

SOAH DOCKET NO. 582-22-0585  
TCEQ DOCKET NO. 2021-1001-MWD

APPLICATION BY  
CITY OF GRANBURY,  
FOR TPDES PERMIT NO.  
WQ0015821001

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BEFORE THE STATE OFFICE  
OF  
ADMINISTRATIVE HEARINGS

**EXHIBIT GF-401**

*James L. Machin, PE*

## **JAMES L. MACHIN, P.E.**

### **EDUCATION**

M.S., Environmental and Water Resources Engineering, University of Texas at Austin, 1980

M.B.A., University of Michigan, Ann Arbor, MI, 1974

B.S.E., Engineering, Princeton University, Princeton, NJ, 1971

### **PROFESSIONAL REGISTRATIONS/CERTIFICATIONS**

Professional Engineer, Texas, No. 53349

Professional Engineer, Arizona, No. 29159

OSHA 40-hr HAZWOPER training, including Supervisor Certification

Fluvial Geomorphology 101, Forester University, 2014

Introduction to Physical and Chemical Hydrogeology GEO 346C, University of Texas, 2015

### **AREAS OF EXPERTISE**

Mr. Machin has been in environmental and water resources consulting for over 40 years. His work has been in the fields of water resources engineering, hydrology, and water quality; design and construction; permitting and compliance; environmental engineering and water/waste treatment; environmental remediation and investigations; and environmental impact assessments. He is very knowledgeable in environmental regulations. His experience has included surface-water availability studies, storm water management and design studies, intensive surface-water quantity and quality investigations, environmental impact assessments related to both water projects and multi-disciplinary projects, flood hydrograph and flood plain modeling, water/waste treatment studies, instream water quality impacts and modeling, storm water and wastewater permitting, and development of comprehensive planning documents for various governmental clients. Mr. Machin has been an expert witness in several cases.

### **EXPERIENCE**

Principal, JLM Engineering, 2018-present

Water Team Leader, TRC, Austin, TX, 2004-2018.

Senior Engineer, TRC/R.J. Brandes Company, Austin, TX, 1997-2004.

Senior Engineer/Project Manager, Radian International LLC, Austin, TX, 1977-1997.

Hydrologist, Texas Water Quality Board, Austin, TX, 1975-1977.

Manufacturing Engineer, Texas Instruments, Inc., Austin, TX, 1974.

Pipestress Engineer, C-E Lummus, G.m.b.H., Wiesbaden, Germany, 1971-1972.

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## **Water Quality and Water Resources**

- Prepared water quality models for two proposed WWTP upgrades for the City of Seguin, Texas. Extensive site-specific data were collected to calibrate the model. Results were accepted by the State.
- Prepared TPDES initial technical reports and subsequent renewals and performed instream studies and water quality analysis to support discharges for seven proposed or operating brackish groundwater desalination plants in Texas. Established recording instream monitoring stations. Worked closely with Texas Commission on Environmental Quality (TCEQ) to establish effluent limitations that would protect water quality and instream uses in agricultural drainage ditches in Texas for industrial TPDES permit development of these unique facilities.
- Performed various water quality and quantity studies in support of permitting, permit amendments, and compliance for the large Southmost Regional Water Authority brackish groundwater desalination plant for Brownsville Public Utilities Board. Also evaluated a sludge pond for arsenic removal pre-treatment system. Work included significant coordination with the State to resolve water quality concerns.
- Directed obtaining industrial permits for proposed major seawater desalination plant in Texas. Performed outfall diffusion modeling for brine discharge into the Gulf of Mexico, including extensive field data collection. Directed study of potential deep well injection of brine. Worked closely with water quality team from TCEQ and Texas Water Development Board (TWDB) for this important project.
- Obtained brine concentrate injection well permit for seawater desalination pilot plant on South Padre Island, TX.
- Prepared permit application to Railroad Commission of Texas and USEPA for discharge from brackish groundwater RO facility at a gas processing plant in the Eagle Ford Shale in Texas.
- Designed investigation and permitting of storm water pond as temporary storage of RO concentrate for reuse at the world's largest brackish groundwater desalination plant, the Kay Bailey Hutchison plant in El Paso, TX.
- Designed and permitted wastewater impoundment for high-salinity discharge from proposed solar power plant in southern New Mexico. Performed water balance modeling to efficiently size evaporation impoundment. Worked with regulatory agency to permit this unique facility.

