Appendix E - Glossary

A

Advanced Mixed Waste Treatment Facility: Opened in 2003, this facility is located on the INEEL at the Radioactive Waste Management Complex. Its purpose is the retrieval, preparation, and shipping of stored low-level transuranic waste to the Waste Isolation Pilot Plant.

accuracy: A measure of the degree to which a measured value or the average of a number of measured values agrees with the "true" value for a given parameter; accuracy includes elements of both bias and precision.

actinides: The elements of the periodic table from actinium on. Includes the naturally occurring radionuclides thorium and uranium as well as the human-made radionuclides plutonium and americium.

alpha radiation: The emission of alpha particles during radioactive decay. Alpha particles are identical in make up to the nucleus of a helium atom and have a positive charge. Alpha radiation is easily stopped by materials as thin as a sheet of paper and has a range in air of only an inch or so. Despite its low penetration ability, alpha radiation is densely ionizing and, therefore, very damaging when ingested or inhaled. Naturally occurring radioactive elements such as radon emit alpha radiation.

anthropogenic radionuclides: Radionuclides produced as a result of human activity (human-made).

aquifer: A geologic formation, group of formations, or part of a formation capable of yielding a significant amount of ground water to wells or springs.

aquifer well: A well that obtains its water from below the water table.

B

background radiation: Radiation present in the environment as a result of naturally occurring radioactive materials, cosmic radiation, or human-made radiation sources, including fallout.

basalt: A fine-grained dark igneous rock.

becquerel (Bq): A quantitative measure of radioactivity. This is an alternate measure of activity used internationally. One becquerel of activity is equal to one nuclear decay per second. All references to quantities of radioactive material in this report are made in curies (Ci), followed in parentheses by the equivalent in becquerels. There 3.7×10^{10} Bq in 1 Ci.

beta radiation: Beta radiation is comprised of charged particles emitted from a nucleus during radioactive decay. A negatively charged beta particle is identical to an electron. A positively charged beta particle is called a positron. Beta radiation is slightly more penetrating than alpha, but it may be stopped by materials such as aluminum or Lucite panels. Naturally occurring radioactive elements such as potassium-40 emit beta radiation.

bias: The tendency for an estimate to deviate from an actual or real event. Bias may be the tendency for a model to over or under predict.

biobarrier: A zone/layer of a cap that consists of some material to prevent intrusion of burrowing animals.

bioremediation: The process of using various natural and/or introduced microbes to degrade, destroy, or otherwise permanently bond contaminants contained in soil and/or water.

biota concentration guide (BCG): The limiting concentration of a radionuclide in soil, sediment, or water that would not cause dose limits for protection of populations of aquatic and terrestrial biota to be exceeded.

blank: A blank is used to demonstrate that cross contamination has not occurred. See field blank and laboratory blank.

blind sample: A blind sample contains a known quantity of some of the analytes of interest added to a sample of the media being collected. A blind sample is used to test if the presence of compounds in the sample media that interfere with the analysis of certain analytes.

butte: A steep-sided and flat-topped hill.

C

calibration: The adjustment of a system and the determination of system accuracy using known sources and instrument measurements of higher accuracy.

chain of custody: A method for documenting the history and possession of a sample from the time of collection, through analysis and data reporting, to its final disposition. An item is considered to be in an individual's custody if the item is (1) in the physical possession of that person, (2) within direct view of that person, or (3) placed in a secured area or container by that person.

collective effective dose equivalent: A measure of health risk to a population exposed to radiation. It is the sum of the total effective dose equivalents of all individuals within a defined population. The unit for collective effective dose equivalent is person-rem or person-sieverts.

committed effective dose equivalent: The total effective dose equivalent received over a 50-year period following the internal deposition of a radionuclide. It is expressed in rem or sieverts.

comparability: A measure of the confidence with which one data set or method can be compared to another.

completeness: A measure of the amount of valid data obtained from a measurement system compared to the amount that was expected, under optimum conditions.

