UNITED STATES DEPARTMENT OF AGRICULTURE
Rural Utilities Service
Based on RUS Bulletin 1780-2

PRELIMINARY ENGINEERING REPORT

(STREAMLINED VERSION - WASTEWATER ONLY)

Date of PER: 06/10/20

APPLICANT NAME:	Talbot County Government		
NAME OF PROJECT:	Region II WWTP Sludge Management Improvements		
APPLICANT INFORMATION		ENGINEERING FIRM INFORMATION	
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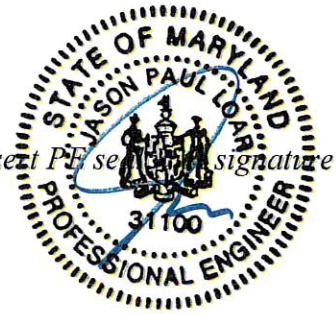

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Project Engineer:	Jason P. Loar, P.E.
Registration No.:	31100
Date of Report:	June 10, 2020
Revision Number:	0

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1.0 - EXECUTIVE SUMMARY

THIS PROPOSAL MUST QUALIFY AS A CATEGORICAL EXCLUSION (WITHOUT REPORT) IN ACCORDANCE WITH:

§ 1970.53
THIS LEVEL OF ENVIRONMENTAL REVIEW HAS BEEN CONFIRMED WITH THE RD STATE ENVIRONMENTAL COORDINATOR:

☑ Yes ☐ No

PROJECT SUMMARY: (Describe the location of the proposed project, brief proposed project improvements, include total project costs with reference to project costs breakdown in the appropriate section, etc.)

The proposed project is located at the Talbot County Region II Wastewater Treatment Plant (WWTP) located on 923 Cavlert Avenue, St. Michaels, Maryland, 21663, see attached maps.

The proposed project improvements consist of replacing the existing sludge management equipment (belt filter press) that was originally installed in 1986 and has outlived its original service life with a new updated and more efficient belt filter press.

Total Costs are estimated to be $600,000.00 with the following breakdown:
Planning $25,000.00
Design $50,000.00
Construction Management $24,500.00
Construction $500,500.00
Total Costs $600,000.00

2.0 - PROJECT PLANNING AREA

Provide a brief discussion regarding the proposed planning area. Include existing service area(s) and proposed project service area(s). Include legal and natural boundaries of the service area.

The proposed planning area is the existing Talbot County Region II sewer district which serves the Town of St. Michaels as well as the Rio Vista, Royal Oak, Newcomb, Bellevue, Tunis Mills, Unionville, Coppersville, Bozman, and Neavitt areas in the western portion of the County; see attached map. There is no future proposed planning area as the intent of the project is to serve the existing service area.

3.0 - EXISTING FACILITIES

Provide a brief discussion regarding the history, components and condition of the existing facilities. Include major system components were constructed, renovated, expanded or removed, violations, etc.

The existing sludge management system, or belt filter press, was originally installed in 1986 and dewaters all the sludge generated at the Region II WWTP. It has outlived its original service life thus has experienced ongoing issues with requiring numerous repairs and part replacements that hinders the daily operations of the Region II WWTP. Due to the age of the system, replacement parts are not readily available, if available at all, requiring some repairs to be completed not as intended by the manufacturer in order to keep the system operational.

4.0 – NEED FOR PROJECT

Provide a brief discussion regarding the project need. Include health/sanitary concerns, aging infrastructure, reasonable growth, etc.

The existing sludge management system, or belt filter press, needs to replaced due it age as it has outlived it original service life. The existing press has required numerous repairs and part replacements. Due to the age of the system, replacement parts are not readily available, if available at all requiring some repairs to be completed not as intended by the manufacturer in order to keep the system operational. When the system is down, the sludge cannot be properly dewatered and is hauled off site with additional water weight causing additional expenses as well as unnecessary risks associated with transportation of wet sludge. The project is needed in order for the County to properly treat and dispose of the sludge generated at the Region II WWTP.