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- Expert witness for Texas Office of the Attorney General and Texas Department of Transportation in case involving metal-finishing industrial wastewater pretreatment facility in Dallas.
- Performed water use, wastewater reuse, and wastewater/storm water evaluation for SpaceX rocket testing facility in Texas. Large amounts of water were being used for quenching during tests.
- Performed evaluation of suitability of two proposed municipal sludge disposal sites in South Texas. Included wetlands/waters of the U.S. determination and delineation. Involved significant coordination with USACE and TCEQ.
- Prepared technical reports for three WWTP TPDES permit renewals for Laredo, Texas, and also several smaller facilities in the Lower Rio Grande Valley.
- Directed water quality modeling and nutrient impact evaluation of proposed controversial WWTP discharge to a stream in the Edwards Aquifer Contributing Zone near Austin, Texas. Conducted instream dye study. Designed and implemented long-term monitoring plan to determine impacts on algal growth in the stream and an impoundment. Spoke at public meetings and provided expert testimony in court proceedings in support of wastewater discharge permit application. Coordinated with City of Austin, Edwards Aquifer Authority, Texas Commission on Environmental Quality (TCEQ), and other parties. Permit was ultimately granted.
- Directed study for City of Seguin, Texas regarding impacts of industrial wastewater contributions to their WWTP. Study quantified sources of high phosphorus loadings and evaluated control options to reduce loadings.
- Obtained permanent and temporary water rights, USACE 404/10 permits, TPDES storm water and wastewater permits, and Texas Parks & Wildlife Sand & Gravel permits for several sand and gravel mining operations. Provided technical support and expert testimony for two contested case hearings involving geomorphological changes to a river where instream dredging was being conducted.
- Directed TPDES permitting for two proposed major new WWTPs for City of New Braunfels, Texas. Included water quality modeling, determination of required treatment levels, and expert testimony for one case.
- Prepared and updated storm water permit applications and plans, spill prevention plans, and conducted personnel training for landfill, composting facility, metals recycling facility, municipal solid waste transfer stations, and

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vehicle maintenance yards for facilities in San Antonio (located on the Edwards Aquifer), Austin, and San Angelo, Texas. Coordinated with TCEQ and Edwards Aquifer Authority.

- Directed third-party EIS for the U.S. Army Corps of Engineers (USACE) for proposed water supply reservoir in Texas involving major impacts to wetlands/waters of the U.S. Spoke at public meetings.
- Surface-water modeling and groundwater evaluation of water quality impacts of potential petroleum spills from controversial gasoline pipeline in environmentally sensitive area, including Edwards Aquifer Recharge Zone. Impacts to both rivers and reservoirs were evaluated. Contributed to preparation of comprehensive Environmental Assessment.
- Designed and implemented long-term storm water and base flow water quality monitoring program for a subdivision and with a wastewater treatment facility to determine nutrient impacts on sensitive spring-fed stream in the Lake Travis watershed near Austin, Texas.
- Performed instream studies and modeling to support TPDES permit renewals for both of Brownsville, Texas' WWTPs. Coordinated closely with TCEQ. Work was accepted by the State and saved the client millions of dollars in upgrades.
- Directed permitting, design, and construction of dam; dredging of wetlands; and associated development in Tyler, Texas. Involved significant consultation with USACE, TCEQ, Texas Parks and Wildlife Dept. (TPWD), and City of Tyler personnel. Included determination and delineation of wetlands.
- Performed evaluation of suitability of two proposed municipal sludge disposal sites in South Texas. Included wetlands/waters of the U.S. determination and delineation. Involved significant coordination with USACE and TCEQ.
- Management of the development and application of water availability model for the Rio Grande Basin in Texas and Mexico for TCEQ. This complex project involved both prior appropriation and type of use priority water rights, evaluation of interstate compacts and international treaties, development of naturalized flows in both Texas and Mexico, and determination of the share of water owned by both countries. Also directed the development and application of water availability models for the Sulphur and Colorado River Basins. For the Colorado, performed special study to quantify channel losses.
- Support for development of dam and reservoir on the Rio Grande for water supply development for the Lower Rio Grande Valley. Included preparation of comprehensive Environmental Assessment. Significant coordination with

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TCEQ for water rights permit and Section 401 water quality certification, USACE to obtain Sections 404/10 permit, U.S. International Boundary and Water Commission, and U.S. Fish and Wildlife Service Section 7 endangered species consultation. Established and operated recording, long-term water quality monitoring stations on the Rio Grande.

