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Chapter 8

Glossary

Adjudicative Proceeding. A method of dispute resolution that relinquishes control of proceedings to a neutral third party who determines rights and obligations of those involved.

Aggradation. A geological term used to explain an increase in land elevation due to sediment deposit downstream and is typically seen in alluvial rivers.

Allision. An event in which a moving object strikes a stationary object.

Anadromous. Fish species that are hatched in freshwater, migrate to and mature in salt water, and return to freshwater to spawn. Salmon, smelt, shad, striped bass, and sturgeon are common examples.

Anchorage. An area suitable to anchor a ship or other vessel.

Anhydrous Ammonia. A colorless gas or liquid commonly used to make fertilizer.

API Gravity. A measure of how dense an oil is compared to water, as defined by the American Petroleum Institute (API). A crude oil with an API gravity >10 indicates it is lighter than water and will float; a crude oil with an API gravity <10 indicates it will sink in water.

At-Grade Crossings. Locations where railroad tracks cross public highways, roads, streets, and associated walkways at the same level.

Attenuation. Gradual loss of intensity over a medium such as air or water.

Automatic Engine Shutoff System. Allows locomotives to shut down under programmable conditions that include ambient temperature; these are typically set up to shut down idling engines after 15 minutes.

Ballast. Crushed rock material placed below and along wooden crossties of a railroad to keep them in place and prevent vegetative growth.

Ballast Water. Fresh or salt water, sometimes containing sediments, held in tanks and cargo holds of ships to increase stability and maneuverability during transit.

Barrier Effect. Physical or behavioral mechanisms that completely or partially block movements of wildlife.

Basalt. A dark-colored, fine-grained, igneous rock that most commonly forms as an extrusive rock, such as a lava flow, but can also form in small intrusive bodies, such as an igneous dike or a thin sill.

Basket Strainer. Used for debris removal prior to liquids entering a pump/compressor. A line may be shut down for short periods of time for basket cleaning or change out.

Bitumen. A semisolid, highly viscous form of naturally occurring petroleum found within oil sands.

Boiler Blowdown. Water intentionally expelled from a boiler to avoid excessive concentration of impurities.

Bollards. Short vertical posts typically used to control, direct, or obstruct traffic.

Boom (Containment). A temporarily floating barrier deployed to contain oil spills, enhance recovery by skimmers or other collection methods, and reduce impact to shorelines. Booms come in a range of materials, shapes, and sizes (see Fence Boom and Stand-Alone Boom below).

Boom Reel. A boom wrapped on a large spool, which can then be easily stored, mounted to a trailer, or deployed for quick response to an inadvertent crude oil release.

Breathing Losses. Vapors that escape a closed system.

Buffer Cars. Railcars that serve to separate locomotives from railcars carrying crude oil and required by federal regulations. Buffer cars cannot be flat, must be at least 45 feet long and weigh 45 tons, must carry inert cargo, and must have a high-strength coupler.

Bunkering. The transfer of fuel oil for the movement of larger vessels. Bunker oil traditionally has been heavy, higher sulfur residual fuel oil.

Captain of the Port Zone. A specific geographic area (Port Zone) over which a US Coast Guard officer is responsible. The officer is responsible for the protection and security of vessels, harbors, and waterfront facilities; anchorages; security zones; safety zones; regulated navigation areas; deep-water ports; water pollution; and ports and waterways safety.

Carloads. Quantity of goods that can be carried in a railway freight car.

Catchment Area. An area built below ground level for capture of inadvertent crude oil releases or stormwater runoff.

Cathodic Protection. A technique used to control metal corrosion by creating a cathode (positive current) to attract electrons, resulting in corrosion of the cathode rather than the metal it is protecting.

Catwalks. Elevated walkways.

Cetaceans. An order of marine mammal that includes dolphins, whales, and porpoises. All cetaceans have torpedo-shaped bodies, paddle-shaped fins, blowholes at the top of the head, and a horizontally flattened tail for locomotion.

Class 1 Railroad. Carriers having operating revenues of \$433.2 million or more.

Collection Header. This collects the flow of crude oil from a grouping of railcars and can be housed in belowgrade trenches running parallel to rail tracks.

Collection Pans. Pans, typically high-density polyethylene (HDPE), used as a secondary containment system to collect spills or leaks from oil transfers, overflow, or defective equipment.

Commercial Vessel. A vessel involved in the transportation of goods or individuals for trade or business purposes.

Compound Annual Growth Rate. An investment term for the geometric progression ratio that provides a constant rate of return over a period of time.

