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Table 2-1. Invasive Species Identified in the Watts Bar Reservoir Area
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Type	Emory River	Lower Clinch River[1]	Tennessee River
Freshwater jellyfish	*Craspedacusta sowerbyi*	Exotic	X	X	X
Water flea	*Daphnia lumholtzi*	Exotic			X
Rusty crayfish	*Orconectes rusticus*	NT	X		X
American shad	*Alosa sapidissima*	NT			
Brook stickleback	*Culaea inconstans*	NT		X	
Common carp	*Cyprinus carpio*	Exotic	X	X	X
Northern pike	*Esox lucius*	NT			X
Eastern mosquitofish	*Gambusia holbrooki*	NT			X
Redbreast sunfish	*Lepomis auritus*	NT	X	X	X
Ide	*Leuciscus idus*	Exotic		X	
Redeye bass	*Micropterus coosae*	NT	X		
Wiper	*Morone chrysops x M. saxatalis*	NH			X
Striped bass	*Morone saxitalis*	NT			X
Rainbow trout	*Orcorhynchus mykiss*	NT	X	X	X
Yellow perch	*Perca flavescens*	NT	X		X
Brown trout	*Salmo trutta*	Exotic		X	
Saugeye	*Sander canadensis x vitreus*	NH		X	X
Tench	*Tinca tinca*	Exotic			X
Asian clam	*Corbicula fluminea*	Exotic	X	X	X
Zebra mussel	*Dreissena polymorpha*	Exotic			X
Alligatorweed	*Alternanthera philoxeroides*	Exotic			X
Brazilian waterweed	*Egeria densa*	Exotic			X
Hydrilla	*Hydrilla verticillata*	Exotic	X		
Purple loosestrife	*Lythrum salicaria*	Exotic			X
Marsh dewflower, aneilima, Asian spiderwort	*Murdannia keisak*	Exotic		X	X
Eurasian water-milfoil	*Myriophyllum spicatum*	Exotic		X	X
Curly pondweed	*Potamogeton crispus*	Exotic		X	X

Source: Tennessee Aquatic Nuisance Species Management Plan (TWRA 2007).

[1] = Lower Clinch River defined as miles 0.0 to 23.1.

NT = Native transplant.

NH = Native hybrid.

X = Present in river.

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Table 2-2. Threatened and Endangered Fish Species in the Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Federal Status	State Status
Tangerine darter	*Percina aurantiaca*	NL	In need of management
Blue sucker	*Cycleptus elongates*	NL	Threatened
Flame chub	*Hemitremia flammea*	NL	In need of management
Snail darter	*Percina tanasi*	Threatened	Threatened
Spotfin chub	*Cyprinella monacha*	Threatened	Threatened
Tennessee dace	*Phoxinus tennesseensis*	NL	In need of management

Source: Watts Bar Reservoir Land Management Plan, Table 3.3-3 (TVA 2009a).
NL= Not listed.

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Table 2-3. Threatened and Endangered Mollusks Species in the Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Federal Status	State Status
Mussels			
Pink mucket	*Lampsilis abrupta*	Endangered	Endangered
Alabama lampmussel	*Lampsilis virescens*	Endangered	Endangered
Rough pigtoe	*Pleurobema plenum*	Endangered	Endangered
Dromedary pearlymussel	*Dromus dromas*	Endangered	Endangered
Fanshell	*Cyprogenia stegaria*	Endangered	Endangered
Pyramid pigtoe	*Pleurobema rubrum*	NL	In need of management
Fine-rayed pigtoe	*Fusconaia cuneolus*	Endangered	Endangered
Purple bean	*Villosa perpurpurea*	Endangered	Endangered
Orange-foot pimpleback	*Plethobasus cooperianus*	Endangered	Endangered
Snails			
Anthony's river snail	*Athearnea anthonyi*	Endangered	Endangered

Source: Watts Bar Reservoir Land Management Plan, Table 3.3-3 (TVA 2009a).
NL = Not listed.

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Adam's needle	*Yucca flaccida*			X
Agave	*Manfreda virginica*	X	X	
Alabama lip fern	*Cheilanthes alabamensis*	X		
Allegheny brook saxifrag	*Boykinia aconitifolia*		X	
Allegheny foam flower	*Tiarella cordifolia*		X	X
Allegheny hawkweed	*Hieracium paniculatum*			X
Allegheny monkey flower	*Mimulus ringens*	X		X
Allegheny spurge	*Pachysandra procumbens*			X
Alligator weed	*Alternanthera philoxeroides*		X	
Alternate leaf dogwood	*Cornus alternifolia*			X
America blue hearts	*Buchnera americana*		X	X
American alumroot	*Heuchera americana*	X	X	X
American basswood	*Tilia americana var. heterophylla*		X	X
American beech	*Fagus grandifolia*		X	X
American bellflower	*Campanula americana*			X
American bittersweet	*Celastrus scandens*		X	X
American bur reed	*Sparganium americanum*	X		
American burnweed	*Erechtites hieraciifolia*			X
American chestnut	*Castanea dentata*		X	X
American clinging fern	*Lygodium palmatum*		X	X
American dog violet	*Viola conspersa*			X
American eelgrass	*Vallisneria americana*	X		
American elm	*Ulmus americana*			X
American false pennyroyal	*Hedeoma pulegioides*			X
American ginseng	*Panax quinquefolius*			X
American hazelnut	*Corylus americana*		X	X
American hogpeanut	*Amphicarpaea bracteata*	X	X	X
American holly	*Ilex opaca*		X	
American lily of the valley	*Convallaria majuscula*			X
American lopseed	*Phryma leptostachya*		X	X
American plum	*Prunus americana*	X		X
American pokeweed	*Phytolacca americana*	X		X
American spikenard	*Aralia racemosa*		X	
American sycamore	*Platanus occidentalis*		X	X
American water hoarhound	*Lycopus americanus*	X		X
American water plantain	*Alisma subcordatum*			X
American waterwillow	*Justicia americana*		X	X
American witch hazel	*Hamamelis virginiana*		X	X
Amur honeysuckle	*Lonicera maackii*	X		
Angularleaf milkvine	*Matelea gonocarpos*			X
Anisescented goldenrod	*Solidago odora*		X	X
Annual bastard cabbage	*Rapistrum rugosum*			X
Annual blue grass	*Poa annua*		X	
Annual marsh elder	*Iva annua*	X		
Appalachian barren strawberry	*Waldsteinia fragarioides*		X	X
Appalachian blazing star	*Liatris squarrulosa*		X	X
Appalachian bugbane	*Cimicifuga rubifolia*			X
Appalachian bunch flower	*Melanthium parviflorum*		X	X

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Appalachian false white goat's beard	*Astilbe biternata*		X	X
Appalachian polypody	*Polypodium appalachianum*		X	X
Appalachian sandwort	*Arenaria glabra*		X	
Apple of Peru	*Nicandra physalodes*		X	X
Aromatic aster	*Aster oblongifolius*			X
Arrowfeather threeawn grass	*Aristida purpurascens*			X
Arrowhead rattlebox	*Crotalaria sagittalis*			X
Arrowleaf tearthumb	*Polygonum sagittatum*	X		X
Arrowleaf violet	*Viola sagittata var. sagittata*		X	
Arrowwood	*Viburnum dentatum*		X	X
Ashy hydrangea	*Hydrangea cinerea*			X
Ashy sunflower	*Helianthus mollis*			X
Atlantic goldenrod	*Solidago arguta var. caroliniana*		X	X
Atlantic pigeonwing	*Clitoria mariana*		X	
Autumn coralroot	*Corallorhiza odontorhiza*	X	X	
Autumn goldenrod	*Solidago sphacelata*		X	X
Axilflower	*Mecardonia acuminata*		X	X
Azure blue; quaking ladies	*Houstonia caerulea*	X		X
Bagpod	*Glottidium vesicarium*	X		
Bailey's sedge	*Carex baileyi*			X
Bald spikerush	*Eleocharis erythropoda*			X
Barnyard grass	*Echinochloa crusgalli*			X
Bastard toadflax	*Comandra umbellata*		X	
beaked agrimony	*Agrimonia rostellata*		X	X
Beaked cornsalad	*Valerianella radiata*			X
Beaked hazelnut	*Corylus cornuta*		X	
Beaked panic grass	*Panicum anceps*			X
Bearded beggar ticks	*Bidens aristosa*	X	X	X
Bearded shorthusk grass	*Brachyelytrum erectum*		X	X
Bearded skeleton grass	*Gymnopogon ambiguus*			X
Beech drops	*Epifagus virginiana*		X	
Beefsteak plant	*Perilla frutescens*		X	
Bent sedge	*Carex styloflexa*		X	X
Bermuda grass	*Cynodon dactylon*			X
Biennal beeblossum	*Gaura biennis*	X		X
Big bluestem	*Andropogon gerardii*		X	X
Birdfoot deer vetch	*Lotus corniculatus*	X		
Bird's foot violet	*Viola pedata*		X	X
Bitter dock	*Rumex obtusifolius*			X
Bitternut hickory	*Carya cordiformis*			X
Black walnut	*Juglans nigra*	X		X
Blackjack oak	*Quercus marilandica*	X	X	
Black chokecherry	*Aronia melanocarpa*		X	
Black cohosh	*Cimicifuga racemosa*			X
Black gum	*Nyssa sylvatica var. sylvatica*	X		X
Black highbush huckleberry	*Vaccinium fuscatum*			X
Black huckleberry	*Gaylussacia baccata*		X	X
Black locust	*Robinia pseudoacacia*			X