- Participated in eutrophication studies of lakes in Texas and North Carolina which included modeling of the impacts of proposed wastewater discharges.
- Performed water quality modeling for a proposed thermal discharge from a liquefied natural gas facility in Louisiana. Analyzed water quality data, calibrated the model to the existing data, and performed modeling to predict the effects of the proposed discharge.
- Directed a water quality investigation and modeling study of a bayou near Houston, Texas for a petroleum refinery. Data were collected over a one-year period at several locations. A water quality model was developed to support an increase in wastewater discharge anticipated from the addition of a new petrochemical facility. Also performed flood plain modeling on the same bayou and obtained state permit for development of the proposed facility.
- Directed an intensive water quality study of a creek receiving industrial wastewater discharge to evaluate the potential for a site-specific water quality standards change. Included water quality and biological data collection, modeling, and aquatic organism bioassay testing.
- Performed intensive surface-water investigation over a one-year period for proposed mine in Wood, Rains, and Hopkins Counties, Texas. Evaluated water quality and quantity and bottom sediments at numerous stream and impoundment sites, assessed impacts on water quality and water rights, and identified potential issues affecting the project.
- Designed, constructed, and performed surface-water data collection system/program including stream gaging station for lignite mine in Zavala County, Texas. Data were collected over one year. Mr. Machin also trained local personnel to collect water quality samples, service gages, and perform measurements.
- Conducted an assessment of hydrology-related regulatory risks for a lignite mining prospect in Panola County, Texas.
- Performed analysis of water rights and availability of water in the Trinity River Basin, Texas. Analysis was used to support major water right application involving reuse of return flows through diversions from the Trinity River, treatment in constructed wetlands, and discharge to a water supply reservoir.

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- Directed several studies to conduct detailed surface-water field data collection programs including the design and construction of stream gaging stations and automated sampling stations. Also directed and participated in several comprehensive environmental assessments of proposed industrial, mining, and power generation sites in various regions of the country. These studies involved extensive field work and analyses in the areas of water quality, flood plain, and sediment mathematical modeling; design and implementation of water and sediment sampling programs; statistical data analysis; impact analysis; and surface-water supply availability.
- Participated in evaluation of water rights under low-flow conditions in several states including water quality, aquatic biota, and water usage issues.
- Preparation of Storm Water Pollution Prevention Plans and Water Pollution Abatement Plans for multiple industrial and municipal clients, and pipeline and highway construction projects.
- Prepared NPDES stormwater permit applications for several furniture manufacturing facilities. Included training of plant personnel in stormwater flow measurement and flow-weighted sampling techniques.
- Prepared Stormwater Pollution Prevention Plans at Air Force bases in Texas, Nevada, South Dakota, and Delaware. Plans involved evaluation of complex facilities with many activities containing significant stormwater exposure. Evaluated cross-connections. Developed Best Management Practices for control of stormwater pollution from numerous sources. Participated in design of stormwater detention impoundments.
- Directed a comprehensive stormwater management study at a petroleum refinery in Indiana. Designed and evaluated four alternative systems. Project involved preparation of detailed topographic maps, modeling of runoff rates and quantities, design of conveyance systems, design of storage devices for surge capacity, evaluation of treatment needs, and recommendations for reducing potentially explosive vapor levels in sewers.
- Performed a stormwater management study at a petroleum refinery in Illinois. Included evaluation of modifications to and construction of surface impoundments. Directed a water quality study of a creek receiving wastewater discharge to evaluate the potential for a site-specific effluent limitations variance. Included water quality and biological data collection, and fish bioassay testing.
- Performed a special study on a 5-mile reach of the Yampa River in Colorado. Involved numerous hydrologic measurements over a period of time to quantify

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exchanges between the surface-water and ground-water systems. The study was used to support permitting activities at a mine and mine-mouth power plant.

- Conducted a nine-month analysis of streamflow in Ship Creek, an important water supply and recreational stream in Anchorage, Alaska. Measurements were performed at various locations in the creek to determine the degree of groundwater recharge and discharge over time. The study was used to support feasibility studies for contaminated groundwater control in reaches of the stream where groundwater discharge was occurring.
- Designed contaminated runoff diversion, control, and collection system for railroad yard in Oklahoma.
- For EPA, participated in major study of the impacts of using large quantities of water for energy development in eight western states.
- Designed and executed stormwater sampling program at manufacturing facility in Austin, Texas.
- Mr. Machin's work at the Texas Water Quality Board was primarily within the areas of engineering and water quality analysis, waste treatment, and economic evaluations. He helped design and manage a water quality investigation and modeling study for Lake Livingston, a major water supply reservoir for the City of Houston. He also managed a study of impacts of different types of non-point sources throughout Texas. He managed a study of proposed changes in water quality standards for low-gradient streams in east Texas.
- Mr. Machin's work at Texas Instruments involved control of all metal fabricated parts and printed circuit boards at their Austin manufacturing facility.

#### **PROFESSIONAL AFFILIATIONS**

Water Environment Association of Texas  
American Society of Civil Engineers  
Texas Water Conservation Association

#### **PUBLICATIONS AND PRESENTATIONS**

Mr. Machin has extensive technical writing experience and has authored or co-authored a number of published technical papers and presentations at national symposia.

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**EXPERT TESTIMONY**

Mr. Machin has provided deposition and expert testimony on behalf of several clients in cases involving wastewater discharges, water quality, water quantity, and hazardous waste.