



# Public Notice

**U.S. Army Corps  
Of Engineers**

**Galveston District**

Permit Application No: \_\_\_\_\_

Date Issued: \_\_\_\_\_

Comments \_\_\_\_\_

Due: \_\_\_\_\_

SWG-2016-01027

29 March 2018

30 April 2018

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**U.S. ARMY CORPS OF ENGINEERS, GALVESTON DISTRICT  
AND  
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY**

**PURPOSE OF PUBLIC NOTICE:** To inform you of a proposal for work in which you might be interested. It is also to solicit your comments and information to better enable us to make a reasonable decision on factors affecting the public interest. The U.S. Army Corps of Engineers (Corps) is not the entity proposing or performing the proposed work, nor has the Corps taken a position, in favor or against the proposed work.

**AUTHORITY:** This application will be reviewed pursuant to Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act (CWA).

**APPLICANT:** Dow Chemical Company  
2301 North Brazosport Boulevard  
Freeport, Texas 77541  
POC: Ms. Yvonne Sampson  
Telephone: 979-238-4814

**LOCATION:** The project site is located between the Brazos River and Oyster Creek, approximately eight miles northwest of the City of Angleton and abuts the Brazos River, in Brazoria County, Texas. The project can be located on the U.S.G.S. quadrangle map titled: OTEY, Texas.

**LATITUDE & LONGITUDE (NAD 83):**

Latitude: 29.2709860466716

Longitude: -95.543090603221

**PROJECT DESCRIPTION:** The proposed Project would provide additional water storage capacity by constructing an off-channel (upland) reservoir and associated infrastructure located immediately north of the existing Harris Reservoir site. The off-channel reservoir would include a 1,929-acre impoundment with a nominal storage capacity of 50,000 acre-feet, an intake and pump station to divert Dow's existing surface water rights from the Brazos River, an outlet to Oyster Creek and an emergency spillway. The Project also includes floodplain enhancements in Oyster Creek, stream restoration and temporary construction staging and laydown areas.

The Project facilities are intended to provide a reliable water supply from the Brazos River for Dow's Texas Operations in Freeport, Texas and other users of Dow's water supply system including the Brazosport Water Authority during extended periods of low stream flows and/or drought. The proposed off-channel reservoir will be operated in conjunction with the existing Brazoria and Harris reservoirs to supplement the total available storage capacity and to provide additional operational flexibility. The project components include the following:

**Off-channel impoundment** – An approximately 40-foot-high by 36,200-foot-long upland earthen embankment will be constructed to form the impoundment. The embankment is to be constructed of compacted soils obtained from borrow areas within the reservoir interior. The results of an initial geotechnical investigation of the site in 2013 suggest soils from borrow areas located in the reservoir interior will primarily consist of cohesive or silty soils and therefore the preliminary slope design for this embankment section are based on designs for similar soil conditions. The components of the embankment section include a stabilizing berm, soil-cement armoring, wave wall, main embankment, chimney and blanket filters and drains, perimeter toe ditch, seepage barrier wall, and a perimeter road embankment. The proposed embankment section has side slope ratios of 3 horizontal to 1 vertical on the interior slope and 3.5 horizontal to 1 vertical on the exterior slope. The 3.5 horizontal to 1 vertical ratio of the exterior slope is intended to reduce the probability of shallow slumps occurring on the slope. Such slumps are common on embankments with 3:1 (horizontal to vertical) side slopes constructed with clayey soils on the Gulf Coast because of weathering of the compacted clay that occurs because of alternating wetting and drying cycles. A stabilizing berm with a 6:1 (horizontal to vertical) slope is shown against the lower portion of the interior slope. The berm will be constructed of soils stripped from the embankment footprint and borrow areas and will mainly serve two purposes: (1) to stabilize the slope under a rapid drawdown loading condition during releases in drought conditions, and (2) to decrease the portion of the slope requiring armoring against erosion. Some materials like sand and cement will be imported to the site for construction of internal filter/drains and soil-cement armoring. The exterior slope of the embankment will be seeded with native vegetation and maintained by mowing.