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Black medic	*Medicago lupulina*		X	X
Black oak	*Quercus velutina*	X	X	X
Black raspberry	*Rubus occidentalis*	X		X
Black willow	*Salix nigra*			X
Blackberry lily	*Belamcanda chinensis*	X		
Black-edged sedge	*Carex nigromarginata*		X	X
Black-eyed Susan	*Rudbeckia hirta var. hirta*	X		X
Black-eyed Susan	*Rudbeckia hirta var. pulcherrima*			X
Blackseed plantain	*Plantago rugelii*			X
Black-stemmed spleenwort	*Asplenium resiliens*	X	X	X
Bladdernut	*Staphylea trifolia*		X	X
Bloodroot	*Sanguinaria canadensis*		X	X
Bloody butcher	*Trillium recurvatum*	X		
Blue beech	*Carpinus caroliniana*		X	X
Blue cohosh	*Caulophyllum thalictroides*			X
Blue field madder	*Sherardia arvensis*			X
Blue mist flower	*Conoclinium coelestinum*		X	X
Blue sedge	*Carex glaucodea*	X		
Blue skullcap	*Scutellaria lateriflora*	X	X	X
Blue waxweed	*Cuphea viscosissima*			X
Blunt broom sedge	*Carex tribuloides*	X		X
Blunt leaf bedstraw	*Galium obtusum*	X		
Blunt spikerush	*Eleocharis obtusa*	X		X
Bluntleaf waterleaf	*Hydrophyllum canadense*			X
Bluntlobe cliff fern	*Woodsia obtusa*	X	X	X
Bog yelloweyed grass	*Xyris difformis*		X	
Bosc's panic grass	*Dichanthelium boscii*	X	X	X
Bottomland aster	*Aster ontarionis*	X	X	X
Bouncing bet	*Saponaria officinalis*			X
Bowman's root	*Porteranthus trifoliatus*	X	X	X
Boxelder	*Acer negundo*			X
Bracken fern	*Pteridium aquilinum*	X	X	X
Bradley's spleenwort	*Asplenium bradleyi*		X	
Bristle leaf sedge	*Carex eburnea*			X
Bristlewort	*Ranunculus recurvatus*	X		X
Bristly buttercup	*Ranunculus hispidus var. hispidus*	X		X
Bristly buttercup	*Ranunculus hispidus var. nitidus*			X
Bristly greenbriar	*Smilax tamnoides*	X		
Bristly locust	*Robinia hispida*			X
Brittle water nymph	*Najas minor*		X	
Broad beech fern	*Phegopteris hexagonoptera*	X	X	X
Broad leaf arrowhead	*Sagittaria latifolia*	X	X	
Broad loose flower sedge	*Carex laxiflora*	X	X	X
Broadleaf cattail	*Typha latifolia*			X
Broadleaf enchanter's nightshade	*Circaea lutetiana ssp. canadensis*		X	X
Broadleaf rosette grass	*Dichanthelium latifolium*			X
Broadleaf sedge	*Carex platyphylla*		X	
Broadleaf wild leek	*Allium ampeloprasum*			X

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Brome fescue	*Vulpia bromoides*	X		
Broomcorn millet	*Panicum miliaceum*	X		
Broomsedge bluestem	*Andropogon virginicus*		X	X
Brown-eyed Susan	*Rudbeckia triloba*			X
Brownish beak sedge	*Rhynchospora capitellata*		X	X
Buckthorn	*Sideroxylon lycioides*			X
Bue ash	*Fraxinus quadrangulata*	X		X
Buffalo nut	*Pyrularia pubera*		X	X
Bulblet bladder fern	*Cystopteris bulbifera*	X	X	X
Bulbose woodrush	*Luzula bulbosa*		X	X
Bull crown grass	*Paspalum boscianum*	X		X
Bushclover	*Lespedeza bicolor*		X	
Bushy St. Johnswort	*Hypericum densiflorum*	X	X	X
Butler's parsley	*Ammoselinum butleri*	X		X
Butter and eggs	*Linaria vulgaris*	X		
Butterfly weed	*Asclepias tuberosa*	X	X	X
Butterweed	*Senecio glabellus*		X	
Button bush	*Cephalanthus occidentalis*		X	X
Calico aster	*Aster lateriflorus*			X
California bulrush	*Schoenoplectus californicus*		X	
Camphorweed	*Pluchea camphorata*			X
Canada blue grass	*Poa compressa*			X
Canada germander	*Teucrium canadense*			X
Canada goldenrod	*Solidago canadensis var. scabra*		X	X
Canada lettuce	*Lactuca canadensis*			X
Canada licorice root	*Ligusticum canadense*		X	X
Canada lily	*Lilium canadense*			X
Canada serviceberry	*Amelanchier canadensis*	X		
Canada white violet	*Viola canadensis*		X	X
Canada woodnettle	*Laportea canadensis*	X		X
Canadian black snakeroot	*Sanicula canadensis*	X	X	X
Canadian honewort	*Cryptotaenia canadensis*		X	X
Canadian lousewort	*Pedicularis canadensis*		X	X
Canadian summer bluet	*Houstonia canadensis*			X
Canadian clearweed	*Pilea pumila*		X	X
Candyroot	*Polygala nana*		X	
Cankerweed	*Prenanthes serpentaria*			X
Cardinal flower	*Lobelia cardinalis*	X	X	X
Carolina buckthorn	*Rhamnus caroliniana*	X	X	X
Carolina bugbane	*Trautvetteria caroliniensis*		X	X
Carolina crab grass	*Digitaria cognata*			X
Carolina elephant's foot	*Elephantopus carolinianus*		X	X
Carolina foxtail grass	*Alopecurus carolinianus*			X
Carolina geranium	*Geranium carolinianum*	X		X
Carolina hickory	*Carya ovata var. australis*			X
Carolina holly	*Ilex ambigua var. ambigua*			X
Carolina horsenettle	*Solanum carolinense*			X
Carolina leaf-flower	*Phyllanthus caroliniensis*		X	X
Carolina moonseed	*Cocculus carolinus*			X

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Carolina rose	*Rosa carolina*			X
Carolina sedge	*Carex caroliniana*		X	X
Carolina spring beauty	*Claytonia virginica*		X	X
Carolina vetch	*Vicia caroliniana*		X	X
Carolina wild petunia	*Ruellia caroliniensis*	X	X	X
Cat greenbriar	*Smilax glauca*			X
Chaffweed	*Anagallis minima*			X
Cheat grass	*Bromus tectorum*	X	X	X
Cheerful sunflower	*Helianthus x laetiflorus*	X		X
Cherokee sedge	*Carex cherokeensis*		X	
Chestnut oak	*Quercus montana*	X	X	X
Chickasaw plum	*Prunus angustifolia*	X	X	X
Chinese empress tree	*Paulownia tomentosa*			X
Chinese lespedeza	*Lespedeza cuneata*	X		X
Chinese privet	*Ligustrum sinense*	X	X	X
Chinese silvergrass	*Miscanthus sinensis*	X	X	
Christmas fern	*Polystichum acrostichoides*	X	X	X
Churchmouse threeawn grass	*Aristida dichotoma var. dichotoma*	X		X
Cinnamon fern	*Osmunda cinnamomea*		X	
Clammy goosefoot	*Chenopodium pumilio*		X	
Clammy ground cherry	*Physalis heterophylla*		X	
Clasping milkweed	*Asclepias amplexicaulis*		X	X
Clasping Venus looking glass	*Triodanis perfoliata var. perfoliata*		X	X
Climbing false buckwheat	*Polygonum scandens*		X	X
Clustered mountain mint	*Pycnanthemum muticum*		X	
Clustered black snakeroot	*Sanicula odorata*			X
Clustered dock	*Rumex conglomeratus*	X		X
Cockspur hawthorn	*Crataegus crus-galli*			X
Combleaf yellow false foxglove	*Aureolaria pectinata*	X	X	X
Common apple	*Malus pumila*		X	X
Common blue violet	*Viola sororia*		X	X
Common blue wood aster	*Aster cordifolius*	X	X	X
Common boneset	*Eupatorium perfoliatum*		X	
Common chickweed	*Stellaria media ssp. media*			X
Common cinquefoil	*Potentilla simplex var. simplex*	X		X
Common corn cockle	*Agrostemma githago*	X		
Common dittney	*Cunila origanoides*		X	
Common elderberry	*Sambucus canadensis*			X
Common evening primrose	*Oenothera biennis*	X		X
Common gypsyweed	*Veronica officinalis*		X	X
Common milkweed	*Asclepias syriaca*			X
Common moonseed	*Menispermum canadense*	X		X
Common mullein	*Verbascum thapsus*			X
Common ninebark	*Physocarpus opulifolius*			X
Common pear	*Pyrus communis*			X
Common periwinkle	*Vinca minor*		X	X
Common selfheal	*Prunella vulgaris*	X	X	X
Common serviceberry	*Amelanchier arborea*		X	X
Common sheep sorrel	*Rumex acetosella*	X		X

