

# Marine Engineering and Port Planning



Apex has an unparalleled record of helping our clients improve, restore, and maintain their ports and waterways. Our comprehensive services include harbor management planning and development, dredging and disposal, geophysics, surveying, port infrastructure and design, coastal engineering, characterization and remediation, environmental compliance, wetlands mitigation, stream bank restoration, and sediment management.

Our expertise redeveloping and remediating contaminated sites spans from small harbors to large ports, from private marinas to public piers, from ferry and cargo terminals to oil and aggregate facilities and from hotel and mall developments to power plants and heavy waterfront industrial sites.

We have permitted and designed all facets of contaminated sediment disposal projects including in-water disposal, confined shoreline disposal facilities and the upland disposal of dredge spoils. With in-depth design and construction experience, we've honed our cost-estimating skills with predictive analyses so you accurately allocate your budgets and plan accordingly.

Recognized as an industry innovator who balances sound economics with responsible environmental policies, we deliver results expeditiously and cost-effectively. In one project alone, we helped our client transform their port into a cruise destination point while saving them \$49M.

Ask us how. We'd be happy to share what sets Apex apart from the rest.

## Services

- Port and infrastructure engineering
- Marina and terminal layout services
- Waterfront development planning and design
- Marina, pier, bulkhead and wharf design
- Environmental compliance assessment and upgrade design
- Existing marina and bulkhead condition surveys
- Fuel tank and pump-out facility assessment and upgrade services
- 'Portfield' redevelopment/contaminated waterway redevelopment
- Development alternatives cost/benefit analysis
- Engineering cost estimating for the full project lifecycle
- Dredge project planning, estimating, design and build
- Operation and maintenance plans
- Contaminated site assessments and remediation

## Representative Projects



### Remediation and Restoration Oversight *Port of Los Angeles, CA*

Since 2002, Apex has provided a variety of environmental services to the Port of Los Angeles' Harbor Department through a series of contract agreements. We have developed remedial strategies, reviewed and critiqued remedial approaches developed by others and implemented and provided oversight of the restoration of impacted port sites. Our work includes complex environmental projects such as preparing a comprehensive conceptual remedial action plan for a 10-acre industrial parcel heavily contaminated with volatile organic compounds and lubricating oils; overseeing the removal of hazardous waste and materials from a former boat works that was cited by the city's HazMat project lead as one of the fastest, most effective cleanups he's witnessed; and identifying, analyzing, and addressing environmental impacts related to a site slated to become a community park. For the latter project, Apex uncovered an undocumented underground storage tank (UST), removed that UST and five others, excavated 1,500 cubic yards of heavily petroleum-impacted soil, and shipped the soil to a recycling center for processing. Apex helped prepare the property for future redevelopment through our public participation efforts, developed CEQA-required plans, participated in the preparation of documents required for litigation measures, and self-performed the excavation of over 10K tons of contaminated soil from one of the project sites. For a current port project, Apex is planning to implement the final Remedial Action Plan for a site from which approximately 15K tons of metal, PCB, and TPH-contaminated soil will be removed. Our work was critical for the port to proceed with important industrial development, which will lead to economic expansion and job creation in an underserved community.



### Environmental Services *Port of Portland, OR*

For over a decade, Apex has provided a myriad of services including Phase I and II Environmental Site Assessments (ESAs); an underground storage tank investigation and decommissioning; cleanup and remedial action design and cost estimating; risk-based site closure; risk assessment, engineering and construction support; remedial construction; cost recovery; strategic site management; a remedial investigation/feasibility study (RI/FS); soil, groundwater, and stormwater source control and stormwater maintenance; waste management; upland/in-water environmental liability estimates; and technical support for the Portland Harbor Superfund Site allocation.

Within the Portland Harbor Superfund Site, our projects include investigations at the port marine terminals for RI/FS, source control evaluations (including stormwater, groundwater, and riverbank erosion), and implementation of source control measures. These port facilities had been used as shipyards, lumber milling/wood product manufacturing, cooperage, grain storage and milling, dry and liquid products importing/exporting, bulk fuel storage/transport, and equipment or vehicle storage.