composite sample: A sample of environmental media that contains a certain number of sample

portions collected over a period of time. The samples may be collected from the same location or different locations. They may or may not be collected at equal time intervals over a predefined period of time (e.g., quarterly).

confidence interval: A numerical range within which the true value of a measurement or calculated value lies. In this report, radiological values are shown with a 95 percent confidence interval, i.e., there is a 95 percent probability that the true value of a measurement or calculated value lies within the specified range.

contaminant: Any physical, chemical, biological, radiological substance, or matter in a location or concentration that is not naturally occurring.

contaminants of concern: Contaminants in a given media (usually soil or water) above a risk level that may result in harm to the public or the environment. At the INEEL, those contaminants that are above a 10^{6} (1 in 1 million) risk value.

control sample: A sample collected from an uncontaminated area that is used to compare INEEL analytical results to those in areas that could not have been impacted by INEEL operations.

curie (Ci): A quantitative measure of radioactivity. One Bq equals one nuclear decay per second. One curie of activity is equal to 3.7×10^{10} Bq.

D

data gap: An area between all available data and the conclusions that are drawn from that data where the existing data are sparse or nonexistent. An example would be inferring the interactions in the environment of one radionuclide that has not been studied from a chemically similar radionuclide that has been studied.

data validation: A systematic review of a data set to identify outliers or suspect values. More specifically, data validation refers to the systematic process of independently reviewing a body of analytical data against established criteria to provide assurance that the data are acceptable for their intended use. This process may use appropriate statistical techniques to screen out impossible or highly unlikely values.

data verification: The scientific and statistical evaluation of data to determine if data obtained from environmental operations are of the right type, quality, and quantity to support their intended use. Data verification also includes documenting the above operations and the outcome of those operations (e.g., data do or do not meet specified requirements). Data verification is not synonymous with data validation.

decay product: A nuclide resulting from the radioactive disintegration of a radionuclide, being formed either directly or as a result of successive transformations in a radioactive series. A decay product may be either radioactive or stable.

deposition velocity: An empirical rate constant that relates the concentration of a radionuclide in air to that on ground or plant surfaces.

derived concentration guide (DCG): The concentration of a radionuclide in air or water that, under conditions of continuous exposure for one year by a single pathway (e.g., air inhalation/ immersion, water ingestion), would result in an effective dose equivalent of 100 mrem (1 mSv). The U.S. Department of Energy, through Order 5400.5, "Radiation Protection of the Public and the Environment" has established these values.

diffuse sources: A source or potential source of pollutants that is not constrained to a single stack or pipe. A pollutant source with a large areal dimension.

diffusion: The process of molecular movement from an area of high concentration to one of lower concentration.

dilution: The process of lowering a constituent's concentration by increasing the volume of the media in which it occurs (e.g., adding water to a drink concentrate).

direct radiation: External radiation from radioactive plumes or from radionuclides deposited on the ground or other surfaces.

dispersion coefficient: An empirical concentration, normalized to a unit release rate, used to estimate the concentration of radionuclides in a plume at some distance downwind of the source. The National Oceanic and Atmospheric Administration, using data gathered continuously at meteorological stations on and around the INEEL and the MDIFF model, prepared the dispersion coefficients for this report,.

dispersion: The process of molecular movement by physical processes.

dose: Also known as dose equivalent, this is a value for comparing the biological effectiveness of different kinds of radiation on a common scale. Technically, it is the product of the absorbed dose, the quality factor, and any other modifying factors. The unit for dose is the rem. A millirem is one one-thousandth of a rem.

dosimetry: The theory and application of the principles and techniques involved in the measurement and recording of radiation doses.

drinking water: Water for the primary purpose of consumption by humans.

duplicate sample: A sample collected from the same sampling location using the same equipment and sampling technique and placed into an identically prepared and preserved container. Duplicates samples are analyzed independently as an indication of gross errors in sampling techniques.