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Common sneezeweed	*Helenium autumnale*	X	X	X
Common spikerush	*Eleocharis palustris*			X
Common St. Johnswort	*Hypericum perforatum*	X		X
Common sunflower	*Helianthus annuus*	X		
Common threesquare	*Schoenoplectus pungens*	X		X
Common velvet grass	*Holcus lanatus*		X	
Common vipers bugloss	*Echium vulgare*			X
Common wheat	*Triticum aestivum*		X	
Common winterberry	*Ilex verticillata*		X	
Common woodrush	*Luzula multiflora*		X	X
Common wormwood	*Artemisia vulgaris*			X
Common yellow oxalis	*Oxalis stricta*	X	X	X
Common yellow rocket	*Barbarea vulgaris*	X		
Compact dodder	*Cuscuta compacta*			X
Coon's tail	*Ceratophyllum demersum*		X	X
Copperleaf	*Acalypha gracilens*			X
Copperleaf	*Acalypha ostryifolia*	X	X	
Copperleaf	*Acalypha rhomboidea*			X
Copperleaf	*Acalypha virginica*	X		X
Coral honeysuckle	*Lonicera sempervirens*			X
Coralberry	*Symphoricarpos orbiculatus*			X
Corn gromwell	*Buglossoides arvensis*			X
Corn speedwell	*Veronica arvensis*			X
Cornel leaf whitetop	*Doellingeria infirma*		X	
Cow oak	*Quercus michauxii*	X		X
Cranefly orchid	*Tipularia discolor*		X	X
Cream avens	*Geum virginianum*	X	X	X
Creeping aster	*Aster surculosus*		X	X
Creeping bent grass	*Agrostis stolonifera*			X
Creeping lespedeza	*Lespedeza repens*		X	X
Crested Iris	*Iris cristata*	X	X	X
Crimson eye rose mallow	*Hibiscus moscheutos ssp. moscheutos*	X		X
Crinkleroot	*Dentaria diphylla*			X
Crooked stem aster	*Aster prenanthoides*	X		
Cross vine	*Bignonia capreolata*		X	X
Cucumber magnolia	*Magnolia acuminata*		X	X
Culver's root	*Veronicastrum virginicum*			X
Cumberland azalea	*Rhododendron cumberlandense*		X	
Cumberland mock orange	*Philadelphus hirsutus*		X	X
Curley top knotweed	*Polygonum lapathifolium*	X		X
Curly dock	*Rumex crispus*	X		X
Curly pondweed	*Potamogeton crispus*			X
Cursed buttercup	*Ranunculus sceleratus*			X
Curtis' threeawn grass	*Aristida dichotoma var. curtissii*	X		
Curtiss' milkwort	*Polygala curtissii*		X	X
Cutleaf coneflower	*Rudbeckia laciniata var. laciniata*			X
Cutleaf evening primrose	*Oenothera laciniata*		X	
Cutleaf geranium	*Geranium dissectum*			X
Cutleaf toothwort	*Dentaria laciniata*			X

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Cypress panic grass	*Dichanthelium dichotomum*	X	X	X
Cypress spurge	*Euphorbia cyparissias*	X		
Dallas grass	*Paspalum dilatatum*			X
Dames rocket	*Hesperis matronalis*		X	X
Dandelion	*Taraxacum officinale*			X
Deadnettle	*Lamium purpureum*			X
Deerberry	*Vaccinium stamineum*			X
Deertongue	*Dichanthelium clandestinum*			X
Dense blazing star	*Liatris spicata*			X
Densetuff hair sedge	*Bulbostylis capillaris*		X	
Deptford pink	*Dianthus armeria*		X	X
Devil's beggar ticks	*Bidens frondosa*			X
Devil's bite	*Liatris scariosa*			X
Devil's darning needles	*Clematis virginiana*			X
Devil's grandmother	*Elephantopus tomentosus*		X	X
Devil's walking stick	*Aralia spinosa*		X	X
Diamond flowers	*Hedyotis nigricans*		X	X
Dimpled trout lily	*Erythronium umbilicatum*			X
Dissected grape fern	*Botrychium dissectum*		X	X
Ditch stonecrop	*Penthorum sedoides*	X	X	X
Dogtooth violet	*Erythronium americanum*		X	X
Doll's eye	*Actaea pachypoda*		X	X
Dotted smartweed	*Polygonum punctatum*	X	X	X
Dovefoot geranium	*Geranium molle*	X		
Downy carrion flower	*Smilax pulverulenta*	X		
Downy danthonia	*Danthonia sericea*	X	X	
Downy lobelia	*Lobelia puberula*		X	
Downy milkpea	*Galactia volubilis*	X	X	X
Downy phlox	*Phlox pilosa*		X	X
Downy yellow false foxglove	*Aureolaria virginica*	X	X	X
Downy yellow violet	*Viola pubescens*			X
Drooping sedge	*Carex prasina*		X	
Dropseed	*Sporobolus asper var. asper*			X
Drummond's dropseed	*Sporobolus asper var. drummondii*			X
Dutchman's pipe	*Aristolochia macrophylla*		X	X
Dward hackberry	*Celtis tenuifolia*		X	
Dwarf chinkapin oak	*Quercus prinoides*			X
Dwarf cinquefoil	*Potentilla canadensis*		X	
Dwarf gentian	*Gentianella quinquefolia*			X
Dwarf larkspur	*Delphinium tricorne*			X
Dwarf snapdragon	*Chaenorhinum minus*		X	X
Dwarf spikerush	*Eleocharis parvula*			X
Dwarf St. Johnswort	*Hypericum mutilum*			X
Earleaf false foxglove	*Agalinis auriculata*			X
Early blue grass	*Poa cuspidata*			X
Early blue violet	*Viola palmata*		X	X
Early buttercup	*Ranunculus fascicularis*	X	X	X
Early goldenrod	*Solidago juncea*			X
Early saxifrage	*Saxifraga virginiensis*	X		X

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Early yellow rocket	*Barbarea verna*		X	X
Eastern blue-eyed grass	*Sisyrinchium atlanticum*			X
Eastern bluestar	*Amsonia tabernaemontana*		X	X
Eastern cottonwood	*Populus deltoides*			X
Eastern daisy fleabane	*Erigeron annuus*			X
Eastern featherbells	*Stenanthium gramineum*	X		
Eastern gama grass	*Tripsacum dactyloides*	X		X
Eastern gray beard tongue	*Penstemon canescens*	X	X	X
Eastern hemlock	*Tsuga canadensis*		X	X
Eastern narrowleaf sedge	*Carex amphibola*	X		X
Eastern prickly gooseberry	*Ribes cynosbati*		X	
Eastern red Bud	*Cercis canadensis*			X
Eastern red cedar	*Juniperus virginiana*	X	X	X
Eastern silver aster	*Aster concolor*		X	X
Eastern smooth beard tongue	*Penstemon laevigatus*	X	X	X
Eastern sweetshrub	*Calycanthus floridus var. floridus*		X	X
Eastern sweetshrub	*Calycanthus floridus var. glaucus*			X
Eastern wahoo	*Euonymus atropurpureus*			X
Eastern woodland sedge	*Carex blanda*		X	
Ebony spleenwort	*Asplenium platyneuron*	X	X	X
Elf orpine	*Diamorpha smallii*		X	
Elliott's bluestem	*Andropogon gyrans*			X
Elmleaf goldenrod	*Solidago ulmifolia*		X	X
Enitreleaf yellow false foxglove	*Aureolaria laevigata*		X	X
Entangled hawthorn	*Crataegus intricata*		X	
Eastern bottlebrush grass	*Elymus hystrix*			X
European privet	*Ligustrum vulgare*	X		X
Evergreen magnolia	*Magnolia grandiflora*	X		
Eyebane	*Chamaesyce nutans*			X
Fairy wand	*Chamaelirium luteum*		X	
Fall panic grass	*Panicum dichotomiflorum*		X	X
Fall phlox	*Phlox paniculata*			X
False boneset	*Brickellia eupatorioides*		X	X
False daisy	*Eclipta prostrata*			X
False dandelion	*Pyrrhopappus carolinianus*		X	X
False hop sedge	*Carex lupuliformis*	X		
False spotted St. Johnswort	*Hypericum pseudomaculatum*		X	X
False teeth skullcap	*Scutellaria pseudoserrata*			X
Fan club moss	*Diphasiastrum digitatum*	X		X
Fancy fern	*Dryopteris intermedia*		X	X
Farkleberry	*Vaccinium arboreum*		X	X
Fescue sedge	*Carex festucacea*	X		X
Few flowered nut rush	*Scleria pauciflora*		X	
Fewleaf sunflower	*Helianthus occidentalis*			X
Fibrous root sedge	*Carex communis*		X	
Field clover	*Trifolium campestre*			X
Field pansy	*Viola bicolor*		X	X
Field paspalum	*Paspalum laeve*	X		X
Field pepperweed	*Lepidium campestre*	X	X	

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Field thistle	*Cirsium discolor*			X
Fire pink	*Silene virginica*		X	X
Five angled dodder	*Cuscuta pentagona*		X	X
Flat top goldentop	*Euthamia graminifolia*			X
Flaxleaf whitetop aster	*Aster linariifolius*			X
Florida paspalum	*Paspalum floridanum*			X
Flowering dogwood	*Cornus florida*		X	X
Flowering spurge	*Euphorbia corollata*		X	X
Fluxweed	*Isanthus brachiatus*	X	X	X
Fly poison	*Amianthium muscaetoxicum*	X		X
Forked bluecurls	*Trichostema dichotomum*		X	X
Fourleaf milkweed	*Asclepias quadrifolia*	X	X	
Fowl manna grass	*Glyceria striata*		X	X
Fox sedge	*Carex vulpinoidea*	X		X
Foxtail bristle grass	*Setaria italica*			X
Fragrant bedstraw	*Galium triflorum*	X	X	X
Fragrant flat sedge	*Cyperus odoratus*			X
Fragrant sumac	*Rhus aromatica*			X
Frank's sedge	*Carex frankii*		X	X
French grass	*Orbexilum onobrychis*	X		X
French mulberry	*Callicarpa americana*		X	
Fringed loosestrife	*Lysimachia ciliata*			X
Fringed sedge	*Carex crinita*	X	X	X
Fringeleaf wild petunia	*Ruellia humilis*	X	X	X
Frost grape	*Vitis vulpina*		X	X
Frosted hawthorn	*Crataegus pruinosa*			X
Fuller's teasel	*Dipsacus fullonum*			X
Galax	*Galax urceolata*			X
Gall of the earth	*Prenanthes trifoliolata*		X	
Gattinger's false foxglove	*Agalinis gattingeri*		X	
Gattinger's panic grass	*Panicum gattingeri*			X
Gay wings	*Polygala paucifolia*		X	X
Giant cut grass	*Zizaniopsis miliacea*		X	
Giant goldenrod	*Solidago gigantea*			X
Giant ironweed	*Vernonia gigantea*			X
Giant ragweed	*Ambrosia trifida*			X
Giant reed grass	*Arundo donax*		X	
Giant river cane	*Arundinaria gigantea ssp. gigantea*			X
Glade fern	*Diplazium pycnocarpon*	X		
Globe beaksedge	*Rhynchospora recognita*		X	
Globe flat sedge	*Cyperus echinatus*		X	
Glomerate sedge	*Carex aggregata*	X		
Goat's beard	*Aruncus dioicus*		X	X
Goatsbeard	*Tragopogon dubius*			X
Golden club	*Orontium aquaticum*			X
Golden eye saxifrage	*Saxifraga careyana*		X	X
Golden ragwort	*Senecio aureus*			X
Golden tickseed	*Coreopsis tinctoria*		X	X
Goldenseal	*Hydrastis canadensis*			X