**River intake and pump station** –The river intake will be an in-channel intake structure including a sheet pile structure with concrete head wall in the Brazos River, mechanically cleaned T-screens, inlet pipes from the screens to the pump station building and stabilization of the Brazos riverbank near the intake as needed. The pump station will be partially underground with reinforced concrete walls, will be enclosed on three sides above-ground, and have a roof. The above-ground portion will have exterior cladding and roofing of prefinished metal wall and roof panels. The design will allow for removal of equipment thru a roof opening of a size that will be determined. The pump station will contain two pumps each capable of pumping 75,000 gallons per minute (gpm) from the River to the reservoir. An electrical power line will be constructed to convey power from nearby CenterPoint Energy transmission lines to the pump station. Water will be conveyed to the reservoir via approximately 1,200 linear feet of steel discharge pipeline. Streambank stabilization measures will be installed in the immediate vicinity of the intake structure, approximately 200 feet upstream and 100 feet downstream. The streambank stabilization measures are anticipated to include riprap and/or bio-engineered measures. They will be designed to reinforce the toe and a portion of the slope of the riverbank, preventing lateral migration of the Brazos River.

Other facilities associated with the pump station include the Operations Building, Electrical Motor Control Center (MCC) Building, and Transformer area. The Operations Building is an approximately 2,000-square-foot pre-engineered metal building supported by a concrete foundation, and will include restrooms and a meeting space. The MCC will be a pre-engineered/pre-fabricated structure, which may have to be elevated above the ground surface depending on the design flood elevation. Power will be brought into the MCC/ pump station area and routed within the Project site to electrical components as needed. The transformer will be supported on a concrete foundation pad with a containment area.

**Discharge line/reservoir inlet structure** - The welded steel discharge lines from the pumps will run above-grade to where they exit the building and combine into the common header. The header will remain above grade upstream and immediately downstream of the flowmeter. Downstream, the discharge line will be buried with minimum cover to the reservoir. The line will be exposed up the face of the reservoir embankment and through the top portion of the embankment into the reservoir, with the invert at or above the high-water level in the reservoir to ensure no reverse flow out of the reservoir. The inlet structure will be located inside the reservoir and serve to transition the pump discharge from the steel pipe into the reservoir. When the reservoir is at or near empty the structure must provide energy dissipation from the high velocity of water flowing by gravity from the top of the embankment to the bottom of the reservoir. A U.S. Army Corps of Engineers (USACE 1963) -type stilling well at the end of the pipe is proposed to provide a structure to meet these requirements. The stilling well will be approximately 15-foot in diameter and depth.

**Reservoir outlet** - Water stored in the off-channel reservoir will be released into the proposed Oyster Creek flood bypass channel through the outlet works. From upstream to downstream, the proposed outlet works will consist of a reinforced concrete structure with trash rack, an upstream large-diameter pipe, reinforced concrete control structure with sluice gates in the embankment, two downstream pipes (smaller than the upstream large-diameter pipe), two U.S. Bureau of Reclamation (USBR) Type VI impact stilling basins, a concrete channel, a flume, and an armored channel leading to the Oyster Creek flood bypass channel. Buried pipes, both upstream and downstream of the control structure, will be encased in reinforced concrete.

**Emergency spillway** – The spillway will provide two functions. First, it will serve as an uncontrolled spillway with a fixed crest to protect the dam without requiring operations. The second function is as a gated spillway allowing for approximately 3 feet of operational drawdown or lowering the reservoir water surface elevation (WSEL) during an emergency release condition. If the second function of operational drawdown is determined to be unnecessary during final design, the spillway and the outlet works could possibly be combined. The concept for the spillway structure consists of a reinforced concrete structure at the top of the dam embankment with 3 radial gates. When operating, the radial gates will provide a capacity of approximately 600 cubic feet per second (cfs) to 1,000 cfs over the range of reservoir WSELs 65 to 68 feet, respectively. When overtopped, the radial gates will also serve to provide 20 to 30 feet of fixed spillway crest length for uncontrolled releases. The estimated spill capacity of the uncontrolled spillway is approximately 650 cfs with 4 feet of surcharge (WSEL 82). Downstream of the radial gates, a concrete chute will convey the flows down the embankment to an USBR Type III stilling basin followed by either a riprap or concrete channel leading to Oyster Creek.

