for the *Carriage Estates III Wastewater Treatment Plant Expansion* on February 21, 2014. According to the permit, this project was to expand capacity to 4.0 MGD (with three new CSBR tanks and a fourth CSBR tank – concrete only) based on plans and specifications prepared by Lakeland InnovaTech, and certified by Edward J. Serowka, P.E., with revised drawings submitted for review on January 13, 2014.

[34] **327 IAC 3-2-1.5** Valid permit requirement
Sec. 1.5. No person shall cause or allow the construction, installation, or modification of any water pollution treatment/control facility or sanitary sewer without a valid construction permit issued by the commissioner.

1. No significant or material changes in the scope of the plans or construction of the project shall be made unless the following provisions are met:
   a. Request for permit modification is made 60 day in advance of the proposed significant or materials changes in the scope of the plans or construction;
   b. Submit a detailed statement of such proposed changes;
   c. Submit revised plans and specifications including a revised design summary; and
   d. Obtain a revised construction permit from this agency.

Q: Did ASU seek a permit modification?

A: No. Based on my check of IDEM's Virtual File Cabinet ("VFC"), ASU's 2014 permit was never modified, revoked or reissued by IDEM. In response to discovery, ASU admitted it did not build in accordance with the construction permit (DR 4-1), that IDEM only issued two construction permits for the Carriage Estates projects in 2014 and 2019 (DR 4-2), and that ASU never applied for or received permit modifications (DR 4-3).[35] ASU also admitted it did not construct any of the four Options it developed under the preapproval case (DRs 4-6 to 4-9), although it maintained that components it built were part of the Option 4 design.

Q: Do you agree it built components that were part of the Option 4 design?

A: Functionally, the expanded plant most closely resembles Option 2. It has six CSBR tanks capable of biological phosphorus removal if ASU completes construction to add mixers and SCADA controls and instrumentation, the four original CSBR tanks continue to be used for wastewater treatment instead of being converted to aerobic digesters, and there are only four aerobic digesters. However, many of the new

[35] *See* Attachment JTP-7 for ASU's responses to DR 4-1 and 4-2 and for other ASU responses regarding construction permits and Options 1, 2, 3 and 4.

facilities were sized based on the 6.0 MGD daily average flow for Option 4. ASU began constructing Option 4 in July 2013 and continued for three and a half years to sometime in 2017 when it modified the design. In the 4th quarter of 2017 ASU made the decision to eliminate biological phosphorus removal.[36] The higher capacity facilities include headworks (macerators (6.7 MGD firm capacity/ 13.4 MGD peak), influent lift station piping and wet well (enlarged from Option 4 permitted design), influent pumps (7.3 MGD firm capacity /10.4 MGD all pumps with space for two more 2,100 gpm pumps – 3.0 MGD each), force main to the four original CSBR tanks (6.5 MGD), 24-inch force main to two new CSBR tanks (20.9 MGD), four original CSBR tanks (2.3 MGD average / 6.9 MGD peak), two new CSBR tanks (3.0 MGD average / 9.0 MGD peak), the decanter discharge tank (34% larger than the Option 4 permitted design), UV disinfection (14.4 MGD), and effluent flow meter (20 MGD).

Q: Did ASU notify IDEM or the OUCC of the significant and material changes and that it was not building Option 4 as permitted?

A: No. Nothing in my review indicated ASU notified IDEM, the IURC or the OUCC it was no longer building Option 4. It appears IDEM first became aware ASU deviated from the permitted Option 4 design during Compliance Evaluation inspections on March 13, 2019 and again on September 24, 2019. OUCC witness Scott Bell discusses ASU's failure to construct per the IDEM construction permits and the subsequent IDEM enforcement action.[37]

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[36] ASU's response to DR 12-3.

[37] IDEM initiated an enforcement action against ASU on January 21, 2020 (Agreed Order 2019-26314-W, adopted December 1, 2020).

Q: When did you learn ASU was building something other than Option 4?

A: I learned ASU altered the CE-III WWTP expansion project when I read IDEM's October 1, 2019 Inspection Summary / Noncompliance letter.[38] However, I did not know the extent of the changes or that ASU had dropped enhanced biological phosphorus removal that was the basis ASU used to justify redesign to the higher cost CSBR system.

Q: Did ASU accurately describe the CE-III expansion project in its construction permit application for the 2019 chemical Phosphorus project?

A: No. In 2019, when it applied for another permit to install a standby chemical phosphorus system, ASU did not disclose the significant and materially changed CE-III expansion project it was actually building. Instead, ASU listed the same 2014 design summary in its 2019 application. In evaluating the construction permit, IDEM relied on ASU's no longer applicable 2014 design summary and used it for the Facility Description in Construction Permit 22977.

> The permittee received a construction permit Approval No. 20788 on February 21, 2014, to expand the WWTP to a 4.0 MGD SBR type WWTP. The upgrade included new macerators, new influent lift station, new four -tank continuous sequential batch reactor (CSBR) system (three tanks needed for CSBR to handle 4.0 MGD and fourth tank to be used as aerobic digester until the time when influent flows exceed 4.0 MGD and up to 6.0 MGD when all four tanks are to be used for CSBR), new ultraviolet disinfection system, new effluent flow meter, four new aerobic digesters, conversion of existing SBR tanks to aerobic digesters, new sludge transfer pumps, new blowers, conversion of the existing chlorine contact tank to supernatant holding tank, and new liquid sludge loading station. Final sludge is aerobically digested and land applied by a contractor.[39] (Emphasis added by the OUCC)

[38] IDEM's Noncompliance letter was from a September 24, 2019 inspection by IDEM's Facility Construction and Engineering Support Section and the Compliance Evaluation Section.

[39] Construction Permit No. 22977, Phosphorus Removal, February 21, 2019.

ASU deleted the underlined components but had proceeded to construct two of the four much larger CSBR tanks it permitted with IDEM.

Q: How did you learn about ASU's Construction Permit 22977 for phosphorus?

A: In March 2019 I obtained a copy of the permit application, design summary, plans, and specifications and permit from IDEM's Virtual File Cabinet.

Q: Could you tell from reviewing the 2019 chemical phosphorus project permit that ASU had materially changed its CE-III expansion project?

A: No. The project description indicated that ASU was building Option 4 as ASU previously indicated and permitted. I was not aware of the significant and material changes from ASU removing many of the previously designed and permitted facilities from the project to reduce costs. It was only from the OUCC's December 4, 2019 site visit and my review of IDEM documents that I understood ASU's constructed facilities materially differed from its 2014 IDEM permit.

Q: Had ASU modified its CE-III expansion permit?

A: No. Based on my review of IDEM files available on-line, ASU never sought a permit modification, never prepared or submitted revised plans and specifications to IDEM as required. I would add that I have never encountered a similar situation where a utility deviated so substantially from the permitted design. Permit modifications are required in such instances because IDEM requires construction in accordance with a valid permit that accurately reflects the facilities being built.[40]

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[40] On multiple occasions, ASU had withdrawn construction permit applications when the design needed to be changed. ASU's withdrawal of plans and specifications, design summaries and permit applications include: 1) November 3, 1997 for the CE-II WWTP, 2) December 8, 2011 upgrade plans and request to re-rate the plant capacity to 2.0 MGD, and 3) March 3, 2018 – withdrawal of phosphorus project.

Q: Who made the decisions to alter the project design during construction?

A: ASU indicated major decisions such as raising tank elevations and altering digester dimensions were field decisions by Mr. Serowka but that there were no documents, emails, or correspondence regarding the changes.[41] ASU also indicated it did not have design drawing mark-ups made by FTDC, showing project changes because "Mark-up drawings were not required nor provided." And "All requests for project clarifications from ASU or FTDC to the design engineer were verbal, and no written questions or responses were required nor maintained."[42] There were also no change orders on the project, as the inspection firm, TBird Design Services Corporation ("TBird") noted no changes to the project in its inspection reports.

The changes ASU made to CE-III WWTP project are significant and include multiple deletions of components including rehabilitation of the original CSBR tanks (one of the original reasons for the project), ASU's subsequent idling of these useable CSBR treatment tanks, enhanced biological phosphorus removal with mixers, supernatant phosphorus removal, the new Blower Building, the new Control/Laboratory Building, SCADA control system for the EBPR, numerous electrically operated valves, fewer new CSBR treatment tanks, changed dimensions for tanks, structures, and buildings, altered elevations, altered hydraulic profiles, changed materials, and altered pipe diameters, materials and routes.

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[41] *See* Attachment JTP-8 for ASU's responses to informal DRs 2-9, 2-10, 2-11 and DRs 5-1 and 12-3 regarding design changes and change orders.

[42] *Id.*, ASU response to informal DR 2-9, December 4, 2019.

Q: Affiliate Contract No. 3 (CE-III Expansion) was to build what Option?

A: The word "option" never appears in any of ASU's affiliate contracts with First Time Development Corporation. There are also no references to a set of design plans and specifications or to an IDEM construction permit that would define the project. These documents are required for all wastewater plant construction projects. ASU did attach a schedule of values ("SOV") to its Affiliate Contract but details are absent about size, number, capacities, construction materials, or specific treatment tanks, structures, controls, and equipment to be constructed. Most entries consist of only two to three sub-items without details. For example, the new CSBR tanks SOV entries were:

2.0 NEW CSBR AERATION TANKS	
2.1 Excavating / Backfilling	$92,650.00
2.2 Install CSBR Structure	$1,373,000.00
2.3 Install piping, valves, and equipment	$1,160,000.00

From these entries, it is impossible to know what FTDC was to build. In the new CSBR tanks example, nowhere in the Affiliate Contract including the SOV does it identify such basic information as how many new CSBR tanks are to be built, only the contract cost. There is no reference to any permitted design drawings or specifications. The Schedule of Values is therefore defective because it is not tied to any design plans and specifications or permit (which would reference plans and specifications).

Q: Was the $10,000,000 preapproval tied to a better-defined project description?

A: Yes. The $10,000,000 was derived from Option 2, which was more fully defined in Mr. Serowka's Supplemental Testimony in Cause No. 44272.

Q: What Option did FTDC/ASU construct?

A: That remains unknown. ASU has not stated what option it constructed in any document, filing, or proceeding since its 2016 Project Status Report.

Q: Did the OUCC ask ASU which Option it was constructing?

A Yes. In response to informal discovery, ASU stated: "ASU needs more clarification on this question."[43] During the OUCC's December 4, 2019 site visit, I directly asked FTDC/ASU President Scott Lods which of the Options he built, but he did not state which option, and indicated to me he did not understand the question. I explained I was referring to the preapproval case Options. But he did not identify the Option at that time.

Q: How did ASU describe its construction in its December 19, 2019 response to the OUCC's Objection?

A: Again, ASU did not state which option it built, but asserted it built a 3.0 MGD plant and is therefore entitled to receive the preapproved amount.[44] ASU also essentially asserts that the Settlement Agreement with the OUCC and the Commission's Final Orders gave it wide latitude to build whatever it wanted as long as it resulted in a 3.0 MGD plant. ASU also asserted it was not bound to the preapproval options it developed to justify project costs. In Cause No. 44272, ASU testified all options would cost more than the preapproved amount as summarized in Table 3:

[43] ASU response to OUCC informal Data Request 3-7, dated Dec. 6, 2019.

[44] "Like the Commission's order in this Cause, what the parties agreed to was a level of expenditures which was tied to 3.0 MGD, and not a particular design such as Option 2 or Option 4." Petitioner's Response to OUCC Objection to Phase 3 Tariff Compliance Filing, December 19, 2019, pgs. 3 – 4.

Table 3 – Preapproval Options and Costs, Cause No. 44272

Option	Capacity	Construction and Bid Cost	Engineering and Inspection	Total Estimated Cost
1	2.0	$12,703,173	$551,695	$13,254,910
2	3.0	$15,513,674	$673,805	$16,187,479
3	4.0	$18,190,807	$790,080	$18,980,887
4	4.0/6.0	$19,108,341	$829,932	$19,938,273

Q: Which of the four Options do you think ASU constructed?

A: Comparing the various features, components, the associated costs for each component for each of the options described in the preapproval case, with what was constructed, I do not consider ASU to have built any of the described Options. In terms of the process used to treat wastewater, for purposes of comparing what was built with what was authorized and determining compliance with the preapproval and rate order, because of the treatment process used, the treatment plant expansion most closely resembles Option 2. It relies on the existence of six CSBR tanks (although ASU deleted EBPR, EBPR mixers, and SCADA), and retains the original four CSBR tanks for wastewater treatment. Option 2 also involved rehabilitating the existing CSBR tanks for an additional $1.294 million, which did not occur despite their being necessary, which I discuss below. In Option 4, these original tanks were to be converted to aerobic digesters.

Q: Are all major components of Option 2 completed and in service?

A: No. ASU did not construct several major components. In Table 4 I list the major features and components for Options 2 and 4 that ASU was to have installed but failed to construct.

Table 4 – Comparisons of Major Features of Options 2 and 4 for the CE-III Expansion to Facility Components Not Built by ASU

Item / Component	Option 2	Option 4	Status
Enhanced Biological Phosphorus Removal ("EBPR") with mixers / SCADA /Lab	Yes	Yes	Not Built by ASU
No. of original CSBR tanks with EBPR	4	0[45]	0
Number of new CSBR tanks with EBPR	2	4[46]	0
Total number of CSBR tanks with EBPR	6	4	0
Original CSBR aeration volume at low water level (1,000 ft^3) for wastewater	211.3	0.0	211.3
Rehabilitate four original CSBR tanks for continued wastewater service with EBPR	Yes	No	Not Built by ASU
Convert Chlorination / Post Air tank for Supernatant Phosphorus removal	Yes	Yes	Not Built by ASU
Convert original CSBR tanks to Aerobic Digesters	No	Yes	Deleted by ASU
New Control / Laboratory Building	Yes	Yes	Not Built
Convert Control Building[47]	Yes	Yes	Not Built
Asphalt Paving	Yes	Yes	Not Built
Number of Electrically Operated Valves	14	14	2 Installed
Design Average Flow Capacity (MGD)	3.0	4.0/6.0	5.3
Peak Hourly Flow Capacity (MGD)	6.0	8.0	7.3
Organic Capacity (lbs./day BOD_5)	5,004	6,676	8,828
New CSBR aeration volume at low water level (1,000 ft^3)	105.6	415.2 / 553.6[48]	276.8
Total CSBR aeration volume at low water level (1,000 ft^3)	316.9	415.2 / 553.6	488.1

[45] Under Option 4, the four original CSBR tanks were to have been converted to aerobic digesters and reused.

[46] Four much larger CSBR tanks were to be constructed but only three of the four tanks would be equipped.

[47] ASU mislabeled this building. It should be the existing Blower/Chemical Building which ASU also labels in the IDEM permitted design drawing set as the Existing Blower Building on revised Plan Sheet 13-021-02, dated 01/07/2014, and the Existing Air Blower Building on Plan Sheet 13-021-25, dated 01/03/2014.

[48] The aeration volumes (1,000 ft^3) listed of 415.2 / 553.6 were for 4.0 MGD and 6.0 MGD respectively.

Q: What is the value of project components ASU chose to eliminate?

A: I reviewed the Option 2 costs presented in Mr. Serowka's testimony and deducted items costing more than $100,000 that ASU downsized, reduced in quantity, or did not install or construct at all.[49] The components deleted by ASU totaled $4,280,000 (rounded) based on cost estimates ASU provided during Cause No. 44272. I tabulated ASU's estimated costs for these deleted items in Table 5.