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Goldie's Wood fern	*Dryopteris goldiana*			X
Goosegrass	*Eleusine indica*			X
Granite gooseberry	*Ribes curvatum*		X	
Grassleaf rush	*Juncus marginatus*		X	X
Gray goldenrod	*Solidago nemoralis*		X	X
Gray's sedge	*Carex grayi*			X
Great blue lobelia	*Lobelia siphilitica*	X		X
Great indian plantain	*Arnoglossum muehlenbergii*			X
Great plains flat sedge	*Cyperus lupulinus*		X	
Great yellow wood sorrel	*Oxalis grandis*		X	
Greater bladder sedge	*Carex intumescens*		X	X
Greater marsh St. John's wort	*Triadenum walteri*			X
Greater periwinkle	*Vinca major*			X
Greater straw sedge	*Carex normalis*			X
Greater tickseed	*Coreopsis major*			X
Greater yellow lady's slipper	*Cypripedium pubescens*		X	
Green adder's mouth orchid	*Malaxis unifolia*		X	X
Green antelophorn	*Asclepias viridis*		X	
Green arrow arum	*Peltandra virginica*	X		
Green ash	*Fraxinus pennsylvanica*	X		X
Green bristle grass	*Setaria viridis var. major*			X
Green bristle grass	*Setaria viridis var. viridis*			X
Green bulrush	*Scirpus atrovirens*	X	X	X
Green carpetweed	*Mollugo verticillata*	X		X
Green comet milkweed	*Asclepias viridiflora*	X	X	X
Green dragon	*Arisaema dracontium*			X
Green fringed orchid	*Platanthera lacera*		X	
Green violet	*Hybanthus concolor*	X	X	X
Grooved flax	*Linum sulcatum*			X
Ground nut	*Apios americana*	X	X	X
Ground pine	*Lycopodium obscurum*		X	X
Hairy alumroot	*Heuchera villosa var. villosa*	X	X	X
Hairy angelica	*Angelica venenosa*	X		X
Hairy bedstraw	*Galium pilosum*		X	X
Hairy bittercress	*Cardamine hirsuta*		X	X
Hairy buttercup	*Ranunculus sardous*	X		
Hairy chervil	*Chaerophyllum tainturieri*			X
Hairy crab grass	*Digitaria sanguinalis*			X
Hairy forked nailwort	*Paronychia fastigiata*		X	X
Hairy goldenrod	*Solidago hispida*		X	
Hairy joint meadow parsnip	*Thaspium barbinode*		X	X
Hairy leaf-cup	*Smallanthus uvedalius*		X	X
Hairy lespedeza	*Lespedeza hirta*	X	X	X
Hairy lip fern	*Cheilanthes lanosa*	X	X	
Hairy phlox	*Phlox amoena*	X	X	X
Hairy seed paspalum	*Paspalum pubiflorum*		X	X
Hairy skullcap	*Scutellaria elliptica var. elliptica*		X	
Hairy skullcap	*Scutellaria elliptica var. hirsuta*		X	X
Hairy small leaf tick trefoil	*Desmodium ciliare*		X	X

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Hairy sunflower	*Helianthus hirsutus*	X	X	X
Hairy white old field aster	*Aster pilosus var. pilosus*	X		X
Hairy wild rye	*Elymus villosus*			X
Hairy woodland brome grass	*Bromus pubescens*		X	X
Hairy woodrush	*Luzula acuminata*			X
Halberd-leaf yellow violet	*Viola hastata*		X	X
Harper's three-part violet	*Viola tripartita var. glaberrima*		X	X
Harvest bells	*Gentiana saponaria*			X
Harvest lice	*Agrimonia parviflora*	X		X
Hayscented fern	*Dennstaedtia punctilobula*		X	X
Heart shaped peppervine	*Ampelopsis cordata*	X		X
Heartleaf hedge nettle	*Stachys nuttallii*		X	X
Heavy sedge	*Carex gravida*	X		
Hedge false bindweed	*Calystegia sepium*		X	X
Hedgehog woodrush	*Luzula echinata*		X	X
Heller's cudweed	*Gnaphalium helleri*			X
Heller's rosette grass	*Dichanthelium oligosanthes*	X		X
Helmet flower	*Scutellaria integrifolia*	X	X	X
Henbit	*Lamium amplexicaule*			X
Highbush huckleberry	*Vaccinium corymbosum*		X	X
Highland doghobble	*Leucothoe fontanesiana*		X	X
Hirstue sedge	*Carex complanata*	X	X	X
Hoary puccoon	*Lithospermum canescens*			X
Hoary skullcap	*Scutellaria incana var. incana*		X	X
Hoary skullcap	*Scutellaria incana var. punctata*		X	X
Hoary tick trefoil	*Desmodium canescens*			X
Honey locust	*Gleditsia triacanthos*	X	X	X
Honeyvine	*Cynanchum laeve*			X
Hop sedge	*Carex lupulina*	X		X
Hophornbeam	*Ostrya virginiana*		X	X
Hornleaf river weed	*Podostemum ceratophyllum*	X		
Horsetail	*Equisetum hyemale var. affine*		X	X
Horseweed	*Conyza canadensis*			X
Huger's carrion flower	*Smilax ecirrata var. hugeri*	X		X
Husk tomato	*Physalis pubescens var. integrifolia*		X	X
Hybrid violet	*Viola x primulifolia*		X	X
Hyssop leaf thoroughwort	*Eupatorium hyssopifolium*		X	X
Illinois pinweed	*Lechea racemulosa*		X	X
Indian blanket	*Gaillardia pulchella*			X
Indian cucumber	*Medeola virginiana*		X	X
Indian grass	*Sorghastrum nutans*		X	X
Indian hemp	*Apocynum cannabinum*			X
Indian love grass	*Eragrostis pilosa*			X
Indian physic	*Porteranthus stipulatus*		X	
Indian pink	*Spigelia marilandica*		X	X
Indian pipe	*Monotropa uniflora*	X		X
Indian tobacco	*Lobelia inflata*		X	X
Inland rush	*Juncus interior*			X
Inland woodoats	*Chasmanthium latifolium*			X

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Intermediate lespedeza	*Lespedeza intermedia*	X	X	X
Interrupted fern	*Osmunda claytoniana*		X	X
Italian rye grass	*Lolium multiflorum*			X
Ivyleaf morning glory	*Ipomoea hederacea*			X
Jack-in-the-pulpit	*Arisaema triphyllum*	X		X
Jacob's ladder	*Polemonium reptans*			X
Jagged chickweed	*Holosteum umbellatum*	X		X
Japanese bristle grass	*Setaria faberi*		X	X
Japanese brome grass	*Bromus japonicus*			X
Japanese clover	*Kummerowia striata*			X
Japanese honeysuckle	*Lonicera japonica*			X
Japanese stiltgrass	*Microstegium vimineum*			X
Java bean	*Senna obtusifolia*			X
Jerusalem artichoke	*Helianthus tuberosus*	X		X
Jimson weed	*Datura stramonium*		X	X
Johnson grass	*Sorghum halepense*			X
Jumpseed	*Polygonum virginianum*		X	X
Jungle rice	*Echinochloa colona*			X
Kentucky blue grass	*Poa pratensis*	X		X
Kidney leaf grass of Parnassus	*Parnassia asarifolia*		X	
King of the meadow	*Thalictrum pubescens*			X
Koren clover	*Kummerowia stipulacea*	X	X	X
Lace grass	*Eragrostis capillaris*		X	X
Lanceleaf fogfruit	*Phyla lanceolata*	X		X
Lanceleaf loosestrife	*Lysimachia lanceolata*		X	X
Large brack tick trefoil	*Desmodium cuspidatum*		X	
Large bracted plantain	*Plantago aristata*	X	X	X
Large fruit black snakeroot	*Sanicula trifoliata*		X	
Large seed forget-me-not	*Myosotis macrosperma*	X		X
Large-flowered Barbara's button	*Marshallia grandiflora*			X
Largeleaf pond weed	*Potamogeton amplifolius*	X		
Late flowering thoroughwort	*Eupatorium serotinum*		X	X
Late purple aster	*Aster patens*	X	X	X
Lavendar old field aster	*Aster pilosus var. priceae*	X		X
Leafy bulrush	*Scirpus polyphyllus*	X		
Leafy pondweed	*Potamogeton foliosus*	X		X
Leathery rush	*Juncus coriaceus*	X	X	X
Leavenworth's sedge	*Carex leavenworthii*		X	
Lemon yellow false golden aster	*Heterotheca camporum*			X
Leonard's skullcap	*Scutellaria parvula var. missouriensis*		X	X
Lesser calaminth	*Calamintha nepeta*			X
Lesser snakeroot	*Ageratina aromatica*		X	
Lesser yellow lady's slipper	*Cypripedium parviflorum*	X		
Licorice bedstraw	*Galium circaezans*	X	X	X
Lillyleaf twayblade	*Liparis liliifolia*			X
Limestone adder's tongue	*Ophioglossum engelmannii*		X	
Limestone meadow sedge	*Carex granularis*	X		X
Limestone wild petunia	*Ruellia strepens*	X		X
Lindheimer panic grass	*Dichanthelium acuminatum var. lindheimeri*		X	X