**Conveyance** – Water will be released from the off-channel reservoir into Oyster Creek via a new bypass channel, supplementing releases from the existing Harris Reservoir discharge facilities. Existing pump stations and industrial canals will convey the water to Texas Operations for use. No new canals are proposed as part of the proposed Project. Drainage enhancement project – The proposed Harris Expansion Project is located within both Brazos River and Oyster Creek’s 100-year FEMA regulatory floodplains with designated special flood hazard zones AE and AO on the Brazoria County Flood Insurance Rate Map (FIRM). The proposed storage facility will be above existing ground elevation with a constructed berm surrounding the reservoir. It will have an approximate footprint of 1,900 acres.

The reservoir embankment will be fully contained within the Oyster Creek floodplain and will not impact the Brazos River floodplain. In addition to the reservoir embankment, an intake/pumping facility will be located to the west of the reservoir within the Brazos River floodplain and the reservoir’s spillway will be directed to Oyster Creek on the east.

The proposed Project includes floodplain enhancement projects along Oyster Creek that include three areas where the hydraulic capacity of the Oyster Creek channel above the Ordinary High Water Mark line will be changed. The first project (Project 1) modifies the existing channel (Oyster Creek and unnamed tributary north and west of Otey) north of the proposed reservoir and includes a 70-foot bottom width channel with 4H:1V side slopes and floodplain benches. A second project (Project 2) widens the main Oyster Creek channel starting just downstream of the Project 1 and includes an 80-foot bottom width channel with 4H:1V side slopes, followed by a 150-foot floodplain bench and buffer with 4H:1V side slopes tying to existing ground. This provides an approximate 400-foot top width. Adjustments to the existing Ramsey Bridge which provides access to the state prison will be required due to the channel widening. The last channel improvement project (Project 3) creates an overflow channel 15-foot-deep with a 100-foot bottom width and 4H:1V side slopes starting just downstream of the proposed Project 2. The Conceptual Mitigation Plan provides representative cross sections of the proposed channel improvements.

**Other facilities** - Access to the embankment for maintenance and inspection will be provided by a road on the embankment crest and another around the perimeter of the embankment. Eleven abandoned and plugged oil and gas wells which have been closed in accordance with Texas Railroad Commission regulations are located on the site.

**Temporary construction laydown areas and work spaces** – An approximate 20-acre area located to the southeast of the proposed reservoir will be utilized for construction offices, equipment and material storage and work force parking. A second area located southwest of the proposed off-channel reservoir near the intake from the Brazos River will be used as a work space during construction of the intake and pump station. Both areas will be sited to avoid impacts to wetlands and other WOUS. Additional temporary work space near the southwest corner of the embankment will be used during construction of the intake from the Brazos River and the bank stabilization. The upland portion of the temporary workspace will be sited to avoid wetlands and waters of the U.S. Additionally, some construction will occur in the Brazos River during construction of the intake facility and bank stabilization.

**Storage facility operations** - Operation of the existing and proposed storage facilities can generally be categorized into the following: (i) normal operations, (ii) drought conditions, and (iii) emergency release conditions. During normal, non-drought conditions, Dow's river water supply will continue to be operated in generally the same fashion as it has been for the past 60 years with the Harris and Brazoria reservoirs. The provision of additional storage will result in minor changes to operations. For example, the proposed reservoir will normally be filled and maintained at a full level until releases are required for maintenance, seasonal adjustments to operating pool level, or a drawdown in advance of a tropical storm landfall near the site. Given this normal mode of operation, the proposed river intake and pump station will only operate as necessary to fill the reservoir and maintain it in a full condition.

During drought conditions with low streamflows on the Brazos River, Oyster Creek, and Buffalo Camp Bayou, the average daily demand for Texas Operations, can't be met by pumping from the river alone. Water is released from Dow's water storage reservoirs in a manner that maximizes the benefit of the storage and yields the highest probability to refill storage during a sustained drought. The following outlines a conceptual operating plan for the storage facilities after the proposed reservoir is constructed.

1. Water releases would first be made from the proposed reservoir. Water would be released exclusively from this source or used to augment flows from the existing Harris reservoir.
2. Once the proposed reservoir water supply was exhausted, releases would then be made from the existing Harris reservoir.
3. Finally, releases from the Brazoria Reservoir would be made. The release rates would first be set to augment the diminishing flow from the existing Harris reservoir as it empties and then at the full demand rate after Harris reservoirs are depleted. Releases from the Brazoria Reservoir would be reduced to some minimum rate, identified as required to meet critical demands.