5.0 – PROPOSED PROJECT

Provide brief discussion including preliminary project design, project schedule, permit requirements, annual O&M costs, possible construction problems, land requirements, sustainability considerations, and project costs. If there is multi-agency coordination involved please include information for scheduling, costs, etc.

The project design will consist of removal of the existing belt filter press and ancillary items such as control panel and feed/drain piping with replacement of all with new.

The estimated project schedule is as follows:
Planning Completion 5/2020
Design Completion 12/2020
Bidding Completion 8/2021
Construction Completion 3/2022

As this is considered a critical piece of treatment equipment at the WWTP, a MDE Construction Permit will be required. No other permits are required as the project is considered maintenance as opposed to new construction.

No construction issues are anticipated as the project is to be a maintenance/ replace-in-kind type of project. Further investigation into existing electrical and plumbing will be completed during the design phase and corrected/improved if deemed necessary.

No additional land will be required as the new belt filter press will be installed in the same location as the existing.

Total Costs are estimated to be $600,000.00 with the following breakdown:
Planning $25,000.00
Design $50,000.00
Construction Management $24,500.00
Construction $500,500.00
Total Costs $600,000.00

APPENDICES – WASTEWATER SYSTEM IMPROVEMENTS

A **Project Maps**
B **Existing System Summary**
C **Existing/Proposed Usage Information**
D **Health and Sanitary Documentation (*if applicable*)**
E **Overall Project Schedule**
F **Cost Estimates (proposed project)**
H **Annual O&M / Short-Lived Assets**

APPENDIX B - Existing System Summary

National Pollutant Discharge Elimination System (NPDES Permit #): MD0023604

Wastewater Collection Type *(select all that apply):*

- [x] Conventional Gravity
- [ ] Small Diameter
- [ ] Vacuum Effluent
- [ ] Pumps Grinder
- [x] Pumps
- [ ] Hauling
- [ ] Decentralized/On-Site
- [x] Lift Station
- [x] Pump Station/Forcemain

Wastewater Treatment Type *(select all that apply):*

Physical Unit Operations

- [x] Screening
- [ ] Mixing/Flocculation
- [ ] Sedimentation
- [ ] Aeration
- [ ] Coarse Solids Reduction (e.g. comminutors & grinders)
- [x] Grit Removal
- [ ] Stabilization Ponds
- [ ] Septic Tanks

Chemical Unit Processes

- [x] Precipitation
- [ ] Oxidation
- [ ] Neutralization/Scale Control/Stabilization

Suspended Growth Biological Treatment

- [ ] Activated Sludge
- [ ] Facultative Lagoons
- [ ] Aerated Lagoons
- [ ] Membrane Biological Reactors
- [ ] Sequencing Batch Reactor
- [x] Oxidation Ditches
- [ ] Other:

Attached Growth Biological Treatment

- [ ] Trickling Filters
- [ ] Rotating Biological Contactors
- [ ] Packed Bed Reactors
- [ ] Submerged Attached Growth Process
- [ ] Other:

Other Treatment

- [ ] Anaerobic Treatment
- [x] Advanced Wastewater Treatment

Disinfection

- [ ] Chlorination
- [x] Ultraviolet
- [ ] Biosolids
- [ ] Disinfection with Ozone

Biosolids

- [x] Thickening
- [ ] Anaerobic Digestion
- [ ] Composting
- [x] Dewatering
- [ ] Incineration
- [ ] Biogas Energy Production
- [ ] Stabilization
- [ ] Aerobic Digestion
- [ ] Conditioning
- [ ] Heat Drying
- [ ] Land Application
- [ ] Other:

If wastewater treatment capacity is inadequate, please use PER format described in RUS Bulletin 1780-2.