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Lined sedge	*Carex striatula*	X	X	X
Little barley	*Hordeum pusillum*	X	X	
Little bluestem	*Schizachyrium scoparium*	X	X	X
Little brown jug	*Hexastylis arifolia var. arifolia*			X
Little head nut rush	*Scleria oligantha*	X		X
Little ladies' tresses	*Spiranthes tuberosa*		X	X
Little leaf buttercup	*Ranunculus abortivus*	X		X
Littleflowered alumroot	*Heuchera parviflora*		X	
Lizard tail	*Saururus cernuus*		X	X
Lobed spleenwort	*Asplenium pinnatifidum*		X	
Lobed tickseed	*Coreopsis auriculata*		X	X
Longbeak arrowhead	*Sagittaria australis*	X	X	
Longhair sedge	*Carex comosa*	X		
Longleaf ground cherry	*Physalis longifolia var. subglabrata*	X		
Longleaf pondweed	*Potamogeton nodosus*	X		
Longleaf summer bluet	*Houstonia longifolia*	X	X	X
Longleaf woodoats	*Chasmanthium sessiliflorum*		X	X
Longspur violet	*Viola rostrata*		X	X
Longstalk cranesbill	*Geranium columbinum*	X		
Longstyle sweet cicely	*Osmorhiza longistylis*	X		
Loomis' mountain mint	*Pycnanthemum loomisii*	X		
Lopsided rush	*Juncus secundus*		X	
Low spearwort	*Ranunculus pusillus*			X
Low spike sedge	*Kyllinga pumila*			X
Lowbush blueberry	*Vaccinium pallidum*		X	X
Lowland bladder fern	*Cystopteris protrusa*	X	X	X
Lowland rotala	*Rotala ramosior*	X		X
Lowry's blue wood aster	*Aster lowrieanus*		X	
Lyreleaf sage	*Salvia lyrata*	X	X	X
Maidenhair fern	*Adiantum pedatum*	X	X	X
Maidenhair spleenwort	*Asplenium trichomanes*		X	X
Man of the earth	*Ipomoea pandurata*	X	X	X
Many flower flat sedge	*Cyperus lancastriensis*	X		X
Maple leaf viburnum	*Viburnum acerifolium*		X	X
Marginal shield fern	*Dryopteris marginalis*		X	X
Marsh blue violet	*Viola cucullata*		X	X
Marsh bristle grass	*Setaria parviflora*			X
Marsh dayflower	*Murdannia keisak*			X
Marsh flat sedge	*Cyperus pseudovegetus*		X	
Marsh pea	*Lathyrus palustris*		X	
Marsh seedbox	*Ludwigia palustris*	X		X
Maryland golden aster	*Chrysopsis mariana*		X	X
Maryland meadow beauty	*Rhexia mariana var. mariana*		X	
Maryland senna	*Senna marilandica*			X
Matting rosette grass	*Dichanthelium meridionale*		X	X
May apple	*Podophyllum peltatum*		X	X
Meadow beauty	*Rhexia virginica*		X	X
Meadow brome grass	*Bromus catharticus*	X		
Meadow fescue	*Festuca pratensis*		X	X

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Meadow foxtail grass	*Alopecurus pratensis*			X
Meadow garlic	*Allium canadense*			X
Meadow spike moss	*Selaginella apoda*	X	X	
Meadow zizia	*Zizia aptera*			X
Mercury spurge	*Euphorbia mercurialina*	X	X	X
Mexican tea	*Chenopodium ambrosioides*			X
Midland sedge	*Carex mesochorea*	X		
Mimosa	*Albizia julibrissin*	X		
Mockernut hickory	*Carya tomentosa*		X	X
Money plant	*Lunaria annua*	X		
Moth mullein	*Verbascum blattaria*			X
Mountain bush honeysuckle	*Diervilla rivularis*			X
Mountain camelia	*Stewartia ovata*		X	X
Mountain decumbent goldenrod	*Solidago curtisii*			X
Mountain false indigo	*Amorpha glabra*	X		
Mountain goldenrod	*Solidago flaccidifolia*		X	
Mountain holly	*Ilex ambigua var. montana*		X	
Mountain laurel	*Kalmia latifolia*		X	X
Mountain meadow-rue	*Thalictrum clavatum*		X	
Mountain rosebay	*Rhododendron catawbiense*		X	
Mountain silverbell	*Halesia tetraptera*	X		X
Mountain spleenwort	*Asplenium montanum*	X	X	X
Mouse-ear cress	*Arabidopsis thaliana*		X	X
Mouseear hawkweed	*Hieracium venosum*	X	X	X
Multiflora rose	*Rosa multiflora*	X		X
Muscadine	*Vitis rotundifolia*		X	X
Naked flower tick trefoil	*Desmodium nudiflorum*		X	X
Narrowleaf bluecurls	*Trichostema setaceum*		X	X
Narrowleaf blue-eyed grass	*Sisyrinchium angustifolium*	X		X
Narrowleaf evening primrose	*Oenothera fruticosa ssp. fruticosa*			X
Narrowleaf mountain mint	*Pycnanthemum tenuifolium*		X	X
Narrowleaf plantain	*Plantago lanceolata*	X		X
Narrowleaf silkgrass	*Pityopsis graminifolia*		X	X
Narrowleaf vervain	*Verbena simplex*		X	X
Narrowleaf whitetop aster	*Sericocarpus linifolius*		X	X
Neckweed	*Veronica peregrina*		X	X
Needle grass	*Stipa avenacea*	X	X	X
Needleleaf rosette grass	*Dichanthelium aciculare*			X
Needlepod rush	*Juncus scirpoides*		X	
Needle-tip blue-eyed grass	*Sisyrinchium mucronatum*		X	
Netted chain fern	*Woodwardia areolata*		X	
Nettle leaf sage	*Salvia urticifolia*	X	X	X
New England aster	*Aster novae-angliae*			X
New Jersey tea	*Ceanothus americanus*		X	X
New York fern	*Thelypteris noveboracensis*		X	X
Nimblewill	*Muhlenbergia schreberi*			X
Nodding chickweed	*Cerastium nutans var. nutans*			X
Nodding fescue	*Festuca subverticillata*			X
Nodding ladies' tresses	*Spiranthes cernua*		X	

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Nodding onion	*Allium cernuum*			X
Northern bush honeysuckle	*Diervilla lonicera*			X
Northern panic grass	*Dichanthelium boreale*			X
Northern red oak	*Quercus rubra*	X		X
Northern slender ladies' tresses	*Spiranthes lacera var. gracilis*	X	X	X
Northern white cedar	*Thuja occidentalis*			X
Norwegian cinquefoil	*Potentilla norvegica*		X	X
Nottoway Valley brome grass	*Bromus nottowayanus*		X	
Nuttall's lobelia	*Lobelia nuttallii*			X
Nuttall's tick trefoil	*Desmodium nuttallii*		X	
Obedient plant	*Physostegia virginiana ssp. praemorsa*		X	X
Obedient plant	*Physostegia virginiana ssp. virginiana*			X
October ladies' tresses	*Spiranthes ovalis*			X
Ohio buckeye	*Aesculus glabra*	X		X
One seed bur cucumber	*Sicyos angulatus*			X
Ontario blazing star	*Liatris cylindracea*		X	X
Openflower rosette grass	*Dichanthelium laxiflorum*		X	X
Orange coneflower	*Rudbeckia fulgida var. fulgida*	X		X
Orange coneflower	*Rudbeckia fulgida var. umbrosa*		X	
Orange daylilly	*Hemerocallis fulva*			X
Orangegrass	*Hypericum gentianoides*		X	X
Orchard grass	*Dactylis glomerata*	X		X
Oriental lady's thumb	*Polygonum caespitosum var. longisetum*	X		X
Osage orange	*Maclura pomifera*	X		
Oval leaf sedge	*Carex cephalophora*	X	X	X
Oxeye daisy	*Leucanthemum vulgare*	X		X
Ozark dropseed	*Sporobolus vaginiflorus var. ozarkanus*	X	X	X
Painted buckeye	*Aesculus sylvatica*	X	X	X
Pale beard tongue	*Penstemon pallidus*			X
Pale green orchid	*Platanthera flava var. herbiola*			X
Pale indian plantain	*Arnoglossum atriplicifolia*		X	X
Pale leather flower	*Clematis versicolor*			X
Pale touch-me-not	*Impatiens pallida*		X	X
Palespike lobelia	*Lobelia spicata*	X	X	X
Panicled leaf tick trefoil	*Desmodium paniculatum*		X	X
Paper mulberry	*Broussonetia papyrifera*		X	
Parasol whitetop	*Doellingeria umbellata*			X
Parrot feather watermilfoil	*Myriophyllum aquaticum*	X		
Partridge berry	*Mitchella repens*		X	
Partridge pea	*Chamaecrista fasciculata*		X	X
Partridge pea	*Chamaecrista nictitans*		X	X
Passion flower	*Passiflora incarnata*	X	X	X
Pasture spike sedge	*Kyllinga gracillima*	X		
Path rush	*Juncus tenuis*		X	X
Pawpaw	*Asimina triloba*		X	X
Peach	*Prunus persica*			X
Pennsylvania sedge	*Carex pensylvanica*		X	X
Pennsylvania smartweed	*Polygonum pensylvanicum*	X	X	X
Peppermint	*Mentha x piperita*	X		X