Emergency release conditions would include drawdown in advance of a tropical storm landfall near the site, or drawdown because of embankment instability. Emergency releases could also occur via the emergency spillway in a full reservoir condition.

The construction of the proposed Project is estimated to result in the loss of 12.19 acres of emergent wetlands, 4.15 acres of forested wetlands, and 20,486.3 linear feet (5.73 acres) of streams.

The applicant's project plans are enclosed in 15 sheets.

**AVOIDANCE AND MINIMIZATION:** Avoidance of wetland and waterbody impacts to the maximum extent possible is initially accomplished through a robust alternative project selection process. For the proposed Project, avoidance of wetland and waterbody impacts is primarily accomplished through site selection and temporary workspace siting during design iterations. Impacts to wetlands and other waters could not be completely avoided due to the nature of the proposed project which includes inundation of water bodies on the site. Conceptual design of the floodplain enhancement project includes increasing hydraulic capacity above the Ordinary High Water Mark of Oyster Creek. Impacts are also reduced by siting temporary construction workspaces to avoid sensitive wetland and other water features. In addition, wetlands outside of construction workspaces will be demarcated in the field and identified on work plans as "no work zones" to avoid impacts during construction.

Dow will avoid and minimize potential adverse impacts to wetland and WOUS by implementing the following techniques as appropriate. Other techniques may be identified during final design and construction that can be implemented in addition to or in lieu of the following:

- Install appropriate BMPs and erosion control measures to protect wetland and water resources on the subject property and adjacent areas.
- Locate equipment refueling areas away from wetlands and WOUS.
- Reduce the disturbance to the Brazos River, Oyster Creek and other waterbodies identified during delineation, and associated vegetation to the extent practical and minimize clearing of trees and other plants in temporary workspace areas to leave in place as much vegetation as possible on stream banks within the temporary workspace.
- Stabilize and restore stream banks and adjacent upland areas after construction.
- Segregate wetland topsoil and its associated seedbank and returning it to the top where applicable.
- Use of matting to protect the underlying soil and root stock, where applicable such as during restoration and re-establishment projects along Oyster Creek as proposed in the Conceptual Mitigation Plan.
- Inspect construction areas periodically during and after construction and repair any erosion controls and/or performing restoration, as needed, in a timely manner.

The applicant's alternatives analysis are enclosed in 43 sheets.

**MITIGATION:** The proposed mitigation strategy includes acquiring functional capacity units from an approved mitigation bank to mitigate impacts to wetlands. To mitigate impacts to potentially jurisdictional linear features within the impoundment, Dow proposes to restore and rehabilitate two segments of Oyster Creek and reestablish two ephemeral streams. Providing bankfull benching, riparian buffer and other preservation, rehabilitation, enhancement and reestablishment treatments throughout these areas will improve the physical, biological and chemical functionality of Oyster Creek.

The applicant's mitigation plan is enclosed in 38 sheets.

**CURRENT SITE CONDITIONS:** The diversity of the project site with respect to vegetation, soils, and available water resources provides habitat for a large number of native wildlife species such as those described in the following sections. Columbia Bottomland Hardwoods, scrub shrub uplands, forested uplands, forested wetlands, emergent wetlands, ephemeral and intermittent streams, and a series of man-made drainage ditches are present on the site.

The applicant's ecological baseline report is enclosed in 31 sheets.

This public notice is being issued based on information furnished by the applicant. This project information has not been verified by the Corps. As of the date of this public notice, the Corps has received but not yet verified the wetland delineation.

A preliminary review of this application indicates that an Environmental Impact Statement (EIS) may be required. Since permit assessment is a continuing process, this preliminary determination of EIS requirement will be changed if data or information brought forth in the coordination process is of a significant nature.

Our evaluation will also follow the guidelines published by the U.S. Environmental Protection Agency pursuant to Section 404 (b)(1) of the CWA.

**OTHER AGENCY AUTHORIZATIONS:**

Although the project site is not located within the Texas Coastal Zone projects that affect downstream inflow rates along the coast may require certification from the Texas Coastal Management Program. The applicant has stated that the proposed activity complies with Texas' approved Coastal Management Program goals and policies and will be conducted in a manner consistent with said program.