Concrete-Decked Access Trestle. A rigid framework supporting the flat surface of the berth via parallel horizontal beams held up by pairs of sloping legs.

Concrete Pump Basins. A depressed area that houses pumping systems associated with unloading crude oil from trains. The basin also acts as a secondary containment for capture of inadvertent crude oil releases from pumps or attached pipes.

Concrete Ringwalled Foundation. An underground, circular, concrete wall enclosing a double-bottom tank used to support a crude oil storage tank. Ringwall foundations may be built to tolerate a capacity of 2,000 pounds per square foot.

Concrete Trenches. A long, narrow trough built belowground to house pipes associated with unloading crude oil from trains. The trench also acts as a secondary containment for capture of inadvertent crude oil releases from pipes.

Condensate Hoses. A hose that returns water back to steam boilers after it has condensed onto internal steam manifolds located at the bottom of heavy crude oil tank cars.

Cone Penetrometer Test. A test that determines the strength of a soil by measuring the resistance as an instrumented steel cone is driven into the subsurface.

Conex Box. A large aluminum cargo box that is used to store booms for rapid deployment in case of an oil release.

Containment Berm. A barrier surrounding crude oil storage tanks to limit the area of a spill in case of a release incident. The containment berm for this facility would be 6 feet high with the capacity to hold a liquid volume greater than 360,000 barrels or the volume of the largest enclosed storage tank.

Containment Tanks (Holding Tanks). Covered steel tanks that collect inadvertent crude oil releases by a gravity-fed line connected to collection pans.

Cooling Water Supply. A reserve of water used to lower the temperature of working engine components, ensuring their proper function and reducing fire hazard.

Corrosion Inhibitor. A chemical compound that typically decreases the corrosion rate of metal when added to a liquid or gas.

Cradle-to-Grave Analysis. An analysis of the entire lifecycle of a fuel. “Cradle” refers to the extraction of raw materials (e.g., crude oil) from the earth and “grave” represents the end use of a fuel, such as fuel combustion in a vehicle/aircraft).

Creosote. A carbon-derived chemical used industrially for wood treatment to protect from fungi and insects as well as acting as a water repellent. Railroad ties are often treated with creosote.

Crossties. Rectangular slabs laid perpendicular to railroad tracks in order to distribute weight to the ballast and keep rails upright while maintaining spacing. Crossties have traditionally been timber but pre-stressed concrete is more common in new construction.

Crude Oil Fractions. Oil separates based on hydrocarbon composition, with larger hydrocarbon compounds (darker in color and more viscous) settling to the bottom when heated. These heavier hydrocarbons are less likely to catch fire and burn.

Cumulative Effects/Impacts. Additive or interactive effects that result from incremental impacts of a proposed action when added to other past, present, and reasonably foreseeable future actions in a similar timeframe and geographical location.

Deep-Draft Vessel. A vessel with a draft greater than 12 feet.

Dentalium. Tooth shells or tusk shells used as currency by Lower Columbian tribes.

Derrick Barge. A large, flat-bottomed boat equipped with a crane typically used for in-water construction projects. They can store building materials and vary in size and capacity based on individual project requirements.

Docking Assist Systems. Computerized systems that monitor vessel maneuvers including approach speed.

Dilbit. Bitumen blended with a diluent, usually a natural gas liquid such as condensate (e.g., propane, butane), to create a somewhat “lighter” product and to reduce viscosity for transportation.

Direct Effects/Impacts. Effects that are caused by a proposed action and occur at the same time and place as the action.

Disproportionate Effect. An incidence (or prevalence) of an effect, a risk of an effect, or likely exposure to environmental hazards potentially causing adverse health effects on a minority and/or low-income population, or subpopulation, that significantly exceed those experienced by a comparable reference population.

Dolphins/Breasting Dolphins. Permanent isolated structures associated with docks to aid in positioning and securing of vessels to the dock; breasting dolphins are typically placed to keep the vessels from pressing against the pier and mooring dolphins are used to keep the vessels in a secured position at dock.

Double Bottom Tank. Storage tanks that contain two tank floors with a release prevention barrier liner (typically HDPE) between them to reduce galvanic corrosion as well as a spacer (sand or concrete) to keep the underside of the second bottom drier and reduce corrosion and puddling. This construction provides improved leak detection and control of tank corrosion.

Downstream System. The outlet of a pipe system. Downstream also commonly refers to the refining/processing and purifying systems of the oil and gas industry, as well as marketing and distribution of the products derived from crude oil and natural gas.