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Perennial rye grass	*Lolium perenne*		X	X
Perfoliate bellwort	*Uvularia perfoliata*	X	X	X
Perfumed plum	*Prunus mahaleb*	X		
Perplexed tick trefoil	*Desmodium perplexum*		X	X
Persimmon	*Diospyros virginiana*			X
Philadelphia daisy fleabane	*Erigeron philadelphicus*			X
Philadelphia panic grass	*Panicum philadelphicum*			X
Piedmont bedstraw	*Galium pedemontanum*	X		
Piedmont rhododendron	*Rhododendron minus*	X		X
Pignut hickory	*Carya glabra*		X	X
Pinesap	*Monotropa hypopithys*		X	
Pink azalea	*Rhododendron periclymenoides*	X		X
Pink fussy bean	*Strophostyles umbellata*		X	X
Pink ladies	*Oenothera speciosa*	X		
Pink Lady's slipper	*Cypripedium acaule*	X	X	X
Pink thoroghwort	*Fleischmannia incarnata*	X		X
Pinnate prairie coneflower	*Ratibida pinnata*			X
Pitcher's sandwort	*Arenaria patula*	X		
Plantain leaf sedge	*Carex plantaginea*		X	
Pleatleaf knotweed	*Polygonum tenue*		X	
Plumleaf spiraea	*Spiraea prunifolia*			X
Pointed leaf tick trefoil	*Desmodium glutinosum*		X	
Poison ivy	*Toxicodendron radicans*			X
Poke milkweed	*Asclepias exaltata*		X	X
Poor robin's plantain	*Erigeron pulchellus*		X	X
Poorjoe	*Diodia teres*			X
Possum grape	*Vitis cinerea var. baileyana*		X	X
Post oak	*Quercus stellata*		X	X
Poverty dropseed	*Sporobolus vaginiflorus var. vaginiflorus*		X	X
Poverty oat grass	*Danthonia spicata*	X	X	X
Prairie cord grass	*Spartina pectinata*	X		
Prairie fleabane	*Erigeron strigosus var. strigosus*		X	X
Prairie rose	*Rosa setigera*	X		X
Prairie rosinweed	*Silphium terebinthinaceum*			X
Prairie tea	*Croton monanthogynus*		X	
Prairie threeawn grass	*Aristida oligantha*	X		X
Prairie wedgescale	*Sphenopholis obtusata var. obtusata*		X	X
Prairie willow	*Salix humilis var. humilis*			X
Prickly bog sedge	*Carex atlantica ssp. atlantica*			X
Prickly fan petals	*Sida spinosa*			X
Prickly lettuce	*Lactuca serriola*	X		
Prickly pear cactus	*Opuntia humifusa*			X
Prostrate tick trefoil	*Desmodium rotundifolium*			X
Poverty brome grass	*Bromus sterilis*		X	
Puffshealth dropseed	*Sporobolus neglectus*		X	X
Purple cliffbrake fern	*Pellaea atropurpurea*	X	X	X
Purple coneflower	*Echinacea purpurea*			X
Purple cudweed	*Gnaphalium purpureum*	X		X
Purple disk sunflower	*Helianthus atrorubens*	X	X	X

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Purple false foxglove	*Agalinis purpurea*			X
Purple giant hyssop	*Agastache scrophulariifolia*			X
Purple loosestrife	*Lythrum salicaria*			X
Purple love grass	*Eragrostis spectabilis*	X		X
Purple milkwort	*Polygala sanguinea*	X		
Purple phacelia	*Phacelia bipinnatifida*	X	X	X
Purple rocket	*Iodanthus pinnatifidus*	X		
Purple sedge	*Carex purpurifera*		X	
Purpleheaded sneezeweed	*Helenium flexuosum*		X	X
Purpleleaf willow herb	*Epilobium coloratum*			X
Purpletop tridens	*Tridens flavus var. flavus*			X
Pussytoes	*Antennaria plantaginifolia*		X	X
Quack grass	*Elymus repens*			X
Queen Anne's lace	*Daucus carota*			X
Queendevil	*Hieracium gronovii*			X
Quill fameflower	*Talinum teretifolium*		X	
Rabbit tobacco	*Gnaphalium obtusifolium*	X	X	X
Racemed milkwort	*Polygala polygama*		X	
Ragweed	*Ambrosia artemisiifolia*		X	X
Rattan vine	*Berchemia scandens*		X	X
Rattlesnake fern	*Botrychium virginianum*	X	X	X
Rattlesnake master	*Eryngium yuccifolium*		X	X
Rattlesnake plantain	*Goodyera pubescens*		X	X
Ravenel's rosette grass	*Dichanthelium ravenelii*		X	X
Red buckeye	*Aesculus pavia*			X
Red chokecherry	*Aronia arbutifolia*		X	
Red clover	*Trifolium pratense*			X
Red Columbine	*Aquilegia canadensis*			X
Red fescue	*Festuca rubra*		X	
Red maple	*Acer rubrum*		X	X
Red mulberry	*Morus rubra*	X		X
Red trillium	*Trillium erectum*			X
Redring milkweed	*Asclepias variegata*	X		X
Redstar	*Ipomoea coccinea*	X	X	X
Redtop	*Agrostis gigantea*		X	X
Redtop panic grass	*Panicum rigidulum var. elongatum*			X
Redtop panic grass	*Panicum rigidulum var. rigidulum*	X		X
Reflexed sedge	*Carex retroflexa*	X	X	X
Resurrection fern	*Pleopeltis polypodioides var. michauxiana*	X	X	X
Ribbed sedge	*Carex virescens*		X	X
Rice button aster	*Aster dumosus*			X
Rice cutgrass	*Leersia oryzoides*	X	X	X
Richweed	*Collinsonia canadensis*		X	X
Ridged yellow flax	*Linum striatum*		X	X
River birch	*Betula nigra*		X	X
Riverbank wild rye	*Elymus riparius*		X	
Rock cap fern	*Polypodium virginianum*		X	
Rose pink	*Sabatia angularis*			X
Rosebay	*Rhododendron maximum*		X	

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Rosy sedge	*Carex rosea*		X	X
Rough barnyard grass	*Echinochloa muricata var. muricata*	X		X
Rough boneset	*Eupatorium pilosum*		X	
Rough cocklebur	*Xanthium strumarium*			X
Rough dropseed	*Sporobolus clandestinus*	X	X	X
Rough flat sedge	*Cyperus retrofractus*			X
Rough leaf dogwood	*Cornus drummondii*			X
Round fruit hedge hyssop	*Gratiola virginiana*		X	X
Roundheaded lespedeza	*Lespedeza capitata*	X		X
Roundleaf catchfly	*Silene rotundifolia*		X	
Roundleaf greenbriar	*Smilax rotundifolia*		X	X
Roundleaf ragwort	*Senecio obovatus*			X
Roundleaf thoroughwort	*Eupatorium rotundifolium*		X	X
Roundlobed liverleaf	*Hepatica americana*	X	X	X
Roundseed panic grass	*Dichanthelium sphaerocarpon*	X	X	X
Roundseed panic grass	*Dichanthelium sphaerocarpon var. isophyllum*			X
Roundseed St. Johnswort	*Hypericum sphaerocarpum*		X	
Royal fern	*Osmunda regalis var. spectabilis*		X	X
Rescue grass	*Bromus commutatus*	X	X	X
Rue anemone	*Thalictrum thalictroides*		X	X
Rufous bulrush	*Scirpus pendulus*			X
Running strawberry bush	*Euonymus obovatus*			X
Russian olive	*Elaeagnus umbellata*			X
Rusty black haw	*Viburnum rufidulum*		X	X
Ruth's little brown jug	*Hexastylis arifolia var. ruthii*	X	X	X
Sampson's snakeroot	*Orbexilum pedunculatum*			X
Sand bittercress	*Cardamine parviflora*		X	X
Sand hickory	*Carya pallida*		X	X
Sand violet	*Viola affinis*			X
Sandbar love grass	*Eragrostis frankii*			X
Sandbar willow	*Salix exigua*	X		X
Sanddune wallflower	*Erysimum capitatum*			X
Sandplain flax	*Linum intercursum*			X
Sassafras	*Sassafras albidum*	X	X	X
Saw greenbriar	*Smilax bona-nox*	X		X
Scaldweed	*Cuscuta gronovii*			X
Scaly blazing star	*Liatris squarrosa*	X	X	X
Scarlet Indian paintbrush	*Castilleja coccinea*			X
Scarlett pimpernel	*Anagallis arvensis*			X
Seedbox	*Ludwigia alternifolia*	X		X
Sensitive fern	*Onoclea sensibilis*	X	X	X
Sessile leaf bellwort	*Uvularia sessilifolia*	X	X	
Shagbark hickory	*Carya ovata var. ovata*			X
Shaggy solider	*Galinsoga quadriradiata*	X		
Shallow sedge	*Carex lurida*		X	X
Sharpleaf St. Johnswort	*Hypericum denticulatum var. acutifolium*		X	X
Sharplobed liverleaf	*Hepatica acutiloba*		X	X
Sharpscale sedge	*Carex oxylepis var. oxylepis*	X		
Sharpscale sedge	*Carex oxylepis var. pubescens*			X