E

ecosystem: The interacting system of a biologic community and its nonliving environment.

effective dose equivalent (EDE): A value used to express the health risk from radiation exposure to a tissue or tissues in terms of an equivalent whole body exposure. It is a normalized value that allows the risk from radiation exposure received by a specific organ or part of the body

to be compared with the risk due to whole body exposure. It is equal to the sum of products of the dose to each tissue or organ multiplied by their respective weighting factor for each tissue or organ. The weighting factor is used to put the dose to the different tissue and organs on an equal basis in terms of health risk. The EDE is expressed in units of rem or sieverts.

effluent: Any liquid discharged to the environment, including stormwater runoff at a site or facility.

effluent waste: Treated wastewater leaving a treatment facility.

electrometallurgical treatment: The process of treating spent nuclear fuel using metallurgical techniques.

environment: Includes water, air, and land and the interrelationship that exists among and between water, air, and land and all living things.

environmental indicators: Animal species that are particularly susceptible to decline related to changes, either physical or chemical, in their environment.

environmental media: Includes air, groundwater, surface water, soil, flora, and fauna.

environmental monitoring: Sampling for contaminants in air, water, sediments, soils, agricultural products, plants, and animals, either by direct measurement or by collection and analysis of samples. It is a combination of two distinct activities (effluent monitoring and environmental surveillance) that together provide information on the health of an environment.

equipment blank: Samples prepared by collecting uncontaminated water passed over or through the sampling equipment. This type of blank sample is normally collected after the sampling equipment has been used and subsequently cleaned. An equipment blank is used to detect contamination introduced by the sampling equipment either directly or through improper cleaning.

exposure: The interaction of an organism with a physical or chemical agent of interest. Examples of such agents are radiation (physical) and carbon tetrachloride (chemical).

exposure pathway: Refers to the mechanism through which an organism may be exposed to a contaminant. An example is the surface water pathway, whereby an organism may be exposed to a contaminant through the consumption of surface water containing that contaminant.

extremely hazardous chemicals: An extremely hazardous substance listed in the appendices to 40 CFR Part 355, “Emergency Planning and Notification.”

F

fallout: Radioactive material made airborne as a result of aboveground nuclear weapons testing that has been deposited on the Earth's surface.

field blank: A blank used to provide information about contamination that may be introduced

during sample collection, storage, and transport. A known uncontaminated sample, usually deionized water, is exposed to ambient conditions at the sampling site and subjected to the same analytical or measurement process as other samples.

fissile material: Material capable of starting and sustaining a nuclear chain reaction.

fission: The nuclear reaction resulting from the splitting of atoms.

flood plain: Lowlands bordering a river that are subject to flooding. Flood plains are comprised of sediments carried by rivers and deposited on land during flooding.

G

gamma radiation: A form of electromagnetic radiation, like radio waves or visible light, but with a much shorter wavelength. It is more penetrating than alpha or beta radiation, capable of passing through dense materials such as concrete.

gamma spectroscopy: An analysis technique that identifies specific radionuclides that emit gamma radiation. It measures the particular energy of a radionuclide's gamma radiation emissions. The energy of these emissions is unique for each radionuclide, acting as a fingerprint to identify a specific radionuclide.

gross alpha activity: The total radioactivity due to alpha particle emission as inferred from measurements on a dry sample. See alpha radiation.

gross beta activity: The total radioactivity due to beta particle emission as inferred from measurements on a dry sample. See beta radiation.

groundwater: Water found beneath the surface of the ground (subsurface water). Groundwater usually refers to a zone of complete water saturation containing no air.

H

half-life: The amount of time it takes for the radioactivity of a radioactive material to be reduced by half.

halogenated: A compound containing one or more of the halogen elements (fluorine, chlorine, bromine, iodine).

hazardous air pollutant: See hazardous substance.

hazardous chemical: Any hazardous chemical as defined under 29 CFR 1910.1200, (Hazard Communications), and 40 CFR 370.2 (Definitions).

hazardous materials: Materials considered dangerous to people or the environment.

hazardous substance: Any substance, including any isomers and hydrates, as well as any solutions and mixtures containing these substances, designated as such under Section