Table 5 – Comparisons of Major Features of Options 2 and 4 to Facility Components Deleted by ASU

Item No.		Work Not Done	Deduct Amount (rounded)
Option 2	**Option 4**		
4	to Aer. Digesters	Modifications of original CSBR tanks for continued wastewater service (not done)	$1,294,000
4	5 (b)	Mixers for Biological Phosphorus removal	$800,000
10	10	Conversion of Exist. Chlorine Contract/Post Air Tank to Supernatant Decanting Tank (not done)	$180,000
12 (a)	12 (a)	New Aeration/ UV Control Bldg. (reduced sq. ft.)	$226,000
13 (b)	13 (b)	Air Blowers in Existing Blower Bldg. (5 fewer)	$300,000
14	14	New Control/ Laboratory Building (not built)	$356,000
15	15	Convert Existing Control Building (not done)	$138,000
18 (a)	18 (a)	CSBR Control and SCADA Panel with Instrumentation (no EBPR)	$500,000
19 (e)	19 (e)	Asphalt Paving (no paving completed)	$247,000
20 (h)	20 (h)	Electric 16" and 8" valves (12 valves not installed)	$239,000
Total deduction amount (construction only for items above $100,000)			$4,280,000

[49] *See* Cause No. 44272, Supplemental Rebuttal Testimony of Edward Serowka, Exhibit EJS-SR3, Dec. 11, 2013 for ASU's Option 2 costs that the OUCC used to deduct costs for deleted components not constructed.

B. Original CSBR Tanks' Equipment Rehabilitation (Not Done)

Q: Please explain ASU's proposed modifications of the four original CSBR tanks that it did not achieve in Option 2.

A: In Cause No. 44272, Mr. Serowka testified that equipment in these tanks needed to be replaced:

> First, much of the equipment at the existing plant has reached its useful age. It is beginning to malfunction, which is causing operational issues at the plant. Many of these replacements have been requested by IDEM.[50]
>
> The equipment in the existing CSBR Aeration Tank has simply reached its useful age and needs replacement.[51]

Option 1 (Re-rate the plant to 2.0 MGD) was also to replace deteriorated equipment causing operational problems. In the body of his testimony, Mr. Serowka did not elaborate on the needed work, what was malfunctioning, or specific equipment to be replaced but listed in Exhibit EJS-SR3, the equipment ASU would replace and their associated costs. The project used to justify the preapproved amount included removing rusted/deteriorated equipment (flow divider boxes), and installing new electric plug valves, new flow divider boxes, new decanter assemblies, new waste sludge pumps, piping, and fittings, and all new access bridges and stairways.

Q: Did ASU rehabilitate the original CSBR tanks?

A: No. ASU did not replace any of the major cost items but did remove the rusted flow divider boxes and installed four manual valves and waste sludge pumps.

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[50] *See* Cause No. 44272, Supplemental Rebuttal Testimony of Edward Serowka, Dec. 11, 2013, page 13 and Exhibit EJS-SR3.

[51] *Id.*, page 14

Q: Does IDEM require keeping the original CSBR tanks for wastewater service?

A: Yes. ASU suggested retaining these tanks for wastewater service. IDEM requires they remain for wastewater service. In fact, ASU's 3.0 MGD capacity rating is expressly contingent on ASU not converting the original CSBR tanks to aerobic digesters.

Q: What has ASU said it would do with the four original CSBR tanks?

A: That has greatly varied from rehabilitating them for continued wastewater treatment (Option 2), to converting them to aerobic digesters (IDEM permitted Option 4), to enlarging them to double their capacity (letter to IDEM on October 21, 2019), to retiring them completely from service (revised letter to IDEM on January 24, 2020 amending its October 21, 2019 letter).[52] At the OUCC's December 4, 2019 site visit, Mr. Lods stated he would be raising the tank walls. (I presumed this was to enlarge the tanks and double their capacity as ASU stated in writing to IDEM by raising the 16 feet walls to match the two new CSBR tanks' 24 feet walls). But in its December 19, 2019 response to the OUCC Objection, for the first time ASU stated it would be retiring the tanks from service:

> While the OUCC does not submit any evidence in support of its claims, it is suspected that the OUCC's position derives from the fact that the tankage associated with the old plant has not yet been removed from service. The new plant has a total capacity of 3.0 MGD, and the old plant's CSBR reactor tanks will be retired from service. Until the upgraded plant has had a sufficient time to run without incident, however, the old tanks have not yet been taken off line. The old tanks must and will be removed from service for two reasons. First, they are not piped through the new UV disinfection equipment. Given that we are presently not in recreational season[2], this is not a problem because disinfection is not currently required.

[52] *See* Attachment JTP-9 for ASU's responses to IDEM and discovery responses pertaining to the four original CSBR tanks.

> But before the Spring, the old tanks must be removed from service. Second, the old tanks are not in a condition that they can continue to serve. There is exposed rebar in the concrete above the water line. We can have no idea what the condition will be below the water line. These tanks could not continue to be part of ASU's treatment process absent rehabilitation to a level that ASU will not know until after the tanks have been completely drained. It is expected that the cost to rehabilitate these tanks properly could be in the millions of dollars. As such, they will be removed from service.[53]
>
> (Emphasis added by the OUCC.)

Again, ASU told IDEM it intends to enlarge the tanks to double capacity, and Mr. Lods told me ASU will be raising the walls, but then ASU told the IURC and the OUCC that, because of those same walls, the tanks must be retired since they "are not in a condition that they can continue to serve."

Q: Were the original CSBR tanks ever to be removed from service as ASU later stated must be done?

A: No. ASU's construction design presented in both the preapproval and rate cases, depended on continued use of the original CSBR tanks for either wastewater service (Option 2) or aerobic digestion (permitted Option 4). Continued use of these tanks had never been an issue and their retirement had not been proposed in any IURC proceeding. If ASU had promoted such a move in its preapproval and rate cases, the OUCC would presumably have opposed replacing or eliminating useful plant. Until ASU's December 19, 2019 response, no party had ever suggested retiring the tanks. Furthermore, ASU has never presented any basis to IDEM, the IURC, or the OUCC for retiring or idling the tanks.

[53] *See* Petitioner's Response to OUCC Objection to Phase 3 Tariff Compliance Filing, December 19, 2019, page 3.

Q: Is there an engineering reason to retire or idle the original CSBR tanks?

A: No. They are twenty-year-old concrete tanks in good condition.[54] Based on my site visits in 2015, 2019, and 2020, the concrete appears dirty, typical for sewage tanks, but they are in good condition with a few spots of spalled concrete and exposed reinforcing steel (rebar) above the waterline. The spalled concrete is in the baffle walls that have equal water pressures on both sides and so are in no danger of catastrophic failure. Indeed, there are many engineered openings (holes) through these same walls for wastewater to flow through to the rest of the tank. My inspection of the top half of the tank exteriors (the rest is below grade) show them to be in good condition and not cracked or leaking.

ASU's concrete tanks should continue to provide reliable service for many more years. While the spalled concrete should be patched, there is no reason to retire or idle the original CSBR tanks. Doing so is not in the public interest and contrary to the preapproval case. In Cause No. 41254, less than twenty years ago, Mr. Serowka testified on behalf of ASU that these tanks had a long life and would last fifty years:

> The new CHTP will be made of concrete and will use the extended aeration to [sic] activated sludge process. ASU chose not to go with a package plant because, over the long run, the concrete plant is much better. <u>The expected life for the concrete plant is 50 years</u> compared to 20 years for the package plant. Ongoing maintenance costs are also lower for the concrete plant.[55]
>
> (Emphasis added by the OUCC)

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[54] The original CSBR tanks were certified in service on July 1, 2000.

[55] Cause No. 41254, Direct Testimony of Edward J. Serowka, October 30, 1998, pages 11-12.

My engineering experience confirms that concrete tanks provide long service lives. At the Indianapolis Belmont WWTP, CWA Authority continues to use the original primary clarifiers constructed over 70 years ago in the early 1950s. At the Indianapolis Southport WWTP, CWA Authority continues to use the original treatment tanks installed in 1966 (55 years ago).

Q: Has ASU been concerned about the spalled concrete and exposed rebar?

A: Apparently not. OUCC analyst Larry McIntosh photographed the spalled concrete on CSBR Tank No. 3's baffle wall on March 7, 2013. I saw this same spalling on September 8, 2015 and again in 2019 and 2020. ASU has taken no action to repair the spalled concrete. *See* Figures 1 and 2 and Attachment JTP-10 for photos taken by the OUCC from 2013 to 2020 of the CSBR tank walls.

Figure 1 – View of exposed rebar in the west face of CSBR Tank No. 3 baffle wall. OUCC photo taken March 7, 2013.

Figure 2 – View of exposed rebar in the same west face of CSBR Tank No. 3 baffle wall. OUCC photo taken March 5, 2020. The spalled concrete ends at the waterline.

Q: Did ASU amend its response to IDEM about what it intended to do with the original CSBR tanks?

A: Yes. In its October 21, 2019 response to IDEM's noncompliance letter, ASU stated it would be enlarging the tanks to double their capacity. On January 24, 2020, ASU amended its response to IDEM saying it would instead retire the four original CSBR tanks. ASU's original and amended responses to IDEM's noncompliance letter were as follows:[56]

[56] *See* Attachment JTP-9 for ASU's responses to IDEM and discovery responses pertaining to the four original CSBR tanks.

Original ASU Response to IDEM (Oct. 21, 2019):

> 2. The existing four CSBR reactor tanks were maintained (current design capacity 1.5 MGD) and will be enlarged to handle a future flow of 3.0 MGD. Therefore, the current CEIII plant can handle an average design flow of 4.5 MGD (1.5 MGD Existing CSBR and 3.0 MGD new CSBR). Since the current average daily plant flow is 2.0 MGD (2019), ASU is designing the modifications to the existing CSBR tanks to increase their capacity to 3.0 MGD and also provide new aerobic digester tanks and any additional pumps, blowers, controls, etc., required to meet 6.0 MGD ADF. ASU is preparing design manuals, specifications, and engineering plans to be submitted to IDEM's Facility Construction and Engineering Support Section of the Office of Water Quality for a construction permit. ASU is planning to submit its application for the construction permit in the summer of 2020.
>
> (Emphasis added by the OUCC)

ASU Amended Response (January 24, 2020):
We were only allowed to include in rates an expansion to 3.0 MGD. ASU decided to construct the structures approved in its construction permit to a capacity of 3.0 MGD. This resulted in the following changes (Refer to Engineer plans in Exhibit 1 (provided previously)):

l. Only two of the four new CSBR Reactor Tanks were constructed for a total ADF of 3.0 MGD.

2. The existing four CSBR reactor tanks are being maintained in service temporarily (current design capacity of 1.5 MGD) until we know a sufficient start-up period with the new plant has occurred so that we know there will be no issues with its operations. Then these four tanks will be removed from service. The tanks will not be demolished, however. They will instead be retained but out of service so that, in the event of a need to add future capacity, ASU will have the option to rehabilitate them. Since the current average daily plant flow is 2.0 MGD (2019), there is not a present need to add more capacity than that provided by the tanks set forth in No. 1. When further capacity is needed, ASU will evaluate its options.

(Emphasis added by the OUCC)

ASU's statement to IDEM indicates ASU has not rehabilitated the original CSBR tanks as included in Option 2 work which was one of the original reasons for the CE-III Expansion project. ASU eliminated most of the rehabilitation work but states it will retain the tanks and rehabilitate these tanks in the future. It is important that ratepayers not be charged for incomplete work under Option 2 as part of the CE-III expansion project today only to be charged again for the same rehabilitation work in the future. In its amended response to IDEM, ASU does not mention the condition of the original CSBR tanks.

Q: Did the OUCC explore ASU's claim it must retire the original CSBR tanks?

A: Yes. Addressing the concrete structures themselves was not part of any proposed tank rehabilitation in Cause No. 44272 or in any other proceeding. Therefore, the OUCC requested ASU support its assertion that the "tanks are not in a condition that they can continue to serve." *See* Attachment JTP-9 for ASU's communications with IDEM and ASU responses to OUCC discovery regarding the original CSBR tanks. Summarizing ASU's support for its assertion – ASU has none. ASU does not have any studies, reports, inspections, or evaluations of the tanks condition, can't remember when the tanks were last drained and inspected, and has no support whatsoever for its claim that the tanks must be retired, first made to the IURC and the OUCC on December 19, 2019[57] and to IDEM on January 24, 2020 that the tanks will be retired.

Q: How are the original CSBR tanks depicted on the As-Built drawings?

A: ASU now lists them as "Redundant CSBR tanks" and stated the following in Note 5 on Plan Sheet 20-005-20.

[57] *See* Petitioner's Response to OUCC Objection to Phase 3 Tariff Compliance Filing, December 19, 2019, page 3.

5. All the Redundant CSBR equipment, including but not limited to the following, have been inspected, repaired or replaced if required so that the CSBR system is in proper operation conditions:
   A. Decanter and decanter drive assembly
   B. Waste sludge pumps
   C. Aeration equipment
   D. CSBR control panel

I believe this is the first time ASU has referred to the tanks as "Redundant." ASU never proposed and the OUCC never agreed in Cause No. 44272 that the original CSBR tanks would no longer be used or that they would be replaced with new oversized tanks and then idled to serve as "Redundant" or back-up tanks. No such change was suggested in Cause Nos. 44272 or 44676.

ASU's statement on Plan Sheet 20-005-20 that "All the Redundant CSBR equipment, including but not limited to the following, have been inspected, repaired or replaced if required so that the CSBR system is in proper operation conditions:" does not identify which equipment was inspected and found to not need repair or replacement. ASU does not specify which equipment was repaired or replaced except for the sludge pumps and flow divider boxes.

Q: Was IDEM concerned about the condition of the original CSBR tanks?

A: Yes. ASU stated to IDEM on September 28, 2020 that it will keep the original CSBR tanks in good condition.[58] ASU's response to IDEM implies the tanks are currently in good condition. IDEM required ASU to justify the tanks condition:

2. IDEM Comment:
ASU will need to justify/demonstrate that all the equipment (e/g splitter structure, piping, valves, air diffusers and piping, decanter mechanisms)

[58] *See* Attachment JTP-9 for the ASU's September 28, 2020 response to IDEM Deficiency Notice regarding the condition of the four original CSBR tanks.

in the existing SBRs is in good functional shape and expected to last many years to come to serve as back-up SBRs (until next expansion).

Lakeland Response (9/28/2020):
ASU will keep the Redundant CSBR in good repair and functioning. The CSBRs equipment is checked daily and maintained per the manufacturer's recommendations regarding oil changes, etc. The status of the CSBR equipment is as follows:

a. Each reactor tanks fine bubble aeration system is checked daily for uniform surface pattern and dissolved oxygen levels. If any problems are seen, then that tank is removed from service and its aeration system is checked for leaks, broken diffusers, damaged air piping, etc. Repairs are made and the tank is placed back in service. All aeration systems are in good operating condition.

b. Two (2) new 800 CFM positive displacement air blowers have been installed, one (1) blower can provide sufficient air to one (1) reactor tank. Additional air, if required for any reason, can be provided from the new 2000.0 CFM standby aerobic digester blower.

c. New Tsurumi waste sludge pumps have been installed in each of the reactor tanks.

d. The decanters are stainless steel and are in good condition. The decanter drives are checked daily and are properly maintained. Due to long lead items for the decanters jack screws, the utility keeps spares on hand so that repairs can be made quickly.

e. The CSBRs control panel is still in operating condition; however, due to its age, many of its electronic components are no longer available. Therefore, a new control panel is available if ever required and the change over can be quickly made since the wiring for the existing CSBR system is close to the new panel.

ASU has been operating and maintaining the existing CSBR system for the last twenty (20) years and therefore is very capable of operating and maintaining the redundant CSBR system in the future.

Q: Did ASU also tell the OUCC the original CSBR tanks are in good condition?