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Sharpwinged monkey flower	*Mimulus alatus*	X		X
Shiny wedgescale	*Sphenopholis nitida*	X	X	X
Shooting star	*Dodecatheon meadia*		X	
Shortbeaked sedge	*Carex brevior*	X		
Shortbristle horned beak sedge	*Rhynchospora corniculata*	X		
Shortleaf pine	*Pinus echinata*			X
Short's sedge	*Carex shortiana*			X
Showy goldenrod	*Solidago erecta*		X	X
Showy goldenrod	*Solidago speciosa var. rigidiuscula*			X
Showy goldenrod	*Solidago speciosa var. speciosa*			X
Showy orchid	*Galearis spectabilis*		X	
Shumard's oak	*Quercus shumardii*	X	X	X
Shrubby St. Johnswort	*Hypericum prolificum*			X
Sicklepod	*Arabis canadensis*			X
Sidebeak pencil flower	*Stylosanthes biflora*		X	X
Sideoats gamma grass	*Bouteloua curtipendula*			X
Silky dogwood	*Cornus amomum*		X	X
Silver beard grass	*Bothriochloa laguroides ssp. torreyana*			X
Silver maple	*Acer saccharinum*			X
Silver plume grass	*Saccharum alopecuroidum*		X	
Singleheaded pussytoes	*Antennaria solitaria*			X
Silver glade fern	*Deparia acrostichoides*			X
Sixweeks fescue	*Vulpia octoflora var. octoflora*			X
Sleepy catchfly	*Silene antirrhina*		X	X
Slender crab grass	*Digitaria filiformis*	X	X	X
Slender fimbry	*Fimbristylis autumnalis*		X	X
Slender leaf false foxglove	*Agalinis tenuifolia*		X	X
Slender lespedeza	*Lespedeza virginica*	X	X	X
Slender loose flower sedge	*Carex gracilescens*			X
Slender muhly	*Muhlenbergia tenuiflora*		X	X
Slender parsley piert	*Aphanes microcarpa*	X		X
Slender toothwort	*Dentaria heterophylla*			X
Slender wedgescale	*Sphenopholis obtusata var. major*			X
Slender woodland sedge	*Carex digitalis*		X	X
Slender woodoats	*Chasmanthium laxum*			X
Slenderstalk beeblossum	*Gaura filipes*	X	X	X
Slimleaf panic grass	*Dichanthelium linearifolium*	X	X	X
Slippery elm	*Ulmus rubra*		X	X
Small bonny bellflower	*Campanula divaricata*		X	X
Small carp grass	*Arthraxon hispidus*			X
Small flowered buttercup	*Ranunculus parviflorus*	X	X	X
Small flowered hawksbeard	*Crepis pulchra*		X	X
Small flowered phacelia	*Phacelia dubia var. dubia*			X
Small fruit primrose willow	*Ludwigia microcarpa*			X
Small green wood orchid	*Platanthera clavellata*			X
Small head blazing star	*Liatris microcephala*		X	X
Small head rush	*Juncus brachycephalus*			X
Small pondweed	*Potamogeton pusillus*	X		
Small skullcap	*Scutellaria parvula var. parvula*			X

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Small spike false nettle	*Boehmeria cylindrica*			X
Small woodland sunflower	*Helianthus microcephalus*	X	X	X
Smallflower baby blue eyes	*Nemophila aphylla*	X		
Small's beard tongue	*Penstemon smallii*	X		
Small's black snakeroot	*Sanicula smallii*	X		X
Small's ragwort	*Senecio anonymus*	X		X
Smooth blue aster	*Aster laevis var. laevis*			X
Smooth brome grass	*Bromus inermis*			X
Smooth carrion flower	*Smilax herbacea var. herbacea*			X
Smooth cliffbrake fern	*Pellaea glabella*			X
Smooth hedge nettle	*Stachys tenuifolia*			X
Smooth oxeye	*Heliopsis helianthoides*			X
Smooth phlox	*Phlox glaberrima*	X	X	X
Smooth rock cress	*Arabis laevigata var. laevigata*	X	X	X
Smooth serviceberry	*Amelanchier laevis*		X	X
Smooth sheath sedge	*Carex laevivaginata*			X
Smooth small leaf tick trefoil	*Desmodium marilandicum*		X	X
Smooth sumac	*Rhus glabra*			X
Smooth tick trefoil	*Desmodium laevigatum*		X	X
Smooth wood reed	*Cinna arundinacea*	X		X
Smooth yellow false foxglove	*Aureolaria flava*	X		X
Smoth crab grass	*Digitaria ischaemum*			X
Soft agrimony	*Agrimonia pubescens*	X	X	X
Soft beard plume grass	*Saccharum brevibarbe var. contortum*	X		
Soft rush	*Juncus effusus*	X	X	X
Softstem bulrush	*Schoenoplectus tabernaemontani*	X		X
Solomon's plume	*Smilacina racemosa*	X	X	X
Solomon's seal	*Polygonatum biflorum*	X	X	X
Sourwood	*Oxydendrum arboreum*		X	X
Southern adder's tongue	*Ophioglossum vulgatum*			X
Southern blackberry	*Rubus betulifolius*			X
Southern blue monkshood	*Aconitum uncinatum*			X
Southern crab apple	*Malus angustifolia*		X	
Southern hackberry	*Celtis laevigata*		X	
Southern Lady fern	*Athyrium filix-femina ssp. asplenioides*	X	X	X
Southern mountain mint	*Pycnanthemum pycnanthemoides*		X	
Southern pinxter azalea	*Rhododendron canescens*	X	X	
Southern prairie aster	*Aster paludosus ssp. hemisphericus*		X	
Southern red oak	*Quercus falcata*	X		X
Southern red trillium	*Trillium sulcatum*		X	X
Southern sedge	*Carex austrina*	X		
Southern woodland violet	*Viola hirsutula*			X
Southern yellow loosestrife	*Lysimachia tonsa*		X	X
Spanish needles	*Bidens bipinnata*			X
Sparse-lobed grape fern	*Botrychium biternatum*			X
Spicebush	*Lindera benzoin*		X	X
Spike watermilfoil	*Myriophyllum spicatum*	X	X	
Spiked hoary pea	*Tephrosia spicata*		X	X
Spiny pigweed	*Amaranthus spinosus*	X		X

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Splitbeard bluestem	*Andropogon ternarius*	X	X	X
Spotted geranium	*Geranium maculatum*	X	X	X
Spotted knapweed	*Centaurea biebersteinii*			X
Spotted lady's thumb	*Polygonum persicaria*	X	X	X
Spotted mandrin	*Disporum maculatum*		X	X
Spotted St. Johnswort	*Hypericum punctatum*	X	X	X
Spotted water hemlock	*Cicuta maculata*			X
Spotted wintergreen	*Chimaphila maculata*		X	X
Spreading hedge parsley	*Torilis arvensis*			X
Spreading sedge	*Carex laxiculmis*			X
Spreading yellow false foxglove	*Aureolaria patula*			X
Spring coralroot	*Corallorhiza wisteriana*			X
Spring draba	*Draba verna*		X	X
Spring ladies' tresses	*Spiranthes vernalis*		X	
Spurred butterfly pea	*Centrosema virginianum*		X	X
Square steam spikerush	*Eleocharis quadrangulata*			X
Squarrose sedge	*Carex squarrosa*			X
Squaw root	*Conopholis americana*			X
St. Andrew's cross	*Hypericum hypericoides*		X	X
St. Andrew's cross	*Hypericum stragulum*		X	
St. Anthony's turnip	*Ranunculus bulbosus*	X		X
Staggerbush	*Lyonia ligustrina*	X		X
Stalkless yellowcress	*Rorippa sessiliflora*	X		X
Star chickweed	*Stellaria pubera*		X	X
Star grass	*Hypoxis hirsuta*	X	X	X
Star of Bethlehem	*Ornithogalum umbellatum*	X		X
Star tickseed	*Coreopsis pubescens*			X
Starry rosinweed	*Silphium asteriscus*			X
Starved panic grass	*Dichanthelium depauperatum*		X	X
Steeplebush	*Spiraea tomentosa*		X	
Stellate sedge	*Carex albicans var. australis*		X	
Stickywillie	*Galium aparine*	X		X
Stiff cowbane	*Oxypolis rigidior*		X	X
Stiff dogwood	*Cornus foemina*			X
Stiff goldenrod	*Solidago rigida ssp. glabrata*			X
Stiff marsh bedstraw	*Galium tinctorium*	X	X	X
Stiff tick trefoil	*Desmodium obtusum*		X	X
Stiff yellow flax	*Linum medium var. texanum*		X	X
Stink grass	*Eragrostis cilianensis*		X	X
Stoneroot	*Collinsonia verticillata*		X	X
Strong quillwort	*Isoetes valida*			X
Straggling St. Johnswort	*Hypericum dolabriforme*	X	X	X
Straw colored flat sedge	*Cyperus strigosus*		X	X
Strawberry bush	*Euonymus americanus*		X	X
Striped cream violet	*Viola striata*			X
Striped gentian	*Gentiana villosa*		X	
Stripped maple	*Acer pensylvanicum*		X	
Sugar cane plume grass	*Saccharum giganteum*			X
Sugar maple	*Acer saccharum ssp. saccharum*		X	X

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Sulphur cinquefoil	*Potentilla recta*	X		X
Summer grape	*Vitis aestivalis var. aestivalis*		X	X
Summer grape	*Vitis aestivalis var. bicolor*		X	
Swamp dewberry	*Rubus hispidus*			X
swamp doghobble; fetterbush	*Leucothoe racemosa*			X
Swamp milkweed	*Asclepias incarnata ssp. incarnata*	X		X
Swamp smartweed	*Polygonum hydropiperoides*	X		X
Swamp sunflower	*Helianthus angustifolius*			X
Swan's sedge	*Carex swanii*		X	X
Sweet azalea	*Rhododendron arborescens*		X	
Sweet birch	*Betula lenta*		X	X
Sweet briar rose	*Rosa eglanteria*		X	
Sweet gum	*Liquidambar styraciflua*	X	X	X
Sweet Sagewort	*Artemisia annua*		X	
Sweet vernal grass	*Anthoxanthum odoratum*		X	
Sweetflag	*Acorus calamus*			X
Sweetscented joe pye weed	*Eupatorium purpureum*		X	X
Switch grass	*Panicum virgatum*			X
Tag Alder	*Alnus serrulata*	X	X	X
Tall blazing star	*Liatris aspera*	X		X
Tall false indigo	*Amorpha fruticosa*		X	
Tall fescue	*Festuca arundinacea*		X	X
Tall larkspur	*Delphinium exaltatum*			X
Tall morning glory	*Ipomoea purpurea*			X
Tall rattlesnake root	*Prenanthes altissima*		X	
Tall thimbleweed	*Anemone virginiana*	X		X
Tall thoroughwort	*Eupatorium altissimum*			X
Tall tickseed	*Coreopsis tripteris*		X	
Taper leaf water hoarhound	*Lycopus rubellus*			X
Tapered rosette grass	*Dichanthelium acuminatum*	X	X	X
Tapertip rush	*Juncus acuminatus*	X	X	X
Tarheel sedge	*Carex austrocaroliniana*		X	X
Teal love grass	*Eragrostis hypnoides*			X
Ten-lobed false foxglove	*Agalinis obtusifolia*		X	X
Tennessee leafcup	*Polymnia laevigata*		X	
Terrestrial water sandwort	*Callitriche terrestris*			X
Thicket bean	*Phaseolus polystachyus*		X	
Thicket sedge	*Carex abscondita*		X	X
Thin fruit sedge	*Carex flaccosperma*	X	X	
Thin paspalum	*Paspalum setaceum*	X	X	X
Thin spike threeawn grass	*Aristida longespica*			X
Thinleaf late purple aster	*Aster phlogifolius*		X	
Thinleaf sunflower	*Helianthus decapetalus*			X
Three parted beggar tickes	*Bidens tripartita*			X
Threeawn grass	*Aristida virgata*			X
Thymeleaf sandwort	*Arenaria serpyllifolia*	X		
Thymeleaf speedwell	*Veronica serpyllifolia*			X
Timothy grass	*Phleum pratense*			X
Tiny bluet	*Houstonia pusilla*			X