311(b)(2)(A) of the *Clean Water Act*; any toxic pollutant listed under Section 307(a) of the *Clean Water Act*; any element, compound, mixture, solution, or substance designated pursuant to Section 102 of the *Comprehensive Environmental Response, Compensation and Liability Act*; any hazardous waste having the characteristics identified under or listed pursuant to Section 3001 of the *Solid Waste Disposal Act*; any hazardous air pollutant listed under Section 112 of the *Clean Air Act*; and any imminently hazardous chemical substance or mixture with respect to which the U.S. Environmental Protection Agency Administrator has taken action pursuant to Section 7 of the *Toxic Substances Control Act*. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated in the first paragraph, and does not include natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas).

hazardous waste: A waste that is listed in the tables of 40 CFR 261 (Identification and Listing of Hazardous Waste) or that exhibits one or more of four characteristics (corrosiveness, reactivity, flammability, and toxicity) above a predefined value.

high-level radioactive waste: Waste material resulting from the reprocessing of spent nuclear fuel, including both liquid and solid materials containing enough radioactivity to require permanent isolation from the environment.

hot spot: 1. In environmental surveillance, a localized area of contamination (or higher contamination) in an otherwise uncontaminated area. 2. In geology, a stationary, long-lived source of magma coming up through the mantle to the earth's surface. The hot spot does not move, but remains in a fixed position. As the crust of the earth moves over a hot spot, volcanic eruptions occur on the surface.

I

Idaho National Engineering and Environmental Laboratory (INEEL): Known locally as the Site or the INEEL, it was created as the National Reactor Testing Station by the U.S. Atomic Energy Commission in 1949 to build and test nuclear power reactors. The Testing Station was renamed the Idaho National Engineering Laboratory in 1974 and Idaho National Engineering and Environmental Laboratory in January 1997. The INEEL, has recently been renamed the Idaho National Laboratory. Over the life of the INEEL, an assembly of 52 reactors, associated research centers, and waste handling areas have been constructed and tested.

infiltration: The process of water soaking into a soil or rock.

influent waste: Raw or untreated wastewater entering a treatment facility.

inorganic: Relating to or belonging to the class of compounds not having a carbon basis; hydrochloric and sulfuric acids are called inorganic substances.

ionizing radiation: Any radiation capable of displacing electrons from atoms or molecules, thereby producing ions. Some examples are alpha, beta, gamma, x-rays, neutrons, and light. High doses of ionizing radiation may produce severe skin or tissue damage.

isopleth: A line drawn on a map connecting points having the same numerical value of some variable (in this instance the dispersion coefficient).

isotope: Two or more forms of an element having the same number of protons in the nucleus (or the same atomic number), but having different numbers of neutrons in the nucleus (or different atomic weights). Isotopes of single element possess almost identical chemical properties. An example of isotopes are plutonium-238, plutonium-239, plutonium-240, and plutonium-241, each acts chemically like plutonium but have 144, 145, 146, and 147 neutrons, respectively.

L

laboratory blank: A sample that is intended to contain none of the analytes of interest, usually deionized water, that is subjected to the same analytical or measurement process as other samples to establish a zero baseline or background value. Laboratory blanks are run before and after regular samples are analyzed to measure contamination that may have been introduced during sample handling preparation and/or analysis. Laboratory blanks are sometimes used to adjust or correct routine analytical results.

liquid effluent: A liquid discharged from a treatment facility.

M

Management and Operating (M&O): The primary contractor responsible for management (human resources, staffing, and budget control) and day-to-day operations (system operations, building maintenance, process monitoring, and trash removal) of a facility or site.

matrices/matrix/media: Refers to the physical form (solid, liquid, or gas) and/or composition (soil, filter, groundwater, air) of a sample.

maximally exposed individual (MEI): A hypothetical member of the public whose location and living habits, tend to maximize his or her radiation dose, resulting in a dose higher than that received by other individuals in the general population.

millirem (mrem): A unit of radiation dose that is equivalent to one one-thousandth of a rem.

millisievert (mSv): The International System of Units (SI) for radiation dose and effective dose equivalent. The SI equivalent of the millirem (1 millisievert = 100 millirem).

minimum detection concentration (MDC): The lowest concentration to which an analytical parameter can be measured with certainty by the analytical laboratory performing the measurement. While results below the MDC are sometimes measurable, they represent values that have a reduced statistical confidence associated with them (less than 95 percent confidence).

multi-media: Covering more than one environmental media (e.g., an inspection that reviews groundwater, surface water, liquid effluent, and airborne effluent data).