A: As seen several times, ASU provided different accounts or explanations to IDEM than to the OUCC. We directly asked whether all rehabilitations, repairs and replacements were completed. ASU stated yes but its answer with the caveat "for the tanks to serve in a redundant capacity <u>in their present condition</u>" (emphasis added) indicated to me that *ASU has not rehabilitated the tanks as indicated in option 2 plans.* ASU responded as follows:

> OUCC DR 9-8 (g)
> Have all rehabilitations, repairs and replacements been completed?
>
> ASU Response:
>
> > Yes for the tanks to serve in a redundant capacity <u>in their present condition</u>. They are only being maintained to serve as backup in the event of a failure with the new plant. The exposed rebar has not been repaired, and the condition of the concrete has not been inspected below the water line. The exposed rebar does not pose an immediate risk of leakage because the tanks have redundant layers of rebar to accommodate the original design factors of safety. However, plant personnel continue to regularly monitor the tanks for leakage<u>. It is not anticipated that these tanks will be rehabilitated to continue serving in a redundant capacity</u>. When there is a need for capacity in excess of 3.0 MGD, it is anticipated these tanks would be converted to a different use and rehabilitated at that time.[59]
> >
> > (Emphasis added by the OUCC)

In the same discovery question, the OUCC asked ASU what rehabilitation, repairs, or replacement work remain unfinished and to provide the estimated costs to finish and estimated timetables. ASU provided no response other than to direct the OUCC to its previous response.

Based on the responses I received, I conclude <u>*ASU has not done the work*</u> totaling nearly $1.3 million in repairs and replacement work it claimed was needed under Option 2 to justify part of the $10 million preapproval.

Q: Does IDEM require ASU retain the original CSBR tanks for continued wastewater service in order for ASU to have a permitted capacity of 3.0 MG?

A: Yes. With only the two new CSBR tanks, ASU cannot ensure treatment continuity if one of the new tanks is out of service. Ten States Standards require more than

[59] ASU response to DR 9-8, November 2, 2020.

two CSBR tanks. To comply with Ten States and address IDEM's concerns about treatment continuity, ASU's engineer suggested to IDEM sometime before February 26, 2020 to retain the existing CSBR tanks for wastewater service.[60] ASU committed to IDEM to keep the original CSBR tanks in good working condition which should have been already achieved with the $1.3 million rehabilitation of these same tanks under Option 2. In order to retain tanks to maintain its 3.0 MGD permitted capacity, ASU will need to conduct preventive and corrective maintenance, repairs, and replacements of the original CSBR tank equipment into the future. Again, ratepayers should not have to pay for those costs in the future *and* now as a rate base addition in this rate case for rehabilitation of tank equipment that never occurred.

Q: What is your recommendation with respect to the cost of rehabilitation of the existing tanks?

A: Because ASU has not actually incurred these costs or completed the project that was embedded in its preapproved project authorization of up to $10 million for Option 2, I recommend that the Commission subtract $1,294,000 (construction only) of the proposed rate base addition ASU has claimed in this Phase.[61]

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[60] *See* Attachment JTP-9 for the February 26, 2020 email from IDEM's Dale Schnaith to Ed Serowka which references Mr. Serowka's idea to keep the existing CSBR tanks as back-up tanks.

[61] Calculated starting from ASU's estimated $1,330,600 for Item No. 4 – Modification of Existing CSBR Tanks and crediting $10,000 for removal of the flow divider boxes, $8,000 for four new valves, and $19,000 for new waste sludge pumps. These were the only items that ASU completed.

C. <u>Mixers and SCADA for EBPR</u>

Q: Did ASU install enhanced biological phosphorus removal or ESBR?

A: No. Even though ASU included CSBR tanks (expressly for EBPR) in all four options under the preapproval case and built two of the much larger Option 4 CSBR tanks, ASU failed to install everything needed to remove phosphorus biologically and to my knowledge has never achieved enhanced biological phosphorus removal at Carriage Estates. In response to the IURC's Docket Entry in Cause No. 44676, ASU stated in response to question Part B (3) concerning CE-III, "Biological phosphorous removal was proposed for either the 3.0 MGD or 4.0 MGD WWTP. Therefore, if the plant was sized 3.0 MGD, a standby chemical phosphorus removal system will still be required."[62]

ASU unilaterally decided to eliminate EBPR. ASU could still provide biological phosphorus removal in the two oversized CSBR tanks and the four original CSBR tanks per ASU's redesign to CSBR Tanks. Combined, these six tanks are oversized for the flow and pollutant loadings and have ample aeration volumes for EBPR's longer treatment cycle. This allows ASU to return to the six-hour treatment cycles originally proposed, designed and permitted by IDEM in 2014. Providing EBPR partially completes the remaining Option 2 improvements upon which the preapproval Settlement Agreement was derived. Biological phosphorus removal would lower chemical and digested sludge disposal operating expenses by minimizing chemical usage and reducing digested sludge volumes.

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[62] *See* ASU's response to the IURC's March 8, 2016 Docket Entry regarding the standby chemical phosphorus removal system, Part B (3), March 14, 2016, page 9.

Q: Which EBPR facilities have not been installed?

A: The main missing components are the submersible mixers and the more sophisticated SCADA control and electrical systems with the associated electrical field wiring. ASU should install the EBPR mixers in all six CSBR tanks along with the electrical power, instrumentation and control systems needed for EBPR. In developing cost estimates for the work which was not completed, I assumed the same ASU design of four mixers per CSBR tank (24 total) at a cost of $800,000 (construction only).[63] My estimate relies on ASU's estimated $50,000 cost per mixer (eight large mixers for the new CSBR tanks) plus four smaller $25,000 mixers for each of the four original CSBR tanks.[64] For the 16 smaller mixers, I assumed their cost at 50% of the $50,000 cost ASU included for the larger mixers.

ASU also estimated $1,725,000 for Option 2 site electrical (construction only) which included a $250,000 Motor Control Center, $500,000 for a CSBR Control and SCADA panel with instrumentation, and $400,000 for electrical field wiring (Item 18 (a) in Options 2 and 4). Since ASU did not install the more sophisticated SCADA control system, power and motor starters for the mixers and electrical field wiring when it deleted EBPR, I deducted $500,000 for this electrical work. Since ASU did not install the mixers, SCADA system, instrumentation, controls, and field wiring, it has not completed this portion of the project work. I

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[63] The mixer cost is calculated as 8 mixers in the two new CSBR tanks (ASU permitted design) at ASU's estimated $50,000 cost per mixer plus 16 smaller mixers (four per original CSBR tanks) at $25,000 each equals $800,000.

[64] ASU estimated the equipment cost of $50,000 for each submersible mixer (35.4-inch impeller, 33.5 HP, 26,200 gpm units) with a separate installation cost (not specified).

recommend the Commission not include in rate base $500,000 of ASU's estimated $1,725,000 site electrical cost (construction only).

D. Supernatant Decanting Tank

Q: Please explain why ASU testified it needed to convert the existing Chlorine Contact / Post Air tank to a Supernatant decanting tank.

A: All options (Item 10 in Options 2 and 4) included converting this 206,000 gallon tank to chemically precipitate phosphorus and control return of the supernatant recycle stream to the head of the plant to prevent shock loadings on the WWTP. In its Option 4 permitted design ASU included a chemical phosphorus removal system for the supernatant decanting tank. Through its case, ASU asserted the need to control the supernatant return which can be enriched with phosphorus. ASU proposed converting the existing chlorine contact tank to a supernatant decanting tank and adding a supernatant return lift station:

> The supernatant return lift station is needed to address shocking of the plant that currently occurs and [sic] facilitates proper operation.[65]

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[65] *See* Cause No. 44272, Serowka Supplemental Rebuttal Testimony, December 11, 2013, page 14.

ASU's engineer elaborated on the supernatant phosphorus control needed:

> 6. Phosphorous removal will require better control of the plant's sludge inventory including the amount and timing of supernatant discharge back to the head of the plant. The sludge is enriched with phosphorus, which it will re-introduce into the supernatant. As a result, we must more carefully monitor and control the disposal of the sludge and supernatant. Therefore, ASU will install four (4) larger new aerobic digester tanks than previously proposed along with converting the existing four (4) CSBR tanks into new aerobic digesters. In addition, the existing chlorination / dechlorination / post air tank will be converted into a supernatant holding tank so that the supernatant can be returned to the wet well of the new influent lift station under controlled conditions. A new supernatant return lift station will be provided so that the supernatant from the new aerobic digesters and the existing two (2) circular aerobic digesters can be collected and pumped to the new supernatant holding tank. These changes to the sludge handling system are important not only for inventory control but also since the new construction will require removal of the existing sludge lagoons.[66]

Of these improvements, ASU only constructed the supernatant return lift station with a wet well volume of just 1,535 gallons. This is far below (less than one percent) of the 206,000 gallon capacity of the Supernatant Holding Tank that ASU was to achieve under all options.[67]

Related to supernatant improvements, ASU had proposed building the new Aerobic Digester Blower Building at the site of the sludge holding lagoons but did not construct this building.[68] ASU also proposed building the new Aeration / UV

[66] *See* Cause No. 44272, Serowka Supplemental Testimony, July 19, 2013, page S8.

[67] The Supernatant Return Lift Station wet well is 6 feet square with a 5.7 feet maximum supernatant depth. The volume is 6 ft. times 6 ft. times 5.7 ft deep time 7.48 gallons per cubic foot equals 1,535 gallons.

[68] *See* Attachment JTP-11 for aerial views of Carriage Estates during construction showing the sludge lagoons and tertiary pond and that the constructed facilities do not intrude on the sludge lagoons.

Control Building over the sludge lagoons but instead placed this building along the south property line. ASU did not construct any building over the sludge lagoons. Therefore, there was no reason to include lagoon sludge removal as a project cost. Sludge disposal is an operating expense.

Q: What do you recommend about converting the existing chlorine contact tank?

A: ASU should have completed this part of the project. It was included in all options to prevent adverse WWTP impacts caused by supernatant recycle streams including control of the supernatant phosphorus. The chlorine contact / post air tank is no longer needed for decanting the four original CSBR tanks. Under Option 2, this tank was to be modified with a new tank outlet to the new CSBR Decanter Discharge tank. Because ASU did not complete any of this work, I recommend the Commission disallow the full $180,000 cost (rounded) (construction only) from the $8,024,800 Phase III cost.

E. <u>Reduced size Aeration / UV Control Building</u>

Q: Did ASU construct a new Aeration / UV Control Building?

A: Yes. However, according to the As-Built drawings, ASU greatly reduced the size of this new building (Item 12 (a) in Options 2 and 4). The design was for a 40 ft. by 75 ft. single story wood frame building on slab (3,000 ft^2) which ASU estimated to cost $424,500 based on $141.50 per square foot. ASU unilaterally reduced the building size to 35 ft. by 40 ft (1,400 ft^2). Using ASU's same estimated cost per square foot, this building should cost $198,100 instead of $424,500. Accordingly, I reduced the building cost $226,000 (rounded) (construction only). Since ASU did not construct the new Aeration / Control Building as large as it testified the building needed to be, I recommend the Commission reduce the rate base addition by $226,000. It is not in the public interest for ratepayers to pay the same amount for a reduced size building.

F. Aeration Blowers

Q: Did ASU install all aeration blowers that it proposed under Option 2?

A: No. ASU was to install ten new blowers in the Existing Blower Building but only installed five blowers (Option 13 (b) in Options 2 and 4). IDEM's 3.0 MGD capacity is contingent on ASU installing three additional blowers. Since Option 2 included ten blowers that ASU estimated at $60,000 each but ASU only installed five blowers, this work remains incomplete. I recommend the Commission disallow $300,000 (construction only) because ASU installed half of the proposed blowers (five fewer).[69] It is not in the public interest for ratepayers to pay for blowers never installed.

G. Control / Laboratory Building

Q: Did ASU build a New Control / Laboratory Building?

A: No. ASU included this building in all options (Item 15 in Options 2 and 4) at a cost of $356,000. Since ASU never constructed this building, I recommend the Commission disallow the entire $356,000 cost (rounded) (construction only). It is not appropriate for rates to include funds for a building never constructed.

[69] Calculated as five blowers at ASU's estimated $60,000 equals $300,000.

H. Convert the existing Control Building for Supernatant Chemical Phosphorus Removal

Q: Did ASU convert the existing Control Building for chemical phosphorus removal?

A: No. ASU indicated this work would occur at the existing Control Building.[70] But this work was actually to occur in the chemical rooms previously used for the chlorination / dechlorination equipment in the north end of the existing Blower Building[71]. The conversion, included in all options, was to add a chemical feed system for supernatant phosphorus removal (which was also permitted by IDEM in 2014 for use with the standby chemical phosphorus removal system). Since ASU never converted this building, the estimated amount used to justify the preapproved amount should not be included in rate base. I recommend the Commission disallow the $138,000 cost (rounded) (construction only).

I. Asphalt Paving

Q: Did ASU complete any asphalt paving as proposed in all options?

A: No. ASU has not completed any asphalt paving. Therefore, I recommend the Commission remove the entire estimated amount of $247,000 for asphalt paving (rounded) (construction only) because the work was never completed.

ASU also included $132,000 for 3,000 cubic yards of gravel for driveways and access areas plus the additional $247,000 for asphalt paving. The gravel

[70] Cause No. 44272, Serowka Supplemental Testimony including Exhibit EJS-S3, Carriage Estates III Estimated Costs, July 19, 2013.

[71] As listed on Plan Sheet 13-021-02 (revised -1/07/14) included in the set of permitted design drawings under Construction Permit No. 20788, February 21, 2014.

allowance was sufficient to cover nearly 2 acres of the 7.09 acres Carriage Estates WWTP site to a one-foot depth. Some gravel was added to the driveways that I estimate to only be 750 cubic yards (equivalent to 1,065 tons). I did not include a deduction for the gravel because I do not know the depth or extent of the gravel coverage other than a rough approximation.[72]

J. Electrically Operated Valves

Q: Did ASU install all electrically operated valves?

A: No. ASU proposed installing 14 electrically operated valves consisting of four 16-inch valves at $23,000 each plus ten 8-inch valves estimated at $18,400 each. ASU only installed two of the smaller 8-inch valves. The other 12 valves were never installed as well as the electrical field wiring and instrumentation. Therefore, I recommend the Commission not include in rate base the estimated amount of $239,200 used to justify the preapproved amount because the electrical valve work was never completed.[73]

K. Total Of CE-III Expansion Items Not Built or Not Provided

Q: What is the total value of those project components that ASU did not construct or reduced in size or quantity?

A: The total value for the ten components is $4,280,000. I recommend the Commission not allow that amount be included in rate base.

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[72] ASU also included costs for stone placed under all concrete structures. These costs were separately identified for each Option. Also note that gravel is invoiced based on tonnage not volume as indicated by Mr. Serowka in the Option estimates. One cubic yard of gravel weighs approximately 1.42 tons.

[73] The deduction for valves never installed is calculated as four 16-inch valves at $23,000 each ($92,000) plus eight valves at $18,400 each ($147,200) equals $239,200.

III. FLOW METERS AND EFFLUENT SAMPLING INACCURACIES

Q: Why are you discussing ASU's flow meters and effluent sampling?

A: ASU is seeking to include the cost of the effluent flow meter and related structures into rate base. ASU's new effluent flow meter should operate properly and record flow accurately. I am not proposing that the cost of the effluent flow meter be excluded from rate base. But I am recommending that certain measures be required so that ratepayers and the utility will have the appropriate benefit of this investment.

Q: Have accurate influent and effluent flows been an issue at ASU's Carriage Estates WWTP?

A: Yes. Since at least 2008 IDEM has had violations for a non-functioning effluent flow meter and lack of flow proportional sampling.[74]

Q: Please describe ASU's effluent flow meter

A: ASU installed the new effluent flow meter and structure consisting of a Palmer-Bowlus flume primary measuring device with ultrasonic level sensor in June 2016, but it wasn't operational until February 2017.[75] On the As-Built drawings, ASU indicates the Palmer-Bowlus flume as 36-inches with 30-inch upstream and downstream sewers. But this is incorrect since the flume size and inlet and outlet pipes will be the same diameter. The meter calibration reports and ASU's response to DR 9-16 show the flume is 30-inch not 36-inch. This is also consistent with my own on-site observations.[76] ASU should correct the As-Built drawings.