Existing System Summary (Continued)

Wastewater Discharge Type *(select all that apply):*

- [ ] Controlled Discharge
- [x] River/Stream
- [ ] Spray Irrigation
- [ ] Rapid Infiltration
- [ ] Constructed Wetlands
- [ ] Deep Well Injection
- [ ] Zero Discharge
- [ ] Lake
- [ ] Ocean/Estuarine Outfall
- [ ] Overland Flow
- [ ] Natural Wetlands
- [ ] Drainfields
- [ ] Reclaimed Wastewater
- [ ] Other:

Additional Details *(provide attachments as needed):*

APPENDIX C - Existing / Proposed Usage Information

WASTEWATER FLOWS - EXISTING

Year	Residential	Commercial	Industrial	Bulk	Other	Total Flow	Diverted Flow
Month 1	0.39	0.00	0.00	0.00	0.00	0.39	0.00
Month 2	0.46	0.00	0.00	0.00	0.00	0.46	0.00
Month 3	0.45	0.00	0.00	0.00	0.00	0.45	0.00
Month 4	0.34	0.00	0.00	0.00	0.00	0.34	0.00
Month 5	0.44	0.00	0.00	0.00	0.00	0.44	0.00
Month 6	0.36	0.00	0.00	0.00	0.00	0.36	0.00
Month 7	0.33	0.00	0.00	0.00	0.00	0.33	0.00
Month 8	0.31	0.00	0.00	0.00	0.00	0.31	0.00
Month 9	0.29	0.00	0.00	0.00	0.00	0.00	0.00
Month 10	0.32	0.00	0.00	0.00	0.00	0.00	0.00
Month 11	0.27	0.00	0.00	0.00	0.00	0.27	0.00
Month 12	0.31	0.00	0.00	0.00	0.00	0.31	0.00
Average (MGD)	0.35	0.00	0.00	0.00	0.00	0.30	0.00
Total Number of Connections (#)	2,082	0	0	0	0		
Average Dry Weather Flow (MGD)		0.33					
Average Wet Weather Flow (MGD)		0.44					
Peak hour (MGD)							
Estimated Inflow (%)		15.00					
Estimated Infiltration (%)		15.00					

Notes: 1) Use the most current 12 month period data available.
2) Use meter data when available
3) Include a copy of all existing/proposed wastewater agreements.

WASTEWATER FLOWS - PROPOSED

Year	Residential	Commercial	Industrial	Bulk	Other	Total Flow	Diverted Flow
Average Daily Flow (MGD)	0.35	0.00	0.00	0.00	0.00	0.35	0.00
Average Dry Weather Flow (MGD)	0.33	0.00	0.00	0.00	0.00	0.33	0.00
Average Wet Weather Flow (MGD)	0.44	0.00	0.00	0.00	0.00	0.44	0.00
Expected new connections (#)	0	0	0	0	0		
Projected Design Capacity (MCG) =			0.66				

APPENDIX D - Health and Sanitary Documentation (*if applicable*)

Definition of H&S Criteria

A health or sanitary problem is an existing current situation facing an applicant that could threaten human health or the environment, while a health or sanitary standard is any governmental requirement or published industry-recommended practice that is for the purpose of protection of human health or the environment. In some cases, a standard may be a requirement of State law, the Ten State Standards (www.1Ostatestandards.com), or published industry standards. It does not have to be actually enforced or enforceable. In cases where a Federal, State, or local law or regulation is enacted, not yet in effect but with a specified effective date, projects seeking to construct or modify systems to meet the new standard are considered to have a health or sanitary problem. Secondary drinking water standards may be considered a sanitary standard if they affect the ability of rural residents to use rural water to drink, wash their clothing, bathe, or cook.

The RD State Engineer will determine if the project meets the above H&S criteria.

The project is required to properly dewater and adequately dispose of sludge created at the WWTP. The existing belt filter press has outlived its original service life and lack of efficiency has caused inadequate dewatering of sludge as necessary for proper disposal. Without the project, excessively wet sludge would be required to be hauled off site to be dewatered at another facility. The transportation of this wet sludge unnecessarily results in a higher environmental risk of stream/river contamination should there be an incident during transportation.