Driven Piles. Deep foundation elements driven to a design depth or resistance; these are a common construction technique for addressing weak soils.

Dry-Fit Connectors. Hose designed so that liquids in the hose cannot come into contact with the atmosphere and crude oil cannot flow without a secure connection.

Dry Soil Mixing. A ground-improvement technique that improves the characteristics of soft, high-moisture content clays, peats, and other weak soils, by mechanically mixing them with a dry cementitious binder to create soilcrete.

Ebb Tide. An outgoing tide. The Columbia River is influenced by tides from the mouth up to Bonneville Dam.

Effective Worst-Case Discharge (WCD). The most credible or realistic volume for a WCD based on the amount of oil that would effectively be released in the event of an incident based on maximum possible outflow as determined by modeling.

Emergency Fire Pumps. Part of a fire sprinkler system; the pump generates a high-pressure force to move 3 percent foam/water through the associated pipes and to the sprinkler heads during a fire.

Emergency Shutdown Button. Button to manually shut off crude oil conveyance system valves.

Endemism. A species unique to a defined geographic location.

Entrainment. To entrain means “to draw along.” In terms of aquatic resources, entrainment refers to fish larvae and eggs that may get drawn into pump impellers or other vessel equipment causing physical stress or mortality.

Eulachon. A small anadromous forage fish endemic to the northeastern Pacific Ocean. A species of smelt also called candlefish, they are an important resource for native peoples in the Pacific Northwest, from northern California to Alaska.

Essential Fish Habitat. Habitat that is designated as essential to commercially fished species managed under the Magnuson-Stevens Act.

Expansion Loop. A common way to absorb temperature expansion and contraction in steel pipes. Expansion loops can be fabricated from standard pipes and elbows.

Feedstock. A raw material to supply a refinery.

Fence Boom. A temporary solid floating barrier deployed to contain oil spills; these work best in calm waters. They are constructed to have a buoyant foam top with a weight at the base to form a barrier wall or “fence” in the water, and are typically easy to store, handle, and deploy.

Fire Protection Systems. An in-place network built to reduce the impact of fires onsite. The proposed Facility system consists of a designated ultralow sulfur diesel fuel tank housed in a foam building to power the emergency fire water pump.

Flange Joints. Joints strengthened by a flange, or projecting collar or rim, designed to strengthen connections between objects.

Floating Boom. A temporarily floating barrier deployed to contain oil spills, enhance recovery by skimmers or other collection methods, and reduce impact to shorelines.

Flood Tide. An incoming tide. The Columbia River is influenced by tides from the mouth up to Bonneville Dam.

Fusion Centers. An information sharing center designed to promote information distribution at the federal level between agencies such as the Central Intelligence Agency, Federal Bureau of Investigation, US Department of Justice, US military, and state- and local-level government.

Future Actions. Known projects and activities such as commercial and industrial developments that are planned for the future.

Fuzzy Disk Skimmer. A remedial tool used to recover crude oil product from water during offshore spills consisting of two vertical rows of discs covered in a soft material that oil adheres to.

Groundfish. Fish that live on or near the bottom of a body of water.

Grounding Grid. A mitigating shock measure that directs currents generated from large steel structures to a buried metal grid via rods, which dissipate the charge safely into the ground.

Handymax Vessel. A small-size bulk carrier ship with a carrying capacity of less than 60,000 dead weight tonnage (DWT) that is ideal for small ports with length and draught restrictions.

Hanging Fender System. A series of bumpers placed along a berth wall to act as a buffer between the berth and the vessel.

Hazmat Cars. Rail tank cars that carry materials classified as hazardous materials, which may be flammable or inflammable.

Heat Exchanger. A piece of equipment used to transfer heat from one medium to another that avoids overheating and maintains operational temperatures for engines.

Hedonic Method. A methodology to value an attribute, or measure a change in attribute, whenever its value is capitalized into the price of an asset.

Holding Tanks. Covered steel tanks that collect inadvertent crude oil releases by a gravity-fed line connected to collection pans

H-Piles. A bearing pile composed of large steel beams in an 'H' shape effective at transferring load weight for deep foundation construction and marine structures.

Hydraulic Power Pack. Engine components that pressurize hydraulic fluid sent to hoses operating fuzzy disk skimmers.

Hydrology. The scientific study of the distribution, movement, and quality of water over a given area.

Hydrostatically Tested. The process of filling crude handling systems, including pipelines and storage tanks, with potable water and then pressurizing the systems to check for leaks.