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[74] *See* Attachment JTP-12 for IDEM inspections and ASU responses to IDEM and to OUCC discovery pertaining to the new influent and effluent flow meters and sampling practices.

[75] *See* ASU response to DR 9-16 in Attachment JTP-12.

[76] The OUCC noted the discrepancy between the 36-inch flume and the 30-inch sewers but in response to discovery ASU did not provide a coherent answer. *See* ASU response to DR 15-11 in Attachment JTP-12.

Q: Does ASU accurately measure, record, and report effluent flows?

A: No. Based on my observations and investigation, I have concluded the meter has been improperly reprogramed resulting in effluent flows being overreported by as much as 4.3 MGD. More specifically, the Siemens SITRAN LUT400 flow meter has been reprogrammed multiple times resulting in its recording higher flow readings than actual. Particularly troubling is that it registers flow when no flow is being discharged. During the OUCC's October 8, 2020 site visit, OUCC witness Scott Bell and I observed flow readings of 1,209 to 1,211 gpm (1.74 MGD) even though no flow was leaving the WWTP. The Palmer Bowlus flume was also not installed properly since it is not level (south edge is rotated down along the axis).

Q: Did the OUCC document effluent flows being displayed on October 8, 2020 when there was no discharge?

A: Yes. We photographed the control panel display at the meter. *See* Attachment JTP-13 for the photos. The meter readings were as follows:

Table 6 – Inaccurate Effluent Flow Meter Readings when no discharge was occurring[77]

Time	Head (inches)	Meter Displayed Flow (gpm)	OUCC calculated flow (MGD)	Was discharge actually occurring?
11:31 a.m.	7.9	1,209	1.741	No
11:38 a.m.	7.9	1,211	1.744	No
12:07 p.m.	18.1	5,470	7.877	Yes
12:08 p.m.	21.5	7,758	11.172	Yes
12:08p.m.	21.6	7,869	11.331	Yes

The highlighted flow readings observed at 11:31 a.m. and 11:38 a.m. are erroneous.

[77] The flow readings in the highlighted cells should have been zero.

Both readings should have been zero. The CSBR tanks were not decanting, and there was no discharge through the effluent meter and into Indian Creek. Based on my observations, review of ASU's Discharge Monitoring Reports ("MROs") and the meter calibration reports, the flow meters had been mis programmed resulting in effluent flows being registered when no flows were actually being discharged.

Q: On October 8, 2020, how much was ASU's meter over-reporting effluent flow?

A: ASU's 2.578 MGD flow for October 8th reported on the October 2020 Monthly Report of Operations was more than twice the actual 1.174 MGD flow I calculated.

Q: How did you calculate that ASU's actual October 8, 2020 flow was so much lower than reported?

A: My initial attempts were frustrated by the lack of flow information ASU records and retains. ASU should record and maintain this basic influent and effluent flow meter data because the meters all have data logging capabilities. For example, the effluent flow meter can store 5-minute, 15-minute, or 30-minute data for two months, seven months or 14 months, respectively. The data is also needed for ASU's infiltration and inflow program. I recommend the Commission require ASU to record 5-minute flow meter data (for both influent and effluent meters), retain records of all flow, level, and velocity data, and submit it bi-monthly to the Commission and the OUCC.

I first requested ASU's meter data for both the three new influent meters (24-hour totals) and the effluent meter (15-minute data). However, ASU did not provide the information saying it only records daily flow totals.[78] ASU provided

[78] *See* Attachment JTP-12 for ASU's responses regarding flow data in DRs 9-12, 9-13, and 9-16.

no influent flow meter data at all. To estimate discharge volumes, the OUCC also requested beginning to end daily decant times, but ASU responded that it does not record decant times.[79] Therefore, I calculated the influent flows using the influent pumps run times, the 1,150 gpm pump rate for the original pumps, and the 2,100 gpm pump rate for the new influent pumps. ASU only ran two pumps on October 7 and 8 as shown on Table 7.

Table 7 Influent Flow Calculation using Influent Pumps Run Times

	Influent Pump No.				
	No. 1	**No. 2**	**No. 3**	**No. 4**	**No. 5**
10/6/20 Run Time reading	21977.8	No reading	25592.7	928.1	800.2
10/7/20 Run Time reading	21977.8	No reading	25592.7	928.6	809.1
10/8/20 Run Time reading	21978.2	No reading	25592.7	937.7	809.1
Hours (10/7/20 to 10/8/20)	0.4	0.0	0.0	9.1	0.0
Flow (gpm)	1,150	1,150	1,150	2,100	2,100
Flow (MGD)	0.0276	0.0	0.0	1.1466	0.0
Total Flow for October 8 calculated by run times				1.174 MGD	
Total Flow for October 8 reported by ASU				2.578 MGD	

Q: Why do CSBR tanks discharge intermittently?

A: The CSBR tanks operate in a batch mode meaning they do not continuously discharge. Based on ASU's revised twelve cycles per day (six per tank) with a one hour or less discharge per cycle, ASU should only be recording and reporting flows for a maximum of twelve hours daily (worst case scenario).[80]

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[79] *Id.*, ASU response to DR 9-16.

[80] Following its decision to delete EBPR, ASU reduced the 6-hour cycle time required to a standard 4-hour CSBR cycle. This was done to obtain ASU's requested 3.0 MGD capacity using the two new CSBR tanks by increasing throughput and raising the low water from the 14 feet design to 17.3 feet.

In actual practice, discharge occurs in less than one hour per cycle because: 1) flow does not exit the tanks until the lowering decanter's weirs reach the wastewater surface, and 2) the CSBR tanks are not routinely filled to maximum height since flows are low and the tanks ASU constructed are oversized. Therefore, at decant start, no flow leaves the CSBR tanks. This zero-flow condition lasts until the decanter is lowered enough to reach the wastewater. Therefore, decant times per cycle when flow is actually leaving the tanks is less than an hour for each decant cycle. The remaining time will have zero flow. These times include the two-hour aeration time and the one hour settling time per cycle. For maximum one hour decant times (worst case), ASU over-reported October 8th effluent flows by at least 870,000 gallons per day using this method of analyses.[81]

The problem of reporting flow when no flow is happening can also be seen in the November 2020 data. ASU reported daily effluent flows above 5.0 MGD from November 19th to the 21st even though it reported no rain for six days prior to November 22nd. Flows unexplainably doubled on November 7th from the prior day (to 2.076 MGD versus 1.091 MGD) and stayed elevated through November 17th, spiked by 1.4 MGD on the 18th and spiked another 1.2 MGD the next day to 5.026 MGD. Flows stayed above 5.0 MGD for eight days (except for 4.899 MGD on 11/22) before dropping to 0.718 MGD on November 27th for no apparent reason. There is no engineering or technical reason for these abrupt flow swings occurring

[81] Calculated as 1,210 gallons per minute reported during zero discharge times 720 minutes (12 hours per day) equals 870,000 gallons per day (rounded). Actual overreported flows are higher than shown in this calculation because the erroneous offset value would cause high readings for the other twelve hours when flows are being discharged.

when there was no rain. *See* the November 2020 effluent flows in Table 8.

Table 8 – ASU reported Effluent Flow Surges not associated with rain November 2020 – Carriage Estates WWTP

Date	Rain (in.)	Flow (MGD)	Date	Rain (in.)	Flow (MGD)
11/1/2020		1.235	11/16/2020		2.629
11/2/2020		1.317	11/17/2020		2.403
11/3/2020		0.986	**11/18/2020**		**3.825**
11/4/2020		1.3	**11/19/2020**		**5.026**
11/5/2020		1.127	11/20/2020		5.24
11/6/2020		1.091	11/21/2020		5.506
11/7/2020		**2.076**[82]	11/22/2020	1	4.899
11/8/2020		2.205	11/23/2020		5.739
11/9/2020		2.215	11/24/2020	0.1	5.324
11/10/2020	0.2	2.271	11/25/2020	0.3	5.285
11/11/2020		2.281	11/26/2020	0.7	5.285
11/12/2020		2.02	**11/27/2020**	**0.1**	**0.718**[83]
11/13/2020		2.239	11/28/2020		0.65
11/14/2020		2.089	11/29/2020		0.626
11/15/2020	1.2	2.542	11/30/2020		0.665
Monthly Average Flow reported to IDEM (MGD)					2.6938
Percent of 3.0 MGD Design Avg. Flow (based on MRO data)					90%
Total Flow for November calculated by run times (MGD)					1.2819
Percent of 3.0 MGD Design Avg. Flow (based on run times)					43%

I believe the November flow swings suggest incorrect reprogramming of the effluent meter. There is no reason for anyone other than the BL Anderson to be

[82] Data shown in bold are for days when effluent flow drastically changed for no discernible reason and appear to have been caused by someone reprogramming the effluent flow meter software.

[83] The drastic drop in reported effluent flows, again for no apparent reason, are shown highlighted in yellow.

programming or recalibrating this meter. Only the BL Anderson meter technician should be accessing the flow meter's program. Because of the critical importance of accurate and dependable flow data, I recommend the Commission require ASU to have BL Anderson password lock the programs (for all flow meters) to prevent access and reprogramming by anyone besides the BL Anderson meter technicians. I also recommend that ASU be required to conduct semi-annual meter calibrations to confirm there have been no unauthorized or improper meter reprogramming. Finally, a means to tamper proof the ultrasonic level sensor so that it cannot be lowered below its set point should be determined and implemented.

Q: How much flow was treated at Carriage Estates in November 2020?

A: On its Monthly Report of Operations submitted to IDEM, ASU reported treating 80.814 million gallons (2.6938 MGD). This volume is more than double the 38.457 MG volume I calculated for November 2020 based on ASU's reported pump run times. ASU recorded 304 hours of run time for new lift station pumps #4 and #5 and 2 hours of run time for existing pumps #1 and #3.[84]

Q: Is the monthly average flow ASU reported for November 2020 at 90% of the design average flow a problem?

A: As reported, yes. When flows are approaching or reach 90%, IDEM can potentially issue a Sewer Ban Early Warning to notify utilities to begin planning a plant expansion. However, as I explained above, ASU's reported effluent flows are not based on reliable inputs. They should not be used to determine the capacity

[84] The monthly flow total of 38.457 MG is based on pump run times and calculated as 304 hours (new pumps #4 and #5) times 60 minutes per hour times 2,100 gpm equals 38,295,600 gallons per month plus 2 hours (pumps #1 and #3) times 60 minutes per hour times 1,150 gpm equals 161,000 gallons. Total volume for November 2020 is 38,295,600 gallons plus 161,000 gallons equals 38,456,600 gallons.

utilization of the Carriage Estates WWTP until the errors are corrected and safeguards put in place to prevent a reoccurrence.

Q: How often does it appear the meters have been reprogrammed?

A: November 2020 data indicates changes in the effluent flow meter on November 7, 18, 19 and 27. This includes the significant drop from greater than 5.0 MGD to 0.718 MGD and below for November 27 through November 30. The average flow for the prior 26 days of November was 3.006 MGD. If the level of flows that had begun on November 19 had continued through the end of the month, ASU's monthly average flow would have reached 3.272 MGD and be at 109% of hydraulic capacity instead of the reported monthly average reached of 2.6938 MGD. These apparent reprogramming changes or glitches are not explained.

Q: Have you reviewed the meter calibrations that IDEM requires be done at least annually?

A: Yes. The OUCC requested the latest meter calibration reports, which should have included the calibration made after October 8. But ASU provided the March 2019 and March 2020 reports. It appears meter reprogramming occurred October 9, 2020, the day after the OUCC discovered the faulty meter readings. This change lowered the effluent flow reading. Other unusual reading glitches occurred multiple times in November. As such I do not have confidence in ASU's reported effluent flows.

Accurate plant flow data have been particularly important for this utility since 2013. I recommend the Commission ask ASU to explain what is occurring with its effluent meter readings with the goal of taking steps to ensure the accuracy and integrity of the measurement, recording, and reporting of the effluent flow data as required by ASU's NPDES permit.

Q: How should ASU handle these obviously invalid flow values?

A: ASU should recognize these flow readings are inaccurate and exclude them from the data used to determine plant flows. ASU should determine what caused these erroneous meter readings. All influent and effluent pollutant loadings (e.g. lbs./day BOD_5, lbs./day TSS, etc.) that are based on these invalid effluent flow data are also incorrect and the records should be amended with explanation.

Q: Has the BL Anderson meter technician reported meter calibration problems?

A: Yes. In 2019 and 2020, the contracted meter technician, Shawn March, reported calibration problems that caused the wastewater level in the flume to be read higher than actual which in turn caused higher reported flows than actual. Mr. March noted his calibration concerns on the March 28, 2019 Certificate of Calibration and added the following on the invoice.

> Work Performed: Annual calibration of effluent flow meter. I found that someone had programmed it or the program had glitched and put a number of 10 inches in the offset. This was causing the meter to read 10 inches high. I corrected this offset and calibrated the flowmeter. Unit is now operating normally with good signal strength and all other programming is correct 30 inch, bowls for loom [sic] unit is now working normally. Filled out calibration certificate and gave to the operator Eric. See calibration certificate for details. It appears that this job site is under construction and there is a temporary AC line running to the flowmeter, switching power on and off. Could have been the possible cause for this glitch in the programming.[85]
>
> (Emphasis added by the OUCC)

[85] *See* Attachment JTP-12, pages 39-40.

Mr. March also reported calibration problems on the March 11, 2020 Certificate of Calibration. On the invoice he noted there appeared to be programming of the meter and recommended enhanced security:

> Work Performed: Annual calibration of effluent flow meter at the Carriage Estates plant. Checked programming and found there were multiple programming errors that were not in there on the last calibration. Made multiple corrections in the programming, including low calibration point, high calibration point, calibration offset and max flow. Also I wanted to note that the primary device set up for the meter was correct. It has been programmed for a 30 inch Palmer bowls flu [sic], so some items were edited while others were left the same. Once these changes were made, I calibrated the flowmeter, checked totalizer, filled out calibration certificate and gave to the operator Eric. I informed Eric about these changes. He said that he had no idea how this had occurred. I noted these changes on the calibration form and this is the second calibration where I noticed changes in the programming. Suggested that Eric add a password lock to the flowmeter to prevent others from making changes. See calibration sheet for details. This flowmeter is a Siemens LUT 430.[86]
>
> (Emphasis added by the OUCC)

Q: Do the effluent flow meter issues prevent proper sampling?

A: Yes. ASU's sampler is not connected to the effluent meter to signal when the CSBR tanks are discharging. This means the automatic sampler may improperly pull samples when the tanks are not actually discharging. Instead, ASU pulls 24 samples from the post air tank regardless of whether there is any effluent flow. This is contrary to good practice and the NPDES permit requirement to collect representative effluent samples. This also defeats one of the purposes of the new effluent meter. In ASU's testimony in 2012 Mr. Serowka justified the need for the

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[86] *Id.*, pages 41-42

new effluent meter to provide a flow signal for flow proportional sampling and more accurate flow measurement:

> A new effluent flow measuring structure will be installed which will allow the installation of a flow meter which then <u>can be used to provide a 4-20mA signal to a new sampler for flow proportional sampling</u> and also provide more accurate flow measurement data.[87]
>
> (Emphasis added by the OUCC)

But ASU's current sampling method is only representative of the water in the post air tank, not the effluent discharged.

Q: What do you recommend for the effluent sampler?

A: I recommend ASU first have BL Anderson correct the faulty meter programming and then password lock the meter. Next, ASU should integrate the sampler and the meter to pull effluent samples only when effluent is actually being discharged.