APPENDIX E - Overall Project Schedule

Project Schedule			
Schedule Item	**# of days per Item**	**Cumulative (days)**	**Calendar Start:** 05/01/2020
Preliminary Engineering Report (Review/Approval)	30	30	
Environmental - CatEx/ Without a Report	15	45	
All Other Application Items Provided	15	60	
Funding Requirements (total)			
Pre-Bid Engineering Services*			
*~Preliminary Design Phase**	30	30	
*~Final Design Phase**	30	60	
Permitting	30	90	
Agency Plan Reviews/Approval	30	120	
Land and Easement Acquisition	0	120	
Pre-Bid Requirements			
Advertise for Bids	30	30	
Bid Opening to Preconstruction Meeting	30	60	
Notice-to-Proceed to Construction Completion*	180	240	
Final Project Close Out	30	270	
Bid-Construction Period	270		
Total Project Schedule	450		

**Estimated time frames for these items must be consistent with the engineering agreement.*

Additional Details *(provide attachments as needed):*

Construction has been expanded to take into consideration for lead time for belt filter press manufacturing and delivery.

APPENDIX F - Cost Estimates (proposed project)

Estimated Construction and Soft Costs				
Item Description	**Quantity**	**Unit**	**Unit Cost**	**Extended Cost**
Belt Filter Press	1	EA	$ 400,000.00	$ 400,000.00
Installation	1	LS	$ 55,000.00	$ 55,000.00
			$	$ 0.00
			$	$ 0.00
			$	$ 0.00
			$	$ 0.00
			$	$ 0.00
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			$	$ 0.00
			$	$ 0.00
			$	$ 0.00
			$	$ 0.00
			$	$ 0.00
USDA RD Project Sign		EA	$	$ 0.00
Additional Items *(Itemized in separate attachment)*		LS		$
Sub-total Construction Cost Estimate (Development)				**$** 455,000.00
Contingency @ (%)*	10.00			$ 45,500.00
Engineering Services**				$ 99,500.00
Pre-Development - PER		$	25,000.00	
Design		$	50,000.00	
Construction Administration		$	10,000.00	
Inspections		$	14,500.00	
Additional Service:		$		
Additional Service:		$		
Additional Service:		$		
Additional Service:		$		
Land and Rights				$
Legal Services (Bond Counsel)				$
Legal Services (Local Attorney)				$
Equipment				$
Capitalized Interest				$
Other:				$
Other:				$
Other:				$
Other:				$
Total				**$** 600,000.00