This project would result in a direct impact of greater than three acres of waters of the state or 1,500 linear feet of streams (or a combination of the two is above the threshold), and as such would not fulfill Tier I criteria for the project. Therefore, Texas Commission on Environmental Quality (TCEQ) certification is required. Concurrent with Corps processing of this application, the TCEQ is reviewing this application under Section 401 of the CWA and in accordance with Title 30, Texas Administrative Code Section 279.1-13 to determine if the work would comply with State water quality standards. By virtue of an agreement between the Corps and the TCEQ, this public notice is also issued for the purpose of advising all known interested persons that there is pending before the TCEQ a decision on water quality certification under such act. Any comments concerning this application may be submitted to the Texas Commission on Environmental Quality, 401 Coordinator, MSC-150, P.O. Box 13087, Austin, Texas 78711-3087. The public comment period extends 30 days from the date of publication of this notice. A copy of the public notice with a description of work is made available for review in the TCEQ's Austin office. The complete application may be reviewed in the Corps office listed in this public notice. The TCEQ may conduct a public meeting to consider all comments concerning water quality if requested in writing. A request for a public meeting must contain the following information: the name, mailing address, application number, or other recognizable reference to the application; a brief description of the interest of the requester, or of persons represented by the requester; and a brief description of how the application, if granted, would adversely affect such interest.

**NATIONAL REGISTER OF HISTORIC PLACES:** The staff archaeologist has reviewed the latest published version of the National Register of Historic Places, lists of properties determined eligible, and other sources of information. The following is current knowledge of the presence or absence of historic properties and the effects of the undertaking upon these properties:

The permit area is likely to yield resources eligible for inclusion in the National Register of Historic Places. An investigation for the presence of potentially eligible historic properties is justified.



**THREATENED AND ENDANGERED SPECIES:** Preliminary indications are that no known threatened and/or endangered species or their critical habitat will be affected by the proposed work.

**ESSENTIAL FISH HABITAT:** Although the project site is not located along the Texas coast projects that affect downstream inflow rates along the coast may affect essential fish habitat. This notice initiates the Essential Fish Habitat consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act. Our initial determination is that the proposed action would not have a substantial adverse impact on Essential Fish Habitat or federally managed fisheries in the Gulf of Mexico. Our final determination relative to project impacts and the need for mitigation measures is subject to review by and coordination with the National Marine Fisheries Service.

**PUBLIC INTEREST REVIEW FACTORS:** This application will be reviewed in accordance with 33 CFR 320-332, the Regulatory Programs of the Corps, and other pertinent laws, regulations and executive orders. The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors, which may be relevant to the proposal, will be considered: among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs and, in general, the needs and welfare of the people.

**SOLICITATION OF COMMENTS:** The Corps is soliciting comments from the public, Federal, State, and local agencies and officials, Indian tribes, and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Impact Assessment and/or an EIS pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

This public notice is being distributed to all known interested persons in order to assist in developing facts upon which a decision by the Corps may be based. For accuracy and completeness of the record, all data in support of or in opposition to the proposed work should be submitted in writing setting forth sufficient detail to furnish a clear understanding of the reasons for support or opposition.

**PUBLIC HEARING:** The purpose of a public hearing is to solicit additional information to assist in the evaluation of the proposed project. Prior to the close of the comment period, any person may make a written request for a public hearing, setting forth the particular reasons for the request. The District Engineer will determine if the reasons identified for holding a public hearing are sufficient to warrant that a public hearing be held. If a public hearing is warranted, all known interested persons will be notified of the time, date, and location.

**CLOSE OF COMMENT PERIOD:** All comments pertaining to this public notice must reach this office on or before **30 April 2018**. Extensions of the comment period may be granted for valid reasons provided a written request is received by the limiting date. **If no comments are received by that date, it will be considered that there are no objections.** Comments and requests for additional information should reference our file number, **SWG-2016-01027**, and should be submitted to:

Policy Analysis Branch  
Regulatory Division, CESWG-RD-P  
U.S. Army Corps of Engineers  
P.O. Box 1229  
Galveston, Texas 77553-1229  
409-766-3869 Phone  
409-766-6301 Fax  
swg\_public\_notice@usace.army.mil

DISTRICT ENGINEER  
GALVESTON DISTRICT  
CORPS OF ENGINEERS