IV. SANITARY SEWER OVERFLOWS AFTER PHASE 1 AND 2 CONSTRUCTION

Q: Did the Carriage Estates WWTP project include improvements to stop the overflowing manholes?

A: Yes. ASU witness Edward J. Serowka testified in 2013 that the expansion project would stop the SSOs even during a 500-year rain event.[88]

Q36. Did you review the video segment showing three (3) manholes overflowing?

A36. Yes. These manholes have bypassed in the past as stated in the Direct Testimony of Edward J. Serowka, lines 16 thru 20 on Page Serowka-17 where it stated:

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[87] *See* Cause No. 44272, Serowka Direct Testimony, December 19, 2012, page 10.

[88] Cause No. 44272 Supplemental Rebuttal Testimony of Edward J. Serowka, pages 20 – 21, December 11, 2013.

> "Carriage Estates II Wastewater Treatment Plant has experienced only two (2) bypasses over the last three and a half years and that was the result of a rain event exceeding a 500 year storm. Even this bypass will be eliminated with the expanded plant because the plant's headworks will be designed to remove stormwater quicker from the sewer system."

Since these manholes are located just prior to CEIITP and at the end of the Carriage Estates collection system, they become a "bottle neck" during heavy wet weather events greater than the 100 year storm event which lasts an extended period of time. The April 18, 2013 bypass event occurred after five heavy days of rain from April 9 thru April 13 and then additional rain events on April 16 and 17 with a heavy rain event over a short period of time early in the morning of April 18, 2013 which resulted in the bypass. In April, 2013 there were eleven (11) days of significant wet weather events with only one bypass event on April 18, 2013 and only at the three (3) manholes nearest to CEIITP.

<u>This situation will be solved once the plant expansion is placed in service.</u>

(Emphasis added by the OUCC)

Q: Did ASU detail how it planned to prevent future sewage overflows?

A: Yes. In response to discovery during Cause No. 44272, ASU stated two projects would help correct the SSO problem upstream of Carriage Estates.

OUCC DR 9-13 What, if any, of the proposed projects will help prevent future SSOs from these three manholes?

ASU Response:

All four (4) proposed projects consisting of the following will help reduce wet weather flow in the collection system and also eliminate bypassing at the three (3) manholes nearest to the Carriage Estates III Water Reclamation Plant.

<u>Project 3 - Big 3 Sewer Project</u>

The Big 3 Sewer Project consists of replacing three (3) old existing lift stations and approximately 2,400 feet of 40-year old 12-inch and 18-inch gravity sewer lines. The three (3) lift stations and old sewers will be replaced with approximately 11,500 feet of 12-inch and 18-inch PVC SDR 26 sewers. <u>In addition the flow from this area will be redirected from the Carriage Estates II WWTP to the County</u>

<u>Home II WWTP. This will reduce the total flow going to CEIITP and the three (3) nearest manholes which is especially important before the expanded CEIIITP is placed in service.</u> Please refer to the Direct Testimony of Mr. Timothy A. Beyer, Answers A28, A29 and A30 on Page Beyer -10.

<u>Project 4 - Carriage Estates II WWTP Expansion and Upgrade</u>

The headworks of CEIITP will be upgraded and expanded in order to more quickly discharge the flow to the expanded treatment process thus reducing the pressure on the existing three (3) nearest manholes and eliminate them as the "bottle neck" in the collection system. This will be accomplished by increasing the capacity of the existing plant's east manhole and the auxiliary manhole and their 48-inch PVC SDR 26 connecting gravity sewers. In addition the new influent lift station's wet well will be lower and have a greater holding capacity as well as assisting the existing lift station to discharge the wastewater to the expanded secondary treatment system at a faster rate.

Q: When did ASU certify it had constructed the headworks, standby generator and effluent flow meter?

A: The Phase 1 construction of the headworks, standby generator and effluent flow meter were authorized by the Commission to be part of ASU's Phase 2 rate increase. ASU certified these items were complete on February 23, 2017.

Q: Did the SSO's stop occurring after February 23, 2017?

A: No. After February 23, 2017, ASU reported eleven (11) SSOs in less than three years. [89] The latest overflow occurred on January 11, 2020 after ASU stated the full Carriage Estates project was placed in operation on October 18, 2019.[90] The prohibited SSOs actually occurred more often after ASU certified it completed the

[89] In the Cause No. 44676 Phase II Rates filing ASU claimed the new Influent Lift Station was completed on Feb. 23, 2017 rather than state the new influent lift station was in-service or was "complete and in-service".

[90] *See* Attachment JTP-14 for copies of the eleven Bypass / Overflow Incident Reports submitted to IDEM from 2017 to 2020.

new headworks. IDEM brought an enforcement action against ASU on January 21, 2020 for multiple violations including the SSOs. ASU reported these SSOs spilled 569,500 gallons of raw sewage from the second manhole upstream of the WWTP adjacent to Indian Creek. The SSOs are summarized in Table 9.

Table 9 – Sanitary Sewers Overflows Upstream of the Carriage Estates WWTP from April 6, 2017 to January 11, 2020

SSO Date	Volume (gallons)	WWTP Flow during SSO (MGD)	Actions Planned to Prevent
2/24/2017 – ASU certifies completion of Phase 1 construction (headworks)			
4/6/2017	50,000	2.0	Variously reported as "Increasing the capacity of the Carriage Estates II WWTP plant headworks to take larger inflows and also conducting an I&I study." (4/6/2017) to "Increasing the capacity of the Carriage Estates II WWTP plant headworks to take larger inflows and conducting an I&I study. Construction has started." (10/10/2018)
5/4/2017	50,000	2.0	
5/9/2017	60,000	2.0	
7/13/2017	40,000	1.0	
7/22/2017	3,500	0.1	
11/18/2017	73,000	1.2	
2/21/2018	48,000	3.2	
10/10/2018	75,000	2.0	
1/23/2019	90,000	2.8	
3/30/2019	35,000	2.7	
10/18/2019 – ASU certifies completion of Phase 2 construction (all work)			
1/11/2020	45,000	1.906	"Increasing the capacity of the Carriage Estates II WWTP plant headworks to take larger inflows and conducting an I&I study. Construction is being completed." (1/11/2020)
Total	569,500		

Q: What did ASU report it planned to prevent a recurrence of the January 11, 2020 SSO?

A: ASU provided essentially the same response to IDEM each time it had an SSO:

> "Increasing the capacity of the Carriage Estates III WWTP

> Headworks to take larger inflows and also conducting an I & I study. Construction is being completed."
>
> (Emphasis added by the OUCC)

ASU had previously indicated that construction has started but for the January 11, 2020 SSO ASU changed the text to read "Construction is being completed."

Q: What other steps did ASU take to mitigate the January 11, 2020 SSO?

A: ASU reported it added a second 6-inch pump and pulled the plug at Kimberley Lift Station which sent flow to the County Home WWTP. This means ASU had two portable pumps running besides the unknown number of pumps operating in the influent lift stations. It is unclear where ASU discharged this second pump's flow. From the Daily Activity Sheets for January 10 and 11, 2020, it appears only two pumps were in service (existing pumps #1 and #3). Run times for new pumps #4 and #5 were not listed. ASU's Daily Activity Sheet form did not list pumps #4 and #5 until April 23, 2020, when ASU's operators began reporting times for the new pumps #4 and #5. Since January 11, 2020, there have been no more reported SSOs.

Q: Does it make sense that ASU would continue to experience SSO's after its WWTP upgrade is complete and in service?

A: According to ASU's Design Summary for Construction Permit 20788, the firm pumping capacity of the five submersible pumps in the existing and new lift stations with the largest pump out of service should be 7.3 MGD and 10.4 MGD with all five pumps operating.[91] This peak pumping capacity exceeds ASU's historical peak flows and should have met the pumping demand. The inability of the existing and new Influent Lift Stations to bring the sewage into the plant is inconsistent with

[91] Per the Design Summary provided by ASU for Construction Permit 20788, February 21, 2014.

the pumping capacity secured through a completed and in-service upgrade to the CEII WWTP.

Q: Did you explore with ASU why these SSOs occurred?

A: Yes. The OUCC asked in discovery several questions about infiltration and inflow (copy of the I&I Study, list of I&I projects since 2016). (I believe I&I is directly related to flows imposed on the Carriage Estates WWTP, the needed plant capacity and ASU's efforts since 2016, if any, to find and eliminate I&I.) But more importantly, the OUCC asked ASU to explain why the new Influent Lift Station was unable to prevent the SSO. ASU objected on the grounds and to the extent the request exceeded the scope of the sub docket. ASU did not explain why it was unable to prevent the overflow.[92]

With the capacity for the new lift station, ASU should not have to use portable trash pumps during high flows.[93] Photos taken during IDEM's September 24, 2019 inspection showed only a single macerator (instead of the required two units), no pumps in the new Lift Station wet well and unfinished discharge piping. *See* Figures 3, 4, 5, and 6. A photo taken during IDEM's March 13, 2019 inspection shows a 6-inch Trash Pump on top of the existing valve pit. *See* Figure 7.

Q: Were you able to see installed macerators and new Influent Lift Station pumps during the OUCC's site visits on December 4, 2019 and March 5, 2020?

A: No. There was no safe access to view the headworks structures interiors because backfilling was not done, the structures were ten feet high, and there were no access

[92] ASU response to OUCC DR 6-16, February 24, 2020

[93] On January 11, 2020 ASU reported using <u>two</u> 6-inch portable Godwin trash pumps. Typical trash pumps of this size have a 700 to 2,080 gpm pumping range (1.0 to 3.0 MGD per pump).

stairs. In discovery, the OUCC requested invoices for major pieces of equipment to check costs, determine equipment purchase dates, confirm capacities, and document which affiliate (ASU, FTDC, L3 Corp. or L5 Corp.) or subcontractor purchased the equipment. However, ASU refused to provide any equipment invoices responding that “ASU does not have custody of FTDC’s records and is not required to have custody or access to such records per the affiliate agreements.”[94]

Figure 3 – Interior view of the Macerator structure showing unfinished construction with only one macerator installed (not two), an opening in the north wall but no connecting pipe to the existing Lift Station. Photo taken by IDEM on September 24, 2019.

[94] ASU response to OUCC DR 2-11.

Figure 4 – View of the Influent Lift Station showing no slide rails, no pump controllers, and no pumps installed. Photo taken during IDEM's September 24, 2019 inspection. The grey coloring on the red discharge piping may show the high wastewater mark.

Figure 5– View showing the incomplete Valve Pit for the Influent Lift Station (missing air release valves, the 6” D.I. Tee bypass pumping connections, the influent flow meters, and the 6” Ball Centric valves) Photo taken during IDEM September 24, 2019 inspection.

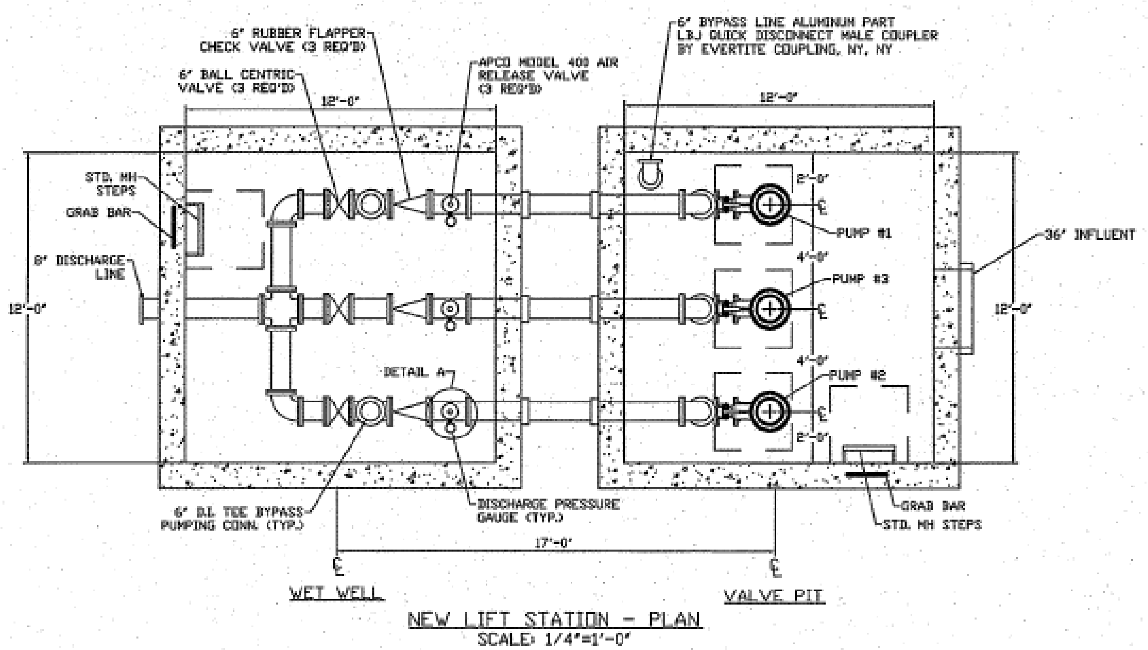

Figure 6 – Design of new Influent Lift Station showing Valve Pit (on the left) and Wet Well (with three pumps on the right). (ASU’s Engineer mislabeled the structures.)

Figure 7– View of a 6-inch portable trash pump over the existing valve pit at the Carriage Estates WWTP used during high flows. The unfinished Influent Lift Station concrete structures are shown at right. Photo taken by IDEM during the March 13, 2019 inspection. Trash pumps should be unnecessary if headworks was completed as certified by ASU. Note the valve ties into the force main to the existing CSBR tanks in the lower left but there is no connecting discharge pipe from the new lift station.

Q: Were you able to view inside the Influent Lift Station wet well and valve pit during your October 8, 2020 site visit?

A: Yes. Discharge pipes for four higher capacity influent pumps are now installed as well as two new pumps. ASU still does not report influent flows on its MROs submitted to IDEM and has declined to provide any influent flow data to the OUCC for any of the influent lift stations or pumps.

Q: How can ASU address any uncertainty over when it completed the Phase 1 Headworks portion of the project?

A: To establish the dates when equipment was purchased and delivered to the WWTP site, ASU should provide to the Commission and the OUCC copies of all equipment invoices and bills of lading (shipping). This would establish the dates invoiced and dates delivered. TBird Design Services Corporation noted delivery of materials and equipment several times in its Commercial Construction Progress Summaries as follows: "There have been addition materials purchased and are on site, yet the values for these items are not included in this pay request." However, TBird never provided details regarding what was delivered (stored materials).

V. RECORD DOCUMENTS

Q: Are there problems with the As-Built drawings?

A: Yes. The As-Built drawings include errors and do not accurately depict what ASU built. They are not standard Record Drawings because they do not start from the permitted design drawings (Lakeland InnovaTech Project No. 17-013 and Project No. 17-013 Revision 2) to which all field changes should be shown together (deletions are crosshatched and additions are highlighted in bubbles). Instead, ASU's engineer, Mr. Serowka created new plan sheets combining both projects under new Project No. 20-005. This makes it much more difficult to identify all of ASU's deletions and changes. ASU's As-Built drawings are inaccurate and therefore are incomplete. Record Drawings are required under the specifications

Mr. Serowka prepared for the CE-III WWTP Expansion project.

Accurate Record Drawings are needed for safety. ASU has not documented the locations of its buried piping and electrical lines. This is a safety issue because of the danger to a contractor or ASU employee contacting the buried lines because their locations are not marked. Photographs of ASU's buried electric lines are shown in Figures 8, 9 and 10 from March 5, 2020.

Figure 8 – View of electrical lines in conduits on the east side of the Existing Blower Building. The standby generator and the Control Building are in the background.

Figure 9 – View south of electrical lines running to the Aeration / UV Control Building.

Figure 10 – View of electrical lines from the Control Building which are not in a duct bank.