Apex has also provided broader strategic management activities including environmental liability forecasting and technical support for a private party allocation, multi-year process which clarified 100+ parties' share for cleanup of the harbor sediments. Our work included technical submissions (e.g. historical analysis of past activities) and evaluating the submissions of others.



### **Sediment Dredging and Disposal** *New Bedford, MA*

Due to lack of maintenance and repair of the harbor and port facilities for over 40 years, the City of New Bedford was faced with the threat of closing this top-grossing fishing port. Providing a cost-effective alternative, Apex implemented a plan for dredging and disposal sediment that decreased cleanup costs from \$200-400 per cubic yard to \$75 per cubic yard saving the city nearly \$49M. Apex's success on the project is evidenced by the commercial expansion of the port which is now a regular stop for a major cruise line.



### **Harbor Management Plan** *Bridgeport, CT*

In conjunction with Urban Harbors Institute, Apex helped the City of Bridgeport update and revise their harbor management plan. Apex updated the existing harbor inventory of natural and marine resources, physical features, marine uses, and owner/operators to incorporate changes over a five-year period. Our team developed a conceptual model for a future Dredged Materials Management Plan (DMMP) and identified historic marine structures and harbor buildings for preservation within the Harbor Management Plan. Apex facilitated communication between the harbor stakeholders, including several municipal and state agencies and marine operators to ensure the plan's implementation paved the path forward for future expansion and development.



### **Site Assessment and Remediation** *Port of Long Beach, CA*

During Apex's on-call contract with the Port of Long Beach, we provided services on nearly 25 separate task orders with increasing value. One of those projects was the 120-acre Pier A West/Area 2 site which was built on dredged sediments in an area historically used for oil exploration operations since the 1930s. Between 1948 and 1970, liquid wastes (e.g. drilling mud, solvents, spent catalysts, paint sludge, and other liquids) were reportedly deposited into 19 shallow, below-ground, clay-lined impoundments (sumps) on the site. The port had conducted an Interim/Source Removal Action under the direction of the Los Angeles Regional Water Quality Control Board that included the removal of the sumps and large-scale site re-grading. Previous investigations revealed the presence of groundwater contaminants beneath the sump locations. As part of the Interim/Source Removal Action, the existing groundwater monitoring wells were removed, and Apex installed well clusters with 53 wells installed, surveyed and sampled. The drilling required detailed field observations, drilling techniques to ensure proper screen placement, and a final reliable set of monitoring point harbor regions. Additional projects included soil sampling by direct-push drilling at locations associated with a Metro track modification, and wharf repair. Much of Apex's work in the Long Beach and San Pedro harbor region has had positive impacts on these communities, advancing the port's environmental justice goals.



## Dredging Feasibility Study *Salem, MA*

The City of Salem contracted Apex to study the feasibility of dredging the South River, South River Approach and the South River Basin. This included a detailed bathymetric survey and environmental assessment of the South River and adjacent National Parks Service facility which is home to the Friendship of Salem, a 171' tall ship. Apex permitted and designed the dredging of approximately 75K cubic yards of contaminated sediment and to construct a Confined Aquatic Disposal (CAD) cell within the harbor. Our innovative approach enables the city to dredge critical navigation areas at a fraction of the cost of more traditional dredging methods.

### About Apex

Established in 1988, Apex is a national multidisciplinary consulting, engineering, and field services firm with a robust portfolio of capabilities in water resources, environmental services, health & safety, construction management, transportation, and compliance & assurance. Rated #16 as an *ENR* All-Environmental firm and #68 in the top 200 overall, we are known for our technical expertise, rapid response, operational integrity, and exceptional client satisfaction. We operate in all 50 states and maintain a highly capable and diverse team of scientists, engineers, technicians, and information management specialists. For more information, visit [www.apexc.com](http://www.apexc.com).

[www.apexc.com](http://www.apexc.com)

info@apexc.com • (800) 733-2739