Impervious Membrane Liner. A layer of material between the ground and the storage tanks acting as a barrier to retain crude oil released from an inadvertent spill.

Indexing. The process of moving a train through an unloading facility. In the case of the proposed Project, this process would involve 30 cars at a time. When a train enters an unloading bay, the first 30 cars would be connected, unloaded, and disconnected. The train would then advance and be positioned to unload the next 30 cars.

Indirect Effects/Impacts. Indirect effects are caused by a proposed action but occur later in time or are farther removed in distance, but are still reasonably likely to occur.

In-lieu Fishing Sites. Fishing sites along the Columbia River that have been acquired by the US Army Corps of Engineers and transferred to the Bureau of Indian Affairs exclusively for use by Indian fishers.

Intermodal Trains. Trains with containers that can be transferred between multiple modes of transportation without handling of the freight. Also referred to as transloaders.

Internal Floating Roof. A roof structure located in a storage tank instead of, or as well as, a fixed roof. A floating roof goes up and down with the liquid level inside a tank, decreasing vapor space above the liquid level to increase safety and prevent pollution.

Internal Steam Manifolds. A many-chambered tubing that routes steam from a boiler across the bottom of a railcar evenly, heating the contents of the railcar. Steam is circulated through the tank manifold in order to heat heavy crude oil, reducing viscosity and making it flow more easily for transfer.

In-water Work Window. A period of time in which all construction activities that occur in water (below the ordinary high-water mark of a river) would be completed. In-water work windows are typically determined based on presence of species' life-stages (e.g., eggs, juveniles, adults) at certain times of the year within a waterbody.

Isobath. A line on a map or chart that connects all points having the same depth below a water surface.

Isopleth. A line on a map connecting points at which a given variable has a specified constant value.

Jet Grouting. A construction process that creates soilcrete (grouted soil) columns, using a grouting monitor attached to the end of a drill stem, used to stabilize loose soils.

Jib Crane. A device used to lift and lower loads.

Key Trains. Trains with blocks of at least 20 hazmat tank cars.

Lacustrine Sediments. Well-sorted, fine sediment deposits composed of fine sand, silt, and clay found in lake beds.

Lagomorphs. Species of the taxonomic order Lagomorpha, which includes hares, rabbits, and pikas.

Lateral Spreading. The finite, lateral movement of gently to steeply sloping, saturated soils caused by earthquake-induced liquefaction.

Laydown Area. An area used for the temporary storage of equipment and supplies during construction projects.

LC50. Lethal concentration 50 is the concentration of a chemical that kills 50 percent of a test population during a specific exposure time of a toxicological test.

Leak Detection System. Permanent monitors installed in crude oil handling systems (e.g., pipelines, storage tanks) to detect and alert inadvertent oil releases.

Liquefaction. A phenomenon whereby a saturated or partially saturated soil substantially loses strength and stiffness in response to an applied vibratory stress, usually from earthquake shaking or other sudden changes in stress condition, causing the soil to behave like a liquid.

Liquefied Natural Gas Peak-Shaving Facility. Facilities where natural gas can be liquefied and stored onsite during low demand periods while during high demand the liquefied natural gas is vaporized and injected into a distribution or gas transmission system.

Loading Process Shutdowns. The stoppage of crude oil loading when moving crude oil between vessel and storage tanks during an emergency.

Marine Vapor Combustion Units. The destruction of hydrocarbon vapors generated during the transfer of crude oil.

Marine Vessel Loading System. A loading system to transfer crude oil from storage tanks to marine vessels.

Microblades. Very small blade tools.

Missoula Flood Alluvium. Deposits of gravel, sand, silt, and clay from dozens of floods from Glacial Lake Missoula that occurred between 15,000 and 12,700 years ago.

Mitigation. Avoiding, minimizing, rectifying (repairing), reducing, eliminating, compensating for, or monitoring environmental impacts.

Mooring Dolphins. Permanent isolated structures associated with docks to aid in positioning and securing of vessels to the dock; mooring dolphins are used to keep vessels in a secured position at dock.

Mooring Lines. Thick rope, typically nylon, used to secure a vessel to a permanent structure such as a berth. The head spring is located at the front of the boat to prevent the vessel from moving forward, while the stern spring is at the back to protect the vessel from drifting backward.

Mudline. The high-water mark along a shoreline

No Action Alternative. The alternative of not constructing or operating a proposed project.

Nonattainment Area. An area considered to have air quality worse than the National Ambient Air Quality Standards as defined by the Clean Air Act (P.L. 91-604, Sec. 109).