N

natural background radiation: Radiation from natural sources to which people are exposed throughout their lives. Natural background radiation is comprised of several sources, the most important of which are:

- Cosmic radiation: Radiation from outer space (primarily the sun).
- Terrestrial radiation: Radiation from radioactive materials in the crust of the earth.
- Inhaled radionuclides: Radiation from radioactive gasses in the atmosphere, primarily radon-222.

natural resources: Land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States, any state or local government, any foreign government, or any Indian tribe.

noble gas: Any of the chemically inert gaseous elements of the helium group in the periodic table.

noncommunity water system: A public water system that is not a community water system. A noncommunity water system is either a transient noncommunity water system or a nontransient noncommunity water system.

nontransient noncommunity water system: A public water system that is not a community water system and that regularly serves at least 25 of the same persons over six months per year. These systems are typically schools, offices, churches, factories, etc.

O

organic: Relating or belonging to the class of chemical compounds having a carbon basis; hydrocarbons are organic compounds.

P

perched water well: A well that obtains its water from a water body above the water table.

performance evaluation sample: Performance evaluation samples are prepared by adding a known amount of a U.S. Environmental Protection Agency reference compound to reagent water and submitting them to the analytical laboratory as a field duplicate or field blank sample. A performance evaluation sample is used to test the accuracy and precision of a laboratory's analytical method.

pH: A measure of hydrogen ion activity. A low pH (0-7) indicates an acid condition; a high pH (7-14) indicates a basic condition. A pH of 7 indicates neutrality.

phytoremediation: The process of using various plants to extract contaminants from soil and water.

playa: A depression that is periodically inundated with water and will retain such water over time. An intermittent or seasonal water body.

PM_{10}: Particles with an aerodynamic diameter less than or equal to 10 microns.

pollutants: Pollutant or contaminant as defined by Section 101(33) of the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA), shall include, but not be limited to, any element, substance, compound, or mixture, including disease-causing agents, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations, in such organisms or their offspring. The term does not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance under Section 101(14) (A) through (F) of CERCLA, nor does it include natural gas, liquefied natural gas, or synthetic gas of pipeline quality (or mixtures of natural gas and such synthetic gas). For purposes of the National Oil and Hazardous Substances Pollution Contigency Plan, the term pollutant or contaminant means any pollutant or contaminant that may present an imminent and substantial danger to public health or welfare of the United States.

plume: A body of contaminated groundwater or polluted air flowing from a specific source. The movement of a groundwater plume is influenced by such factors as local groundwater flow patterns, the character of the aquifer in which groundwater is contained, and the density of contaminants. The movement of an air contaminant plume is influenced by the ambient air motion, the temperatures of the ambient air and of the plume, and the density of the contaminants.

polychlorinated biphenyl: A polychlorinated biphenyl is any chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances, that contain such substance.

pollution: Any hazardous or radioactive material naturally occurring or added to an environmental media, such as air, soil, water, or vegetation.

precision: A measure of mutual agreement among individual measurements of the same property. Precision is most often seen as a standard deviation.

public water system: A system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. Includes any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system and any collection or pretreatment storage facilities not under such control that are used primarily in connection with such system. Does not include any special irrigation district. A public water system is either a community water system or a noncommunity water system.

purgeable organic compound: An organic compound that has a low vaporization point (volatile).