Q: Given the large number of field changes ASU made to its 2014 and 2019 permitted designs, did ASU document these changes as construction occurred?

A: No. During the OUCC's December 4, 2019 site visit, I asked ASU/FTDC/L3 President Scott Lods if he kept a set of design drawings showing field changes. The purpose of these drawings is to capture and document all changes made since construction started in July 2013. Mr. Lods said there were no such drawings. In response to informal discovery asking ASU for a copy of FTDC's design drawing mark-ups showing field changes to the CEIII WWTP project, ASU responded:

> "Mark-up drawings were not required nor provided. All requests for project clarifications from ASU or FTDC to the design engineer were verbal, and no written questions or responses were required nor maintained.[95]

Q: What does ASU mean by "Mark-up drawings were not required nor provided"?

A: ASU did not explain but may be referring to the Affiliate Agreements. My review shows the Affiliate Agreements are silent about Record Documents without any language mandating that FTDC or ASU maintain Record Documents, contractor mark-ups, as-built drawings, or Record Drawings.

Q: Are mark-up drawings typically maintained on construction projects?

A: Yes. These drawings, also called the "Job Set", are a standard part of construction as a contemporaneous recording of field changes which then are made a part of the permanent record after transferring them onto the official Record Drawings. Maintaining the "Job Set" drawings is required by the CEIII WWTP project specifications.[96] ASU's response is inaccurate because the Standard General

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[95] ASU's response to informal OUCC DR 2-9, Cause No. 44676

[96] *See* Attachment JTP-15 for Specification Section 01720 PROJECT RECORD DOCUMENTS.

Conditions in the project specifications requires the contractor to document all changes made that alter the design drawings.[97]

Q: What is your recommendation regarding the Record Drawings?

A: I recommend the Commission order ASU to hire an independent third-party engineer to produce accurate Record Drawings. Incomplete Record Drawings and system information also complicates acquisition appraisals. I recommend the cost to complete the Record Drawings be borne by ASU and not ratepayers. Record Drawings are important for asset management. The best time to complete them is now. They are long overdue. *See* Attachment JTP-15 for a copy of Specification Section 01720 – Project Record Documents that pertain to the CEIII WWTP expansion project.

Q: Does this conclude your testimony?

A: Yes.

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[97] STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT
6.12 Record Documents
A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

Appendix A

Q: Please describe your educational background and experience.

A: In 1980 I graduated from Purdue University, where I received a Bachelor of Science degree in Civil Engineering, having specialized in Environmental Engineering. I then worked with the Peace Corps for two years in Honduras as a municipal engineer and as a Project Engineer on self-help rural water supply and sanitation projects funded by the U.S. Agency for International Development (U.S. AID). In 1984 I earned a Master of Science degree in Civil Engineering and Environmental Engineering from Purdue University. I have been a Registered Professional Engineer in the State of Indiana since 1986. In 1984, I accepted an engineering position with Purdue University, and was assigned to work as a process engineer with the Indianapolis Department of Public Works ("DPW") at the City's Advanced Wastewater Treatment Plants. I left Purdue and subsequently worked for engineering consulting firms, first as a Project Engineer for Process Engineering Group of Indianapolis and then as a Project Manager for the consulting firm HNTB in Indianapolis. In 1999, I returned to DPW as a Project Engineer working on planning projects, permitting, compliance monitoring, wastewater treatment plant upgrades, and combined sewer overflow control projects.

Q: What are the duties and responsibilities of your current position?

A: My duties include evaluating the condition, operation, maintenance, expansion, and replacement of water and wastewater facilities at utilities subject to Indiana Utility Regulatory Commission ("Commission") jurisdiction.

Q: Have you previously testified before the Commission?

A: Yes.

Appendix B - List of Attachments

Attachment JTP-1	Cause No. 44676, ASU's responses to DRs 16-52 to 16-55 regarding the $1.5 million Micro Star filter system, January 7, 2016.
Attachment JTP-2	ASU's incorrect Payment Verification filed on November 7, 2019 and ASU's revised Schedule of Values for the Phosphorus Removal project filed on January 24, 2020.
Attachment JTP-3	ASU's responses to DR 1-1, DR 3-10, DR 5-5, and DR 5-6 pertaining to the listed costs in the Schedule of Values for the Phosphorus Removal project
Attachment JTP-4	Construction Permit 22977 – Phosphorus Removal, issued February 21, 2019.
Attachment JTP-5	ASU's response to DR 9-9 (b) page 6 of 9 - Phosphorus log of chemical usage for June and July 2020 showing the pump outage
Attachment JTP-6	Options 1, 2, 3, and 4 Layouts and additional information for Options 2 and 4
Attachment JTP-7	ASU's responses to DR 4-1 and 4-2 and for other ASU responses regarding construction permits and Options 1, 2, 3 and 4
Attachment JTP-8	ASU's responses to informal DRs 2-9, 2-10, 2-11 and DRs 5-1 and 12-3 regarding design changes and change orders.
Attachment JTP-9	ASU's communications with IDEM and ASU responses to OUCC discovery regarding the original CSBR tanks
Attachment JTP-10	Photos taken by the OUCC from 2013 to 2020 of the CSBR tank walls.
Attachment JTP-11	Aerial views of Carriage Estates during construction showing the sludge lagoons and tertiary pond and that the constructed facilities do not intrude on the sludge lagoons.
Attachment JTP-12	IDEM inspections and ASU responses to IDEM and to OUCC discovery pertaining to the new influent and effluent flow meters and sampling practices.
Attachment JTP-13	OUCC Effluent flow meter photos taken on October 8, 2020.
Attachment JTP-14	Sanitary Sewer Overflows ("SSOs") 2017-2020
Attachment JTP-15	Specification Section 01720 – Project Record Documents that pertain to the CEIII WWTP expansion project.

Attachment JTP-16	Permitted Plant Control, Laboratory, and Chemical Feed Building design and the As-Built drawings for the Chemical Feed Building along with photos showing the incomplete building.
Attachment JTP-17	Manufacturer cost info for transfer pumps, metering pumps, day tanks, and 5,000-gallon bulk storage tanks.
Attachment JTP-18	Construction Permit 20788, issued February 21, 2014.
Attachment JTP-19	Cause No. 44272, Serowka Supplemental Testimony, July 19, 2013 pages S3-S12, S-15, EJS-S3-A-4, A-5, A-8, A-10. (excerpts pertaining to enhanced biological phosphorus removal and phosphorus removal from supernatant.)
Attachment JTP-20	Cause No. 44272, ASU Supplemental Response to DR 11-8, received November 26, 2013 providing ASU's responses to IDEM Deficiency Notices. ASU provided this supplemental DR response to the OUCC after the OUCC filed its Cause No. 44272 Supplemental Testimony on November 13, 2013.
Attachment JTP-21	ASU's Supernatant and Standby Chemical Phosphorus Removal system submittal to IDEM dated January 7, 2014 which IDEM included in Construction Permit No. 20788 issued Feb. 21, 2014.
Attachment JTP-22	Excerpts from ASU's Exhibit EJS-S, Supplemental Testimony of Edward J. Serowka, including Exhibit EJS-S3, Carriage Estates III Estimated Costs, July 19, 2013.

Appendix C – OUCC Calculations of Costs for the Standby Chemical Phosphorus removal system

Q: Did ASU propose to construct new CSBR tanks and Enhanced Biological Phosphorus Removal ("EBPR") under Option 4?

A: Yes. In Cause No. 44676, Mr. Serowka reemphasized ASU had made the right Option choice and was building Option 4 (6.0 MGD/4.0 MGD equipped) per his testimony in Cause No. 44272 (i.e. with EBPR) at a cost of $19,938,273.[98] He also testified construction costs for a standby chemical phosphorus removal system would be $1.5 million, but failed to provide system and cost details in his testimony except a limited component list and total cost.[99] These components were as follows:

<u>ITEM 2</u>: <u>STANDBY CHEMICAL EQUIPMENT</u>

1. Chemical Feed System
2. Chemical Storage Tanks
3. Chemical Control Building
4. Microstrainer

CONSTRUCTION COST (STANDBY CHEMICAL): $ 1,500,000.00

I am not aware that Mr. Serowka informed the Commission or the OUCC that in 2014 ASU had already permitted both the CSBR tanks with EBPR and the combined supernatant/standby phosphorus removal system.[100] ASU switched to CSBR tanks expressly for enhanced biological phosphorus removal and in all its cost estimates (Options 1 -4), ASU included chemical phosphorus costs (for

[98] Cause No. 44676, Direct Testimony of Edward Serowka, September 4, 2015, pages 20-21.

[99] *Id.*, page 19 and Attachment EJS-10, page EJS-9-B-2 (dated 09/01/2015) (mislabeled – should be page EJS-10-B-2).

[100] Cause No. 44676, Serowka Direct Testimony, page 9, lines 18-20.

supernatant) having the same equipment needed for a standby chemical system.

Q: Did the OUCC request support for ASU's $1.5 million lump sum cost?

A: Yes. In Cause No. 44676, we requested support in DR 16-52 and in DR 16-53. We asked for the process flow schematic and design drawings for the standby chemical system. ASU showed $1,230,00 of the $1.5 million requested (82%) was to install a Micro Star filter in a new concrete channel.[101] I summarized ASU's cost information in Table 1 on page 7 and noted the items not constructed.

Q: Please compare how Standby Chemical Phosphorus costs have changed.

A: Listed components and costs for the same class items have varied widely.[102] I summarized the component listings and price changes in Table 2 on page 13.

Q: Please explain why you reduced the building costs from the $180,000 value listed in the Schedule of Values.

A: The $180,000 cost is a reasonable cost for a 2,604 square foot (42 feet by 62 feet) building ($69 per ft^2) of this type (simple frame construction, truss roof, asphalt shingles with drywall and vinyl siding). However, the building is incomplete so costs should be less as ASU did not build according to the 2019 design. The building size is larger than the 40 ft. by 55 ft. – 2,200 ft^2 design. More importantly, two thirds of the building serve no utility purpose because it is just currently an empty unfinished shell. As such, building costs, recoverable in rates should be limited to one third of ASU's claimed $180,000 cost or $60,000. *See* Attachment

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[101] ASU's responses to DRs 16-52 and 16-53 were included in Attachment JTP-2 (pages 249-251) of my testimony in Cause No. 44676 filed on January 13, 2016. *See* Attachment JTP-1 for ASU's responses to DRs 16-52 to 16-55, dated January 7, 2016 under Cause No. 44676.

[102] Mr. Serowka testified in Cause No. 44676 that the standby chemical phosphorus cost would be $1.5 million yet listed $1,778,000 in ASU's response to DR 16-52.

JTP-16 for a comparison of the permitted building design and the As-Built drawings along with photos showing the incomplete building.

Q: How do ASU's pump costs in the SOV compare to the pump prices you found?

A: ASU's estimated and claimed verified costs indicates pump costs (equipment purchase only) rose from $12,500 in 2013 (Cause No. 44272 - 3 pumps) to $74,400 in 2016 (Cause No. 44676 - 5 pumps), to $160,000 in ASU's 11/07/2019 Schedule of Value ("SOV") (pump quantity not stated) and then to $275,000 in SOV 2 in 2020 (pump quantity again not stated). I reviewed transfer and metering pumps specifications through an electronic search on the internet and found prices shown in Table 10 totaling only $13,566 for the four pumps including an assumed shipping allowance. I obtained the pump quantities from the project specifications and As-Built drawings.

Table 10 – Comparison of Chemical Pump Prices (internet) to the Inflated cost listed in ASU's January 24, 2020 revised Schedule of Values

Pump	Model No.	Price Ea.	Qty	Amount
Transfer Pumps	Serfilco Series S model number SE CL -H1.0C	$1,329	2	$2,658
Metering Pumps	LMI Series G Model SD43P2P2 w/ RPM Kit 106 at $372	$5,204	2	$10,408
Assumed shipping cost				$500
Total Pump Cost (equipment only)				$13,566
FTDC Schedule of Value Cost (01/24/2020)		$68,750[103]	4	$275,000
Percent that pump costs are inflated				1,927%

[103] OUCC calculated value based on $275,000 pump purchase cost divided by 4 pumps equals $68,750.

ASU's Schedule of Value pump cost at $275,000 for equipment only (installation cost was listed separately) is grossly inflated and does not reflect actual market prices for chemical transfer and metering pumps. These widely available low-cost pumps are commonly used in industry and utilities. *See* Attachment JTP-17 for cost information I assembled from pump manufacturer sources on the internet.

Q: Please explain how ASU's claimed day tank and bulk storage tank costs are inflated compared to internet tank prices you found.

A: Comparing ASU's estimated and claimed verified costs shows chemical storage tank costs (equipment only) rose from $8,000 in 2013 (two 5,000-gallon tanks) to $95,600 in 2016 (one 1,500-gallon day tank and two 15,000-gallon bulk chemical tanks), to $100,000 in SOV 1 in 2019 (tank size and quantity not stated) and then to $285,000 in SOV 2 in 2020 (tank size and quantity again not stated). I reviewed the chemical storage tank specifications and found the following internet prices shown in Table 11 totaling only $25,888 for the four chemical tanks which includes 10% for shipping. I obtained the tank sizes - quantities from the As-Built drawings.

Table 11 – Comparison of Chemical Tank Prices (internet) to the Inflated cost listed in ASU's January 24, 2020 revised Schedule of Values

Chemical Tank	Price Ea.	Qty	Amount
315-gallon Day Tank	$438	1	$438
5,000-gallon bulk tanks	$7,700	3	$23,100
Assumed shipping cost (10% added)			$2,350
Total Tank Cost (equipment only)			$25,888
FTDC Schedule of Value Cost (01/24/2020)	$95,000[104]	3	$285,000
Percent that chemical tank costs are inflated			1,001%

[104] The $95,000 calculated value per tank is based on only the three 5,000-gallon bulk tanks.

ASU's Schedule of Value chemical tank cost at $285,000 for equipment only (installation cost is separately listed) is grossly inflated and does not reflect actual market prices for chemical storage tanks. High density polyethylene ("HDPE") vertical storage tanks are also referred to as bulk tanks, industrial tanks, and heavy-duty vertical poly tanks. These HDPE tanks are common, widely available, extensively used in agricultural, industrial, manufacturing, and commercial sectors and low cost. *See* Attachment JTP-17 for cost information I assembled from bulk chemical tank supplier sources on the internet.

Q: Are ASU's claimed installation costs for the chemical pumps, tanks, and feed lines also grossly inflated?

A: Yes. ASU listed an astronomical $590,000 for metering system instrumentation ($292,000) and installation of chemical equipment ($298,000). This is nearly 15 times the equipment cost, excessively higher than normal. Based on my experience as a consulting engineer and municipal engineer, installation costs typically add 25% for simple items such as ASU's chemical pumps and tanks which only need to be positioned in place, plumbed up, and provided power. The chemical metering pumps come pre-plumbed as a skid mounted unit. Installation involves mounting the skid unit to the wall and connecting the piping. Tanks only require offloading and placement in their position, followed by attaching fill and withdrawal piping, and exterior ladders and instrumentation. The transfer pumps require placing them in position, connecting the piping, power, and controls.

Q: What is the OUCC's estimated cost to install the standby chemical phosphorus system?

A: I estimate the system costs at $263,000 consisting of the following costs:

New building (one-third of the claimed $180,000)		$60,000
Transfer and Metering Pumps		$14,000 (rounded up)
Chemical tanks		$26,000 (rounded up)
Chemical Feed Lines		$47,000
Metering / Controls / Electrical		$75,000
Installation at 25%		<u>$41,000</u>
	Total	$263,000

Q: How do your costs compare to ASU's developed costs for Options 1-4 and the Micro Star design and to the costs developed by HWC Engineering in 2017?