Nonlisted Species. Species that do not receive protection under the Endangered Species Act.

Outcrop. A visible exposure of solid rock.

Oxygen Scavenger. A chemical compound added to boiler water to help remove oxygen and reduce the problems associated with corrosion of metal components.

Panamax. Class of tankers with maximum dimensions to navigate the Panama Canal. These vessels are approximately 600 feet long and 105 feet wide, with an operating draft of 40 feet and a crude oil cargo capacity of between 331,000 and 338,000 barrels.

Past Actions. Past actions include human settlement, urbanization, and commercial and industrial activities that have taken place since the early 1800s.

Pelagic. Descriptive term for the open water area of an ocean, sea, or lake.

Per Capita. Defines a value by or for each person. For instance, per capita income refers to income averaged over all individuals in the population; it is derived by dividing the total income over the number of individuals.

Perennation. A plant's ability to survive from one germinating season to another, especially under unfavorable conditions.

Pile Caps. A metal cap fitted to the top of a pile or a group of piles used to transmit loads into the pile or to protect it during pile driving.

Pilot (Vessel Pilot). As defined by maritime law, this is a person who assumes responsibility for a vessel while navigating it through a river into or from a port.

Pinnipeds. Commonly known as seals in the Columbia River; this group of species includes harbor seals and sea lions.

Pipe Hammer. The momentary increase in pressure that occurs in a liquid pipe system when there is a sudden change of direction or velocity of the liquid.

Quick Release Hooks. A commonly used method of securing mooring rope from a vessel to a shore fixture (e.g., pier or quay) at oil and gas terminals to provide a quick release for tankers and carriers.

Railbed. Area of crushed rock on which the ties and rails are placed.

Railcar Manifold. A pressured unloading system for railcars.

Railroad Ballast. Crushed rock material placed below and along wooden crossties of a railroad to keep them in place and prevent vegetative growth. The rock distributes the weight load of the ties and rails across the foundation while allowing for ground movement, water drainage, and thermal expansion.

Rapid Oil Skimmer. A boat that removes floating oil from the water, via a filterbelt, to be recovered within the boat. It is highly adaptable to various marine environments and range of oils.

Recruitment. The time when a young fish becomes large enough to be caught or enters a specific juvenile or adult habitat.

Refuge. An area enabling a species or a community of species to survive through a period of unfavorable conditions.

Retractable/Movable-Rotatable Grated Walkways. Walkways with grated flooring that can be easily moved and maneuvered and provide safe access between mooring dolphins and the shoreline for line handling.

Return Pipeline. A pipeline to return crude oil to a storage tank in the event of a shutdown during crude oil loading.

Riprap/Armoring. Rock material used to protect shorelines and streambeds from scour and erosion.

Ruderal. The ruderal community type is defined as weedy vegetation growing on compacted, plowed, or otherwise disturbed ground and showing a preference for this type of habitat.

Salmonid. Fish of the family Salmonidae, including salmon, trout, chars, grayling, and whitefish. In general usage, the term usually refers to salmon and steelhead trout.

Scale Inhibitor. A chemical treatment added to water to stop scale deposition.

Sedimentary Deposits. The accumulation of sediment on the bottom of rivers and other waterbodies.

Seiches. Waves that pass back and forth across enclosed or partially enclosed bodies of water such as lakes, bays, or rivers.

Shale Oil. Light crude oil contained in petroleum-bearing formations of low permeability, often shale or tight sandstone.

Side/Off-Channels. Aquatic habitats with direct connection to a river.

Siding (Rail). A short, low-speed rail track section used for assembling, storing, and loading and unloading railcars.

Sinking Fund. A corporate bond repayment schedule whereby a company would make periodic deposits over the life of a bond to avoid a balloon payment on the principal at the bond maturity date.

Skiff. A shallow, flat-bottomed open boat with a rectangular stern and a pointed bow.

Slough. Swamp or shallow lake system, usually a backwater to a larger body of water.

Smelting. Extracting metal from raw ore through a heating and melting process.

Soilcrete. Soil mixed with cement and water to create an improved foundation soil for construction.

Soil Liquefaction. A phenomenon whereby a saturated or partially saturated soil substantially loses strength and stiffness in response to an applied stress, usually earthquake shaking or other sudden change in stress condition, causing it to behave like a liquid.

Spatial Boundaries. The outer limit of a geographic area.

Spread Footings. Shallow foundation elements that are constructed by excavating a footing footprint, layering base materials, concrete forming and pouring, and backfilling. Spread footings are a common construction technique for addressing weak soils.