Q

quality assurance: Those planned and systematic actions necessary to provide adequate confidence that a facility, structure, system, or component will perform satisfactorily and safely in service. Quality assurance includes quality control. If quality is the degree to which an item or process meets or exceeds the user's requirements, then quality assurance is those actions that provide the confidence that quality was in fact achieved.

quality control: Those actions necessary to control and verify the features and characteristics of a material, process, product, service, or activity to specified requirements. The aim of quality control is to provide quality that is satisfactory, adequate, dependable, and economic.

R

radioactivity: The spontaneous transition of an atomic nucleus from a higher energy to a lower energy state. This transition is accompanied by the release of a charged particle or electromagnetic waves from the atom. Also known as activity.

radioactive decay: The process of a material giving off particles to reach a stable state.

radioecology: The study of the behavior and the effects of radioactive materials on the environment. Also includes the use of radioisotopes to study the structure and function of ecosystems and their component parts.

radionuclide: A type of atom that happens to emit energy in the form of photons or particles (radiation) during transformation.

radiotelemetry: The tracking of animal movements through the use of a radio transmitter attached to the animal of interest.

raw water hardness: Equivalent to the carbonate concentration of water.

reagent blank: A sample of any reagent used for sample preparation subjected to the same analytical or measurement process as a normal sample. A reagent blank is used to show that the reagent used in sample preparation does not contain any of the analytes of interest.

rehabilitation: The planting of a variety of plants in an effort to restore an area's plant community diversity after a loss (e.g., after a fire).

relative percent difference: A measure of variability adjusted for the size of the measured values. It is used only when the sample contains two observations, and it is calculated by the equation:

$$RPD = \frac{(x_1 - x_2)}{0.5x(x_1 - x_2)} \times 100$$

where X_1 and X_2 are duplicate sample measurement results.

release: Spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing of a hazardous substance, pollutant, or contaminant into the environment.

rem: Stands for roentgen equivalent man, a unit by which human radiation dose is assessed. This is a risk-based value used to estimate the potential health effects to an exposed individual or population.

reportable quantity: Any *Comprehensive Environmental Response, Compensation, and Liability Act* hazardous substance, the reportable quantity for which is established in Table 302.4 of 40 CFR Part 302 (Designation, reportable quantities, and notification), the discharge of which is a violation of federal statutes and requires notification of the regional U.S. Environmental Protection Agency administrator.

representativeness: A measure of a laboratory's ability to produce data that accurately and precisely represent a characteristic of a population, a parameter variation at a sampling point, a process condition, or an environmental condition.

reprocessing: The process of treating spent nuclear fuel for the purpose of recovering fissile material.

resuspension: Windblown reintroduction to the atmosphere of material originally deposited onto surfaces from a particular source.

rhyolite: A fine grained light-brown to gray igneous rock.

risk assessment: The identification and quantification of the risk resulting from a specific use or occurrence of a chemical, taking into account the possible harmful effects on individual people or society of using the chemical in the amount and manner proposed and all the possible routes of exposure. Quantification ideally requires the establishment of dose-effect and dose-response relationships in likely target individuals and populations.

S

sediment distribution coefficient: The ratio of the mass of solute species absorbed or precipitated on the sediment to the solute concentration in water.

shielding: The material or process used for protecting workers, the public, and the environment from exposure to radiation.

sievert (Sv): A unit for assessing the risk of human radiation dose, used internationally. One sievert is equal to 100 rem.

sink: Similar to a playa with the exception that it rapidly infiltrates any collected water.

Snake River Plain Aquifer: One of the largest groundwater reserves in the United States, it lies beneath the Snake River plain. Water comes from rivers surrounding the plain (the Snake River, Henry's Fork, Big Lost River, Little Lost River, Birch Creek, and Camas Creek) and from rain

and snow that soaks down through the soils and rock. This water moves through the cracks in the rocks of the Snake River plain and flows out into the Snake River in the Thousand Springs area between Twin Falls and King Hill.