A: My costs are comparable to these three previously developed costs. Mr. Serowka testified Options 1-4 construction costs for the chemical system were $177,500 (chemical feed and storage at $137,500 plus $40,000 for a chemical control panel). Rounding up the prorated share of mobilization, contractor profit, bonds, insurance, design and inspection, I calculate the cost would be $235,000. Chemical system costs remaining for the building, pumps, tanks, controls, and electrical after removing the $1,230,000 for the Micro Star filter and concrete channel from the $1.5 million (since they were never built) is $270,000. HWC Engineering updated costs in 2017 for Item No. 15 – Convert Existing Control Building (for chemical system) at $156,000. HWC's cost estimate consisted only of one page with no component detail within each line item. Control panel costs were not identified but the OUCC assumes they would be similar to ASU's $40,000 cost and with a prorated share of overhead costs, HWC's total chemical system would cost $255,000. I summarize the four cost estimates below:

ASU Option 1-4 cost (Item 15 – Convert Control Bldg.):	$235,000 (2013)
ASU's Micro Star cost (minus the Micro Star filter):	$270,000 (2016)
HWC Engineering cost update (Item 15):	$255,000 (2017)
OUCC cost estimate for Chemical Phosphorus system:	$263,000 (2021)

Q: What do you recommend ASU recover in rates for the Chemical Phosphorus system?

A: I recommend the Commission limit ASU's recovery to $270,000 which is the highest of the four costs summarized previously and equal to the $1.5 million preapproved amount minus the Micro Star filter costs. This reflects only the chemical system costs that ASU actually installed.

Q: Given the wide discrepancy in ASU's claimed costs for the Phosphorus system, how can these costs be determined with more certainty?

A: The easiest way is for ASU to provide copies of all equipment invoices for the chemical pumps, bulk tanks, control panel, piping, and materials purchased for the project. ASU should also provide copies of its construction labor costs detailing the workers, pay rate and hours worked on the project. The equipment invoices and paid checks will also show approximately when the equipment was received.

Appendix D – Progression and Deletion of Enhanced Biological Phosphorus Removal and Changes to the Standby Chemical Phosphorus removal system

Q: What facilities did ASU design for phosphorus removal in 2013 and 2014?

A: ASU designed and permitted *all* phosphorus removal components including 1) enhanced biological phosphorus removal ("EBPR"), the primary method ASU selected for phosphorus removal; 2) supernatant phosphorus removal; and 3) standby chemical phosphorus removal.[105] IDEM issued the construction permit for all the above listed phosphorus facilities on February 21, 2014. Also included was a new Control/Laboratory building which ASU claimed was required for phosphorus process control needs.[106]

In Cause No. 44676, Mr. Edward Serowka testified ASU was proceeding with Option 4 but due to a construction permit appeal, ASU was initially constructing only portions of the project immediately needed even if the plant were not expanded.[107] He indicated those CETP-III Stage 1 projects were replacement of certain equipment and installation of chemical phosphorous removal. He testified Stage 1 was anticipated to be in service by December 2016.[108]

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[105] Construction Permit 20788 – *Carriage Estates Wastewater Treatment Plant Expansion*, February 21, 2014. *See* Attachment JTP-18.

[106] Cause No. 44272, Serowka Supplemental Testimony, July 19, 2013, pages S3-S12, S-15, EJS-S3-A-4, A-5, A-8, A-10. ASU estimated the new Control/Laboratory Building cost at $355,600 (construction) and $477,635 (with prorated share of mobilization, contractor profit, bonds, insurance, design and inspection). *See* Attachment JTP-19 for excerpts pertaining to enhanced biological phosphorus removal and supernatant Chemical phosphorus removal.

[107] ASU's Affiliate, First Time Development actually began billing for the Carriage Estates project on July 3, 2013 before ASU filed its Supplement Testimony in Cause No. 44272 on July 19, 2013, and before IDEM had issued Construction Permit 20788 on February 21, 2014.

[108] Cause No. 44676, Direct Testimony of Edward Serowka, September 4, 2015, page 19.

Separately in 2019, ASU designed and permitted another standby chemical phosphorus removal system in a new Plant Control, Laboratory, and Chemical Feed building located north and off-site of utility owned property.[109]

Q: Was this second standby phosphorus system needed?

A: No. This second design was unnecessary because ASU already had the 2014 permitted design which included all needed phosphorus removal facilities including: 1) new CSBR tanks designed for Enhanced Biological Phosphorus Removal ("EBPR"); 2) chemical phosphorus removal for digested sludge supernatant to prevent reintroducing phosphorus into the wastewater through the recycle stream; and 3) the IDEM required standby chemical phosphorus removal system.[110] The switch to more costly CSBRs with EBPR plus the supernatant phosphorus removal system were part of ASU's July 2013 construction permit application to IDEM. The supernatant system was identified but not adequately shown in the design summary or on the plan sheets.[111] ASU detailed the supernatant phosphorus system in response to an IDEM Deficiency Notice.[112] The supernatant phosphorus system components (two 15,000-gallon chemical storage tanks, two metering pumps, one transfer pump, and chemical feed lines, valves and

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[109] Construction Permit 22977 – Phosphorus Removal, issued February 21, 2019. *See* Attachment JTP-4.

[110] Construction Permit 20788. *See* Attachment JTP-18.

[111] Cause No. 44272, Serowka Supplemental Testimony, July 19, 2013 pages S3-S12, S-15, EJS-S3-A-4, A-5, A-8, A-10. *See* Attachment JTP-19 for excerpts pertaining to enhanced biological phosphorus removal and phosphorus removal from supernatant.

[112] *See* Attachment JTP-20, Cause No. 44272, ASU Supplemental Response to DR 11-8, received November 26, 2013 providing ASU's responses to IDEM Deficiency Notices. ASU provided this supplemental DR response to the OUCC after the OUCC filed its Cause No. 44272 Supplemental Testimony on November 13, 2013.

fittings) are the same components needed for the standby chemical phosphorus system.

Q: Did ASU also permit the standby chemical phosphorus system in 2014?

A: Yes. The OUCC was not aware of this when it was negotiating the Cause No. 44272 Settlement Agreement, but ASU had addressed everything required for phosphorus with IDEM in 2013 and 2014. Since IDEM requires a standby chemical phosphorus system for all WWTPs with phosphorus limits, IDEM had ASU correct its design summary that already listed the chemical phosphorus system for supernatant to include the standby service which uses all of the same equipment (pumps, tanks, controls, power). On January 7, 2014, ASU submitted revisions to IDEM including one new and two revised plan sheets showing the combined supernatant and standby system.[113] ASU has not provided these three revised plan sheets for phosphorus removal to the OUCC in either Cause Nos. 44272 or 44676.

The revised drawings provided to IDEM showed the supernatant / standby phosphorus removal system centrally located in the converted chemical feed rooms of the existing Blower Building with bulk storage tanks located outside adjacent to the building's west side. This location provided short piping runs meeting chemical supplier recommendations (less than 100 feet) to the application points at the CSBR tanks, headworks and supernatant holding tank. IDEM reviewed and permitted all phosphorus removal systems (biological, supernatant, standby) under Construction

[113] *See* Attachment JTP-21 for ASU's Supernatant and Standby Chemical Phosphorus Removal system drawings which IDEM included in Construction Permit No. 20788 issued February 21, 2014, but which ASU did not provide to the OUCC.

Permit No. 20788 issued on February 21, 2014.

Q: What was the supernatant/standby chemical phosphorus removal system cost?

A: ASU estimated the construction only cost at $177,500 (chemical feed and storage at $137,500 plus $40,000 for a chemical control panel) and $235,000 (with prorated share of mobilization, contractor profit, bonds, insurance, design and inspection).[114] This cost was embedded in all four expansion options (Options 1-4) that ASU developed in Cause No. 44272. Therefore, ASU had fully designed and permitted all phosphorus removal improvements by February 21, 2014 with all phosphorus removal costs accounted for in all four Options by July 19, 2013.

Q: Please explain why ASU switched to a CSBR system with EBPR.

A: ASU's expansion plans, including phosphorus treatment, changed several times. Initially neither ASU's 2012 design nor the 2013 revisions (in Rebuttal) included phosphorus removal.[115, 116] ASU filed Supplemental Testimony on July 19, 2013. Mr. Serowka testified that after becoming aware IDEM would add phosphorus

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[114] *See* Attachment JTP-19, Cause No. 44272, Serowka Supplemental Testimony, July 19, 2013.

[115] In 2012, ASU proposed more than quadrupling the Carriage Estates WWTP design average flow capacity from 1.5 MGD to 6.8 MGD (13.6 MGD Design Peak Flow) using an Extended Aeration activated sludge treatment process for $11,596,820. Design did not include phosphorus. *See* ASU's Exhibit EJS, Direct Testimony of Edward J. Serowka, including Exhibit EJS-8 in Cause No. 44272, December 19, 2012.

[116] In 2013 Rebuttal Testimony, ASU reduced its proposed design average flow capacity to 4.0 MGD and decreased costs to $7,931,185 plus $2,390,220 for two future treatment tanks. Design did not include phosphorus removal. *See* Cause No. 44272, ASU's Exhibit EJS-R, Rebuttal Testimony of Edward J. Serowka, including Exhibit EJS-R3 (Drawings and Component Schedule) and EJS-R6 (CE-III Costs) in Cause No. 44272, April 9, 2013.

limits, ASU had to "substantially revise the CE-III Project."[117] He testified ASU specifically redesigned the extended aeration process to a Continuous Sequencing Batch Reactor ("CSBR") system to allow Enhanced Biological Phosphorus Removal ("EBPR"), avoid a spare treatment tank, maximize use of existing tanks, and avoid producing chemical sludge claiming such sludges could not be land applied.[118] He reported ASU had chosen Option 4 to treat 6.0 MGD (with CSBR equipment only for 4.0 MGD) [119]

Mr. Serowka testified that switching to a CSBR system for EBPR increased costs substantially since it required not only additional tankage, but also 1) more sophisticated computer control; 2) instrumentation; 3) a new Control/Laboratory building for more process control to guarantee meeting effluent phosphorus limits; 4) a discharge tank and 5) a larger UV disinfection system due to peak flow surges; 6) larger aerobic digesters; 7) original CSBR tanks' conversion to digesters; and 8) a supernatant holding tank to control supernatant return.[120, 121]

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[117] Cause No. 44272, Serowka Supplemental Testimony, pages S3-S4. *See* Attachment JTP-22 for excerpts from ASU's Exhibit EJS-S, Supplemental Testimony of Edward J. Serowka, including Exhibit EJS-S3, Carriage Estates III Estimated Costs, July 19, 2013. The excerpts discuss the changes to a CSBR system for Revised CE-III Project (design average flow capacity increase to 4.0 MGD (8.0 MGD Design Peak Hourly Flow) using a CSBR process at an estimated $19,938,273 cost.

[118] 44272, Serowka Supplemental Testimony, July 19, 2013, pages S6 to S10.

[119] 44272, Serowka Supplemental Rebuttal Testimony, December 11, 2013, page 13. Although not included in Cause No. 44272 testimony, ASU's affiliate, First Time Development Corporation ("FTDC") began billing for the Carriage Estates expansion project on July 3, 2013. Mr. Scott Lods, President of ASU, signed a $19,918,350 bid for the project July 18, 2013 as FTDC President. Mr. Serowka included the FTDC bid as Attachment EJS-S5 but did not report that construction had begun.

[120] 44272, Serowka Supplemental Testimony, July 19, 2013, pages S6 to S10.

[121] The OUCC assumes the "additional tankage" to mean larger volume CSBR tanks due to longer 6-hour for enhanced biological phosphorus removal rather than 4-hour treatment cycles for only carbonaceous oxidation and single stage nitrification (ammonia removal).

Q: Why did ASU want to avoid chemical addition?

A: In promoting the switch to the CSBR treatment process with biological phosphorus removal, ASU's Engineer, Edward J. Serowka testified the capital and operating costs for chemical treatment would be more costly and that it would produce sludge that could not be land applied:

> **Q19. Phosphorus removal has resulted in a considerable cost increase. What alternatives to the process that you are recommending have you considered and why have they been rejected in favor of what is being proposed?**
>
> A19. There are two primary methods for phosphorus removal: chemical treatment and organic treatment. <u>We are proposing organic</u>. <u>Chemical treatment would involve greater capital expense</u> due to chemical handling, sludge handling and computer technology and control equipment. <u>In addition, operational expense would be higher</u>. Chemical treatment would cause higher costs of sludge removal as well as chemicals. <u>Typically, sludge can be land applied, but if treated chemically, it cannot</u>.[122]

(Emphasis added by the OUCC)

Q: Did ASU construct biological phosphorus removal facilities?

A: No. They built the larger and more costly CSBR tanks but omitted the mixers, more elaborate CSBR tank process controls, and supernatant phosphorus removal. ASU only chemically removes phosphorus.

Q: Does ASU produce chemical sludges?

A: Yes. The chemical phosphorus sludge is combined with the biological sludge.

Q: Is ASU land applying the sludge produced by chemical addition?

A: Yes. Despite Mr. Serowka's testimony in 2013 that chemical sludges could not be land applied, ASU began chemical addition for phosphorus removal on February 1,

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[122] 44272, Serowka Supplemental Testimony, July 19, 2013, page S10

2019.[123] and land applied sludge in December 2019 and 2020.[124] ASU indicated to IDEM that it would continue land applying sludge from the Carriage Estates WWTP, which presumably always included the chemically treated sludge.[125] ASU proposed no other sludge disposal method.

Q: Was ASU's testimony in Cause No. 44272 correct that a chemical addition system would be unneeded for a biological phosphorus removal system?

A: No. For all treatment plants with phosphorus limits, IDEM requires a chemical phosphorus removal system. Chemical systems are required even when biological phosphorus removal will be employed.[126]

Q: Was ASU's testimony in Cause No. 44272 correct that chemical sludge could not be land applied?

A: No. Chemical sludges can and are being land applied by ASU and then reported to IDEM.

Q: Is chemical addition a common phosphorus removal method?

A: Yes. Chemical addition is one of the most common phosphorus removal methods, especially as retrofits for existing smaller treatment plants such as Carriage Estates (less than 10 MGD). Capital costs for chemical addition as the sole phosphorus removal method *<u>are always lower</u>* than capital costs for systems that include EBPR systems. In the latter case, IDEM still requires standby chemical phosphorus

[123] Phosphorus Compliance Progress Report Four submitted to IDEM, February 27, 2019

[124] ASU Land Application Monthly Reports submitted to IDEM.

[125] Per the Design Summaries for the both the *Carriage Estates III Wastewater Treatment Plant Expansion* project (Construction Permit No. 20788 issued on 02/21/2014) and the *Carriage Estates III Wastewater Treatment Plant Improvements, Phosphorus Removal* project (Construction Permit No. 22977 issued on 02/21/2019)

[126] January 20, 2021 conference call between IDEM and the OUCC. IDEM stated that standby chemical phosphorus removal systems are required for all WWTPs with phosphorus limits.

removal systems.

Q: What was the cost impact of the 2013 redesign that switched to CSBR tanks for enhanced biological phosphorus removal?

A: According to Mr. Serowka's testimony in Cause No. 44272, the switch to EBPR nearly doubled the cost from $10,321,405 to $19,938,273 for the 6.0 MGD expansion (with CSBR equipment only for 4.0 MGD):

> **Q16: What impact do the changes in design have on the estimated cost of the CE-III Project?**
>
> A16. The estimated costs have increased compared to the most recent estimates provided in ASU's Exhibit EJS-R6 filed with my rebuttal testimony. As ASU has previously noted in discussions with the OUCC, <u>phosphorus removal at the levels mandated by the new IDEM requirements is expensive</u>. ASU's Exhibit EJS-S3 is a breakdown of the estimated cost of the revised CE-III Project. This exhibit was prepared by me or under my direction and supervision. The total estimated cost is $19,938,273.00. This estimate is based on my engineering experience and judgment. [127]
>
> (Emphasis added by the OUCC)

Q: Did ASU's redesign include all needed phosphorus removal facilities?