Steel Piles. Steel poles driven into the earth to a designated depth in order to create a stronger foundation for decks, mooring dolphins, and trestles in weak soils.

Storage Area Heated Inlet Manifold. A many-chambered tubing that maintains a high temperature across an area storing crude oil offloaded from railcars.

Subballast. Subgrade layer of finely graded, compacted granular material below railroad ballast, which acts as a moisture barrier and gives additional structural support.

Suezmax Vessel. A mid-size bulk carrier ship with a carrying capacity between 120,000 and 200,000 DWT capable of operating in the majority of global ports.

Swing-Related Groundings. The grounding of a vessel when anchored and swings with the movements of water, usually at low-water periods.

Switching Locomotives. A locomotive designated to move railcars.

Tamper. A specialized piece of construction equipment that is used to raise a rail track through ballast, so the ballast can be compacted under a crosstie.

Tank Ships. A self-propelled tank vessel of any gross tonnage, engaged in the transport of oil, chemicals, tallow, or biologically derived plant oils.

Temporal Boundaries. A set period of time.

Tight Oil. Light crude oil contained in petroleum-bearing formations of low permeability, often shale or tight sandstone.

Traditional Cultural Property. A distinctive natural site, historic environment, or a place with significant historic value to a specific ethnic or cultural group based upon historic cultural beliefs, customs, or practices that may or may not continue to the present.

Transloader. Trains with containers that can be transferred between multiple modes of transportation without handling of the freight.

Transshipment Capacity. Transshipment is the shipment of goods to an intermediate destination, and then to a final destination. Transshipment capacity refers to the total quantity of goods that can be handled in the transshipment.

Trusses. A framework for supporting a structure, typically a roof or a bridge, usually consisting of rafters, posts, and struts.

Turning Basin. A wider body of water located in a ship canal or at a port to allow cargo ships to turn and reverse their direction of travel. For a complete 180-degree turnaround, the width of the basin must be more than the length of the longest vessel normally traversing the waterway.

Unit Train. A freight train with up to 120 cars carrying one type of commodity (e.g., crude oil)

Unloading Hoses. Hoses used to move materials like oil and designed to handle strong pressures and a wide range of temperatures.

Usual and Accustomed Areas. Through the treaties of 1855, a number of tribes retained the right to engage in fishing, hunting, and gathering in what are referred to as their “usual and accustomed” areas.

Vacuum Box Testing. This testing method is used to check for faults in welding of bottom plates and annular plates on storage tanks. Through the application of soap water and a vacuum box, faults or leaks become visible as bubbles in the soap.

Vacuum Breaker. A valve attachment that prevents backflow such as prevention of used water from entering a public drinking water system.

Vessel Ballast. Water that is used to provide stability to a vessel. Ballast tanks are typically located at the bottom of a vessel.

Vessel of Opportunity. Recruited volunteer vessels for large oil spill response support.

Vessel Manifold. The point at which the vessel hoses and onshore hoses meet, usually found near amidships on both sides.

Vessel Strike. A collision between a vessel and wildlife such as aquatic mammals.

Vibratory Hammer Method. A hammer using vibration to install a pile or to compact granular soils.

Vibroreplacement. Construction of dense aggregate columns (stone columns) by means of a crane-suspended downhole vibrator, to reinforce soils and densify granular soils.

Viscous. Thick, sticky, and semifluid in consistency.

Viscosity. The thickness and fluidity of a liquid.

Wake Stranding. When aquatic species are lifted by a wave onto a shoreline and are stranded.

Watertight Forms. The use of materials/molds that do not let water pass through.

Weathering. The chemical and biological processes that affect materials in the environment.

Wellhead Protection Area/Zone. A surface and subsurface land area regulated to prevent contamination of a well that supplies a public water system. Time-of-travel criteria are used to represent the time it takes for groundwater or a contaminant to flow from a point within a well's zone of contribution to a well. Three principal zones are delineated using 1-, 5- and 10-year time-of-travel factors.

Wet Soil Mixing. A ground-improvement technique that improves the characteristics of weak soils by mechanically mixing them with cementitious binder slurry. Also known as the deep mixing method.

Wick Drains. A ground-improvement technique that provides drainage paths for water in soft compressible soil, using prefabricated geotextile filter-wrapped plastic strips with molded channels.

Wildlife Aggregation. A group of animals that is commonly found together.

Working Losses. Vapors that are generated and released while a liquid material is being pumped into or out of a tank.