Snake River Plain: A wide (64 to 12 km [40 to 80 mi]) plain of rolling topography extended some 308 km (191 mi) from Ashton to King Hill/Twin Falls. The plain was formed by repeated volcanic eruptions that were the result of the passage of a geologic hot spot beneath the Earth's crust.

sodium absorption ratio (SAR): A measure of the concentration of sodium in soils relative to that of calcium and magnesium. Soils with a high SAR (12 to 15) have low permeability and are unsuitable for plant growth.

$$SAR = \frac{[NA^{+}]}{\sqrt{\frac{1}{2}([Ca^{2+}] = [Mg^{2+}])}}$$

spent nuclear fuel: Uranium metal or oxide and its metal container that have been used to power a nuclear reactor. It is highly radioactive and typically contains fission products, plutonium, and residual uranium.

split sample: A single sample, usually divided by the analytical laboratory, split into two separate samples. Each sample is prepared and analyzed independently as an indication of analytical variability and comparability.

spreading areas: At the INEEL, a series of interconnected low areas that are used for flood control by dispersing and evaporating/infiltrating water from the Big Lost River.

stabilization: The planting of rapid growing plants for the purpose of holding bare soil in place.

standards: A sample containing a known quantity of various analytes. Standards may be prepared and certified by commercial vendors, but they must have traceability to the National Institute of Standards and Technology.

storm water: Water produced by the interaction of precipitation event and the physical environment (buildings, pavement, ground surface).

surface water: Water exposed at the ground surface, usually constrained by a natural or human-made channel (streams, rivers, lakes, oceans).

surveillance: Parameters monitored to observe trends but not required by a permit or regulation.

T

thermoluminescent dosimeter (TLD): A device used to measure radiation dose to occupational workers or radiation levels in the environment. A dosimeter made of one or more lithium fluoride chips that measure cumulative exposure to ionizing radiation. Lithium fluoride absorbs the energy of radiation and releases it as light when heated.

threshold planning quantity: The quantity of a material listed in Appendices A and B of 40 CFR 355 (Emergency Planning and Notification) that must be present at a site for use in emergency planning preparations.

total organic carbon: A measure of the total organic carbon molecules present in a sample. It will not identify a specific constituent (e.g., benzene), but will detect the presence of a carbon-bearing molecule.

total organic halogens: A measure of the total organic halogenated compounds in a sample. Will not detect a specific constituent (e.g., trichloroethylene), but will detect the presence of a halogenated compound.

toxic chemicals: Chemicals that can have toxic effects on the public or environment above listed quantities. See also hazardous chemical.

traceability: The ability to trace history, application, or location of a sample standard and like items or activities by means of recorded identification.

transient noncommunity water system: A water system that is not a community water system, and serves as nonresident persons per day for six months or less per year. These systems are typically restaurants, hotels, large stores, etc.

transuranic waste: Waste containing more than 100 nanocuries of alpha-emitting transuranic isotopes (radionuclide isotopes with atomic numbers greater than uranium [92]) per gram of waste with half-lives greater than 20 years.

transuranic (TRU): Elements on the periodic table with an atomic number greater than uranium (> 92). Common isotopes of transuranic elements are neptunium-239, americium-241, and plutonium-238.

tritium: A radioactive isotope of hydrogen, having three times the mass of ordinary hydrogen.

U

U.S. Department of Energy (DOE): The federal agency that sponsors energy research and regulates nuclear materials used for weapons production. DOE has responsibility for the national laboratories and the science and research conducted at these laboratories, including the INEEL.

V

vadose zone: That part of the subsurface between the ground surface and the water table.

W

Waste Isolation Pilot Plant (WIPP): Located in Carlsbad, New Mexico, this is the permanent repository for government-owned low-level transuranic waste.

water quality parameters: Parameters that are commonly measured to determine the quality of a water body/sample (i.e., specific conductivity, pH, temperature, dissolved oxygen content).

weighting factor: A factor that, when multiplied by the dose equivalent delivered to a body organ or tissue, yields the equivalent risk due to a uniform radiation exposure of the whole body.

wetlands: Those areas that are inundated or saturated by surface- or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally included playa lakes, swamps, marshes, bogs, and similar areas such as sloughs, prairie potholes, wet meadows, prairie river overflows, mudflats, and natural ponds.