A: Yes. ASU's design already had everything needed for phosphorus removal including supernatant chemical removal with the same tanks. pumps, and controls needed for the standby system. These biological and chemical phosphorus systems were designed by July 19, 2013, supported with revised plan sheets by January 7, 2014, permitted by IDEM by February 21, 2014, and included by ASU in cost estimates for Options 1-4 in Cause No. 44272.

Q: Are there reasons the same chemical phosphorus system cannot be used for supernatant and standby purposes?

A: No. There are no engineering or operational reasons for separate systems. Nothing

[127] Cause No. 4472, Exhibit EJS-S, Supplemental Testimony of Edward J. Serowka, July 19,2013, page S9.

prevents using the same chemical, same storage tanks, same transfer pumps, same metering pumps, same controls, with separate piping to remove supernatant phosphorus and serve as a standby chemical system for the EBPR process. Indeed, ASU's January 7, 2014 design had a single chemical system (tanks, pumps, and controls) serving both needs (supernatant and standby). *See* Figure 11.

Q: Was it true at the end of the Cause No. 44272 preapproval that whether to use biological or chemical phosphorus removal was still undecided?

A: No. In July 2013 ASU proposed the switch to CSBR tanks specifically for biological phosphorus and detailed the supernatant/standby chemical system costs. By the end of 2013 and certainly by January 7, 2014 when ASU submitted to IDEM its final design revisions, ASU knew it would remove phosphorus three ways – biologically in the CSBR tanks, chemically in the supernatant, and chemically for the entire plant, if needed, with the IDEM required standby system (same tanks, pumps, piping, etc. as the supernatant system). Mr. Serowka never amended his testimony in Cause No. 44272 even though he knew ASU's switch to larger and more costly CSBR tanks was expressly for biological phosphorus, the supernatant system had all components needed for the standby system except piping to headworks and the CSBR tanks, he knew IDEM required the standby chemical system in 2013 and he had revised the plan sheets to add the piping in late 2013 and January 2014, he had submitted the revisions to IDEM and he had indicated the sludge would be land applied. All of this occurred before ASU and the OUCC filed the Cause No. 44272 Settlement Agreement on February 11, 2014 and before the February 25, 2014 evidentiary hearing. ASU received Construction Permit No.

20788 reflecting all revisions on February 21, 2014. This too was before the evidentiary hearing.

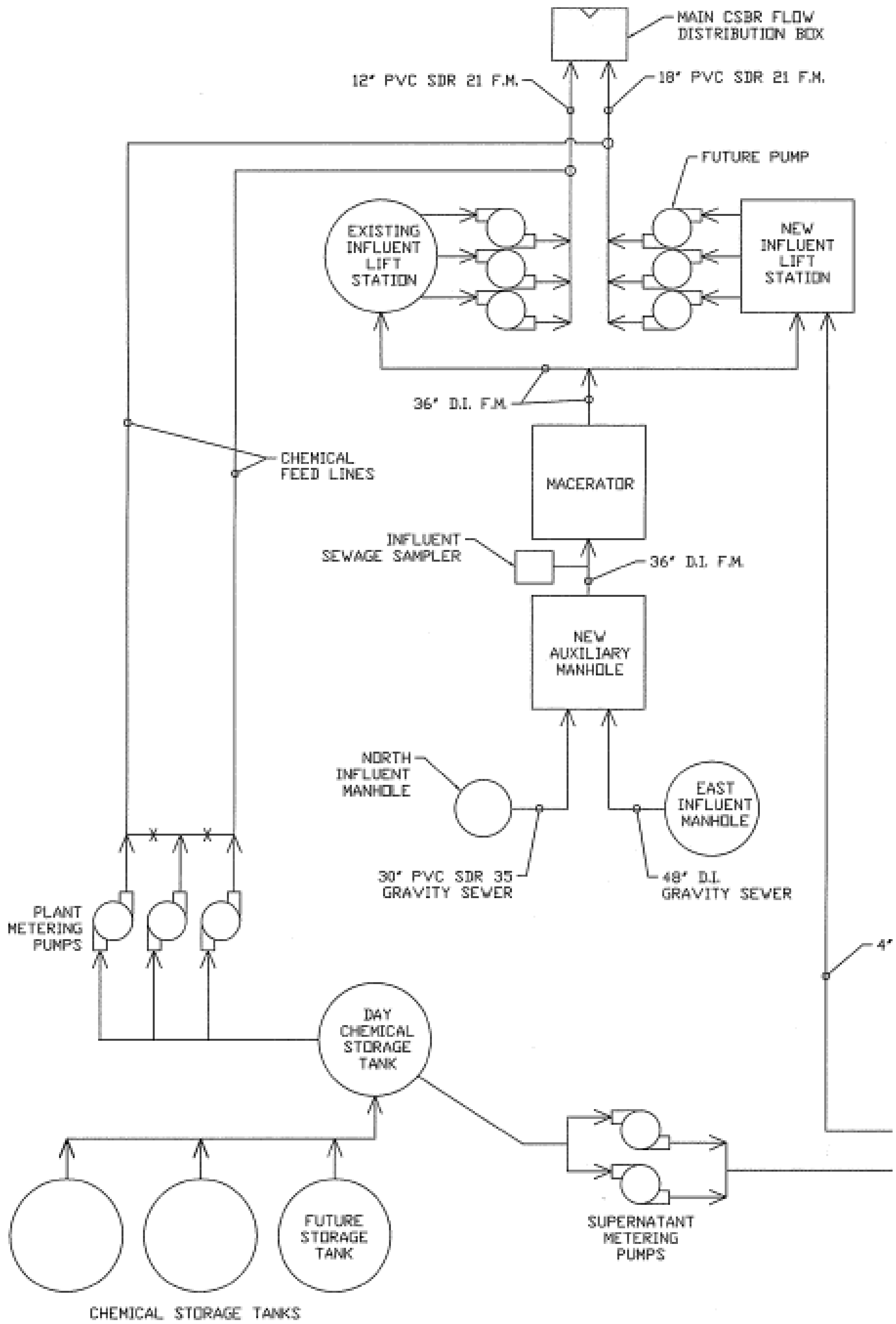

Figure 11 – ASU's Process Flow Schematic for Supernatant and Standby Chemical Phosphorus removal, Jan. 7, 2014. Construction Permit No. 20788, Feb. 21, 2014.

Q: Did the OUCC agree ASU should construct the larger capacity and more costly Option 4?

A: No. The OUCC expressed concern about (1) the size of the proposed expansion, 2) construction of the proposed improvements by an ASU affiliate and 3) the ability to obtain assurance that the costs were reasonable. As a result, the parties agreed to a stipulated preapproved amount of up to $10 million derived from Option 2. The OUCC recommended Option 2 to expand the 1.5 MGD capacity WWTP to 3.0 MGD by adding two more CSBR tanks of the same size as the four original tanks to give six CSBR tanks (each at 0.5 MGD for a total of 3.0 MGD). Under the Stipulation and Settlement Agreement filed February 11, 2014 with the Commission, ASU could pursue Option 2 or its preferred Option 4. Option 4 differed from Option 2 in that it included replacing the four original CSBR tanks with three new much larger CSBR tanks with a capacity of 4.0 MGD and an additional concrete tank without equipment to permit readily expanding the plant to 6.0 MGD.

Both options included CSBRs with biological phosphorus removal and chemical phosphorus removal facilities. The Settlement Agreement said that "To the extent not already included in Option 2, construction cost expenditures for phosphorus removal and engineering in rate base in future rate cases will be addressed in the same manner as other rate base additions that have not been preapproved."[128] (Emphasis added by the OUCC)

Phosphorus costs were already embedded in the estimated costs ASU's witness Serowka prepared for each Option (Options 1-4). There was no need to exclude the standby phosphorus removal from the $10 million preapproval amount. IDEM permitted all phosphorus facilities on February 21, 2014.

Q: In Cause No. 44676, did the OUCC know that ASU had already designed and permitted all needed phosphorus removal facilities?

A: No. ASU witness Serowka did not reveal in his testimony in ASU's 2015 or 2016 rate case filings that ASU had already designed and permitted all phosphorus facilities in 2014. He testified that "The detailed design *which has been approved by IDEM* and is the subject of the appeal is contained in my workpapers.[129] (Emphasis added by the OUCC.) The detailed design workpapers were dated March 20, 2014 and should have been the final set of drawings approved by IDEM. Not included in the workpapers were two supernatant/standby chemical phosphorus drawings.

In discovery, the OUCC requested copies of the IDEM approved design drawings incorporating all of the final changes that ASU made in response to the IDEM Deficiency Notice.[130] However, ASU did not file with Mr. Serowka's workpapers nor provide to the OUCC through discovery, all final drawings IDEM

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[128] Cause No. 44272, Stipulation and Settlement Agreement for the CE-III Project, February 11, 2014

[129] Cause No. 44676, Serowka Direct Testimony, September 4, 2015, pages 18-19. Mr. Serowka's workpapers included: EJS Workpaper 4 – CE-3 Plans March 20, 2014 [provided on CD] (29 drawings).

[130] *See* Attachment JTP-1 for ASU's responses to DRs 16-52 to 16-55.

approved in 2014 for the supernatant/standby chemical system. The missing drawings were:

Drawing 13-021-02 – Plant Site Layout – Proposed, Revised 01/07/2014

Drawing 13-021-02A – Treatment Plant Flow Diagram, Revised 01/07/2014

These drawings (submitted to IDEM) show the chemical phosphorus system, vertical storage tanks, and chemical feed lines to the supernatant decanting tank and to the existing and new influent lift stations (standby system). The drawings in Mr. Serowka's workpapers and submitted to the OUCC in discovery (dated 11/01/13 and 11/12/13 respectively), were not the ASU revised drawings, dated 01/03/2014 and 01/07/2014, approved by IDEM.

Q: Did ASU indicate it was continuing with the new CSBR tanks and Enhanced Biological Phosphorus Removal under Option 4?

A: Yes. In Cause No. 44676, Mr. Serowka reemphasized ASU had made the right Option choice and was building Option 4 (6.0 MGD/4.0 MGD equipped) per his testimony in Cause No. 44272 (i.e. with EBPR) at a cost of $19,938,273.[131] He also testified construction costs for a standby chemical phosphorus removal system would be $1.5 million, but failed to provide system and cost details except a limited component list and total cost.[132] He listed the components as follows:

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[131] Cause No. 44676, Direct Testimony of Edward Serowka, September 4, 2015, pages 20-21.

[132] *Id.*, page 19 and Attachment EJS-10, page EJS-9-B-2 (dated 09/01/2015) (mislabeled – should be page EJS-10-B-2).

ITEM 2: STANDBY CHEMICAL EQUIPMENT

5. Chemical Feed System
6. Chemical Storage Tanks
7. Chemical Control Building
8. Microstrainer

CONSTRUCTION COST (STANDBY CHEMICAL): $ 1,500,000.00

ASU did not disclose to the Commission or the OUCC through its filings in Cause No. 44676 that ASU had already permitted the CSBR tanks with EBPR and the combined supernatant/standby phosphorus removal system. ASU's witness, Mr. Serowka testified that "The Commission ultimately preapproved that amount, (OUCC note: referring to $10 million) which did not include any costs for phosphorous treatment, either biological or chemical.[133] (Emphasis added by the OUCC.) Mr. Serowka's statement that the $10 million did not include biological phosphorus treatment is incorrect. I previously showed ASU switched to CSBR tanks expressly for enhanced biological phosphorus removal. Biological phosphorus removal was specifically part of the CSBR design. I also previously showed that in its Options 1-4 cost estimates, ASU included chemical phosphorus costs (for supernatant) having the same equipment needed for a standby chemical system.

Q: In the amended Schedule of Values what caused the building cost to drop from $900,000 to $180,000?

A: ASU did not say.

Q: What remains unfinished in the building?

A: ASU did not install the wastewater laboratory, safety shower & eyewash, the

[133] Cause No. 44676, Serowka Direct Testimony, page 9, lines 18-20.

laboratory office, rest room, utility room, access stairs to the bulk storage tank area, two exterior doors, and five interior doors. Also missing are numerous ceiling lighting fixtures (commercial fluorescent with 4 lamps), numerous 115 volt (some with GFI) and 240 volt duplex wall receptacles, four exit signs with emergency lights with battery backup. It does not appear that the building meets Building Code requirements for the safety shower and eyewash and the emergency exits lights.

Q: Was building a wastewater laboratory one of the reason costs nearly doubled in the redesign for Biological Phosphorus Removal?

A: Yes. ASU said it had to build the onsite laboratory for process control to guarantee it could meet the phosphorus limits.[134] ASU included building costs twice in this project. First, it included a new Control / Laboratory Building in all Options at a cost of $355,600 (construction only) and $477,635 (with prorated share of mobilization, contractor profit, bonds, insurance, design and inspection). Second, modification costs for the existing blower building were embedded in the Micro Star costs. This amounts to double recovery of building capital costs. ASU has not produced any documentation that the new Control / Laboratory Building was deleted from FTDC's contract. ASU never built the new Control / Laboratory Building or the laboratory it permitted under the phosphorus project. In response to discovery asking what steps needed to be taken to complete the Wastewater

[134] *See* Cause No. 44272, Serowka Supplemental Testimony, July 19, 2013, page S7.

Laboratory, bathroom, and Utility room in the Chemical Feed Building, ASU responded:

> Due to the construction cost limits imposed on ASU by the OUCC and IURC, it was necessary to eliminate the new plant laboratory, bathroom, utility room and offices in the Chemical Feed Building and these were not shown in Plan Sheet 20-005-32, nor included in ASU's Affiliate costs for construction.[135]

In response to discovery asking when the Wastewater Laboratory, Bathroom, and Utility room would be completed, ASU responded: "The engineering and construction cost required to complete the Chemical Feed Building may be included in the next expansion to the Carriage Estates III Wastewater Treatment Plant."[136] These laboratory facilities should have been constructed by ASU. They were not. ASU now reports no wastewater analyses are conducted at the Carriage Estates WWTP, the utilities main treatment plant. Instead, all analyses are made at the much smaller County Home WWTP.[137]

Q: Please explain ASU's temporary phosphorus system.

A: Despite ASU stating the $1.5 million Phosphorus project would be included in the CETP-III Stage 1 work that it expected it to be in service by December 2016, ASU stated it did not place the phosphorus system in service until November 25, 2019. This was after it certified work on the Carriage Estates project was completed. ASU

[135] ASU response to DR 9-10.

[136] ASU response to DR 9-11.

[137] ASU response to DR 15-2.

did not receive the construction permit to build the phosphorus system until February 21, 2019 – three weeks after the Phosphorus limits took effect.

Q: Was the asserted November 25, 2019 in service date accurate.

A: Based on inspections on June 24, 2020 and July 7, 2020 IDEM reported "the facility is in the process completing construction associated with the installation of a phosphorus removal system through a separate construction permit, No. 22977. The facility has completed the chemical feed building and is still in the process of installing chemical feed lines to the SBRs." OUICC witness Scott Bell testifies regarding the IDEM inspections, ASU time extensions for construction, and the IDEM enforcement action against ASU.

I observed the phosphorus work on December 4, 2019 and again on March 5, 2020. Each time, the work was not complete as shown in the series of photographs in Figures 12 and 13. Tank work was also incomplete as well as the building work previously discussed. I also suspect that ASU has not installed the chemical feed piping to the original and new CSBR tanks. Instead, it appears ASU is adding the chemical to the Macerator structure at Headworks. On October 8, 2020 I observed the phosphorus system is shown in Figure 14.

Figure 12 Phosphorus metering pump installation – December 4, 2019

Figure 13 Phosphorus metering pump installation – March 5, 2020

Figure 14 Phosphorus metering pump and piping installation – October 8, 2020