**Contingency is typically limited to between 5-10% given the type of proposed construction.*

***Engineering services need to be provided in accordance with an Agency approved EJCDC E-500 agreement.*

APPENDIX G - Annual O&M / Short-lived Assets

Annual Operation and Maintenance Budget			
Annual O&M Expenses **Item Description**	**Existing Budget**	**1st Typical Year**	**Difference**
			$ 0.00
Labor	$ 31,200.00	$ 31,200.00	$ 0.00
Miscellaneous Maintenance	$ 10,000.00	$ 5,000.00	$ 5,000.00
Electric	$ 1,100.00	$ 800.00	$ 300.00
			$ 0.00
			$ 0.00
			$ 0.00
			$ 0.00
			$ 0.00
			$ 0.00
			$ 0.00
			$ 0.00
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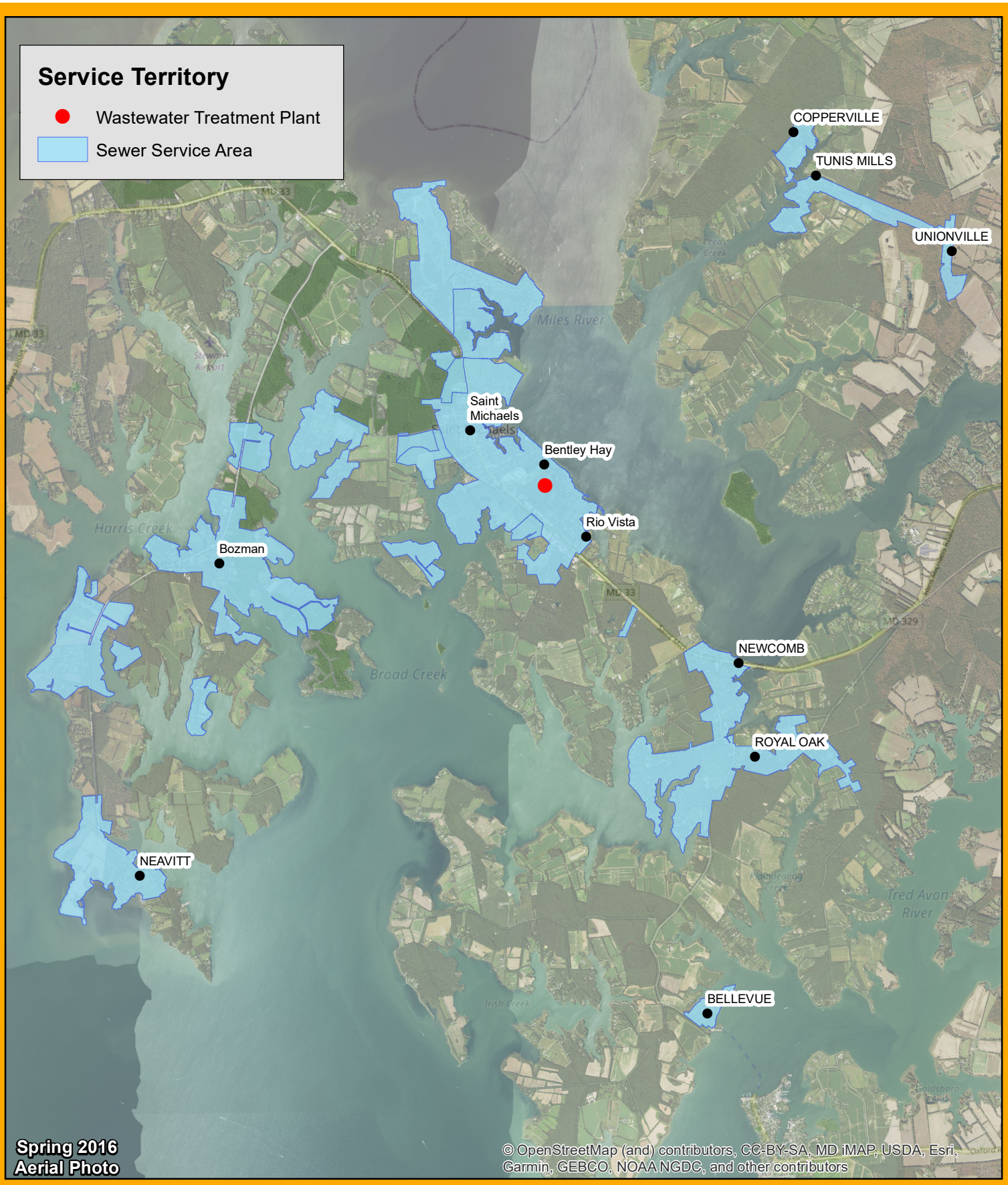
			$ 0.00
			$ 0.00
			$ 0.00
			$ 0.00
			$ 0.00
			$ 0.00
			$ 0.00
Sub-total	$ 42,300.00	$ 37,000.00	$ 5,300.00
Reserve Accounts:			
Short Lived Asset Reserves	$ 0.00	$ 7,500.00	$ 7,500.00
Total Annual Expenses	$ 42,300.00	$ 44,500.00	-$ 2,200.00

Short-Lived Assets			
Item Description	**Years (1-5)**	**Years (6-10)**	**Years (11-15)**
Belt Press Feed Pump	○	⊙	○
Belt Replacement	○	⊙	○
	○	○	○
	○	○	○
	○	○	○
	○	○	○
	○	○	○
	○	○	○
	○	○	○
	○	○	○
	○	○	○
	○	○	○
Year Totals			
Needed Short Lived Asset Reserves	$ 7,500.00		

**This table needs to be as specific as possible and detail a specific replacement period for every item(s) listed.*



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W E
S

Sources:
Sewage data per Talbot County
Aerial Photograph Courtesy of USDA

Region II Sewer Service Area
Talbot County, Maryland

DBF #1503A018

0 0.75 1.5 Miles

May 2020

DAVIS BOWEN & FRIEDEL, INC.
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