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Tiny mousetail	*Myosurus minimus*		X	X
Toothed spurge	*Euphorbia dentata*	X	X	X
Toothed whitetop aster	*Sericocarpus asteroides*			X
Touch-me-not; jewelweed	*Impatiens capensis*			X
Trailing arbutus	*Epigaea repens*			X
Trailing fuzzy bean	*Strophostyles helvula*			X
Trailing lespedeza	*Lespedeza procumbens*	X		X
Tree of Heaven	*Ailanthus altissima*			X
Trifoliate orange	*Ptelea trifoliata*	X		X
Trumpet creeper	*Campsis radicans*		X	X
Trumpet weed	*Eupatorium fistulosum*		X	
Tulip poplar	*Liriodendron tulipifera*		X	X
Twining snoutbean	*Rhynchosia tomentosa*		X	X
Twinleaf	*Jeffersonia diphylla*	X		X
Twisted sedge	*Carex torta*		X	X
Two flower dwarf dandelion	*Krigia biflora*	X	X	X
Two flower melic grass	*Melica mutica*			X
Two headed water sandwort	*Callitriche heterophylla*		X	X
Umbrella magnolia	*Magnolia tripetala*		X	X
Umbrella sedge	*Rhynchospora colorata*			X
Upland bent grass	*Agrostis perennans*		X	X
Upland boneset	*Eupatorium sessilifolium*		X	X
Upland white aster	*Aster ptarmicoides*		X	X
Variable leaf little brown jug	*Hexastylis heterophylla*			X
Variable panic grass	*Dichanthelium commutatum*	X	X	X
Vase vine	*Clematis viorna*			X
Vasey's trillium	*Trillium vaseyi*	X		X
Veiny pea	*Lathyrus venosus*		X	
Veiny skullcap	*Scutellaria nervosa*			X
Velvet leaf tick trefoil	*Desmodium viridiflorum*		X	X
Velvet panicum	*Dichanthelium scoparium*	X		X
Vente conmigo	*Croton glandulosus*			X
Venus' pride	*Houstonia purpurea var. calycosa*		X	X
Venus' pride	*Houstonia purpurea var. purpurea*	X	X	X
Violet wood sorrel	*Oxalis violacea*	X	X	X
Virginia bluebell	*Mertensia virginica*		X	
Virginia buttonweed	*Diodia virginiana*		X	X
Virginia creeper	*Parthenocissus quinquefolia*	X	X	X
Virginia ground cherry	*Physalis virginiana*	X		
Virginia meadowsweet	*Spiraea virginiana*			X
Virginia pennywort	*Obolaria virginica*	X		X
Virginia pepperweed	*Lepidium virginicum*	X	X	X
Virginia plantain	*Plantago virginica*			X
Virginia snakeroot	*Aristolochia serpentaria*			X
Virginia spiderwort	*Tradescantia virginiana*		X	
Virginia strawberry	*Fragaria virginiana*	X	X	X
Virginia tephrosia, catgut	*Tephrosia virginiana*		X	X
Virginia water hoarhound	*Lycopus virginicus*	X	X	X
Virginia wild rye	*Elymus virginicus*		X	X

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Virginia willow	*Itea virginica*	X	X	X
Virginia mountain mint	*Pycnanthemum virginianum*	X		X
Virginia pine	*Pinus virginiana*		X	X
Walking fern	*Asplenium rhizophyllum*	X	X	X
Wall-rue	*Asplenium ruta-muraria*			X
Water knotweed	*Polygonum amphibium*		X	
Water oak	*Quercus nigra*			X
Water speedwell	*Veronica anagallis-aquatica*			X
Watercress	*Rorippa nasturtium-aquaticum*	X		X
Waterthread pondweed	*Potamogeton diversifolius*	X		
Wavy hair grass	*Deschampsia flexuosa*		X	
Waxleaf aster	*Aster undulatus*		X	X
Waxy-leaf meadow-rue	*Thalictrum revolutum*		X	X
Weak rush	*Juncus debilis*		X	X
Weakstalk bulrush	*Schoenoplectus purshianus*			X
Weedy dwarf dandelion	*Krigia caespitosa*	X		
West Indian nightshade	*Solanum ptychanthum*			X
Western waterweed	*Elodea nuttallii*			X
Whip nut rush	*Scleria triglomerata*			X
White arrowleaf aster	*Aster urophyllus*			X
White ash	*Fraxinus americana*	X	X	X
White avens	*Geum canadense*			X
White bergamot	*Monarda clinopodia*			X
White blue-eyed grass	*Sisyrinchium albidum*	X		X
White clintonia	*Clintonia umbellulata*		X	
White clover	*Trifolium repens*			X
White crownbeard	*Verbesina virginica*		X	X
White edge sedge	*Carex debilis*		X	X
White flowered leafcup	*Polymnia canadensis*			X
White fringe tree	*Chionanthus virginicus*		X	X
White grass	*Leersia virginica*	X	X	X
White oak	*Quercus alba*	X	X	X
White panicle aster	*Aster lanceolatus*	X	X	
White pine	*Pinus strobus*	X	X	X
White poplar	*Populus alba*		X	X
White root rush	*Juncus brachycarpus*		X	X
White snakeroot	*Ageratina altissima*	X	X	X
White sweet clover	*Melilotus albus*	X		X
White thoroughwort	*Eupatorium album var. album*		X	X
White tinged sedge	*Carex albicans var. albicans*			X
White vervain	*Verbena urticifolia*		X	X
White wood aster	*Aster divaricatus var. divaricatus*	X	X	X
Whitehair rosette grass	*Dichanthelium villosissimum*		X	X
Whitestar	*Ipomoea lacunosa*			X
WhiteTurtle head	*Chelone glabra*		X	X
Whorled milkweed	*Asclepias verticillata*	X	X	X
Whorled milkwort	*Polygala verticillata var. ambigua*		X	X
Whorled milkwort	*Polygala verticillata var. verticillata*			X
Whorled mountain mint	*Pycnanthemum verticillatum var. pilosum*		X	

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Whorled rosinweed	*Silphium trifoliatum var. trifoliatum*		X	X
Widowcross	*Sedum pulchellum*	X		
Widow's frill	*Silene stellata*		X	X
Wild basal	*Satureja vulgaris*		X	X
Wild bergamot	*Monarda fistulosa*		X	X
Wild black cherry	*Prunus serotina*	X		X
Wild blue phlox	*Phlox divaricata*	X	X	X
Wild comfrey	*Cynoglossum virginianum*			X
Wild garlic	*Allium vineale*		X	X
Wild ginger	*Asarum canadense*			X
Wild goose plum	*Prunus munsoniana*			X
Wild honeysuckle	*Lonicera dioica*	X		X
Wild hyacinth	*Camassia scilloides*			X
Wild hydrangea	*Hydrangea arborescens*	X	X	X
Wild quinine	*Parthenium integrifolium*		X	X
Wild sweet William	*Phlox maculata ssp. pyramidalis*		X	X
Wild yam	*Dioscorea villosa*	X	X	X
Willdenow's croton	*Croton willdenowii*		X	
Willdenow's sedge	*Carex willdenowii*			X
Willow oak	*Quercus phellos*		X	X
Willow-leaf aster	*Aster pratensis*			X
Wineberry	*Rubus phoenicolasius*		X	
Winged elm	*Ulmus alata*		X	X
Winged sumac	*Rhus copallinum*	X		X
Wingleaf primrose willow	*Ludwigia decurrens*	X		X
Wingstem	*Verbesina alternifolia*			X
Winter bent grass	*Agrostis hiemalis*	X	X	X
Wirey panic grass	*Panicum flexile*	X	X	X
Wirestem muhly	*Muhlenbergia frondosa*			X
Witch grass	*Panicum capillare*			X
Withe rod	*Viburnum cassinoides*		X	
Wood anemone	*Anemone quinquefolia*		X	X
Woodland blue grass	*Poa sylvestris*			X
Woodland lettuce	*Lactuca floridana*	X	X	X
Woodland muhly	*Muhlenbergia sylvatica*		X	X
Woodland stonecrop	*Sedum ternatum*	X	X	X
Woodland sunflower	*Helianthus divaricatus*			X
Wool grass	*Scirpus cyperinus*			X
Wooly blueberry	*Vaccinium hirsutum*		X	
Wreath goldenrod	*Solidago caesia*		X	X
Wrinkle leaf goldenrod	*Solidago rugosa ssp. aspera*		X	
Yarrow	*Achillea millefolium*			X
Yellow birch	*Betula alleghaniensis*		X	
Yellow bristle grass	*Setaria glauca*	X		X
Yellow buckeye	*Aesculus flava*	X	X	X
Yellow chestnut oak	*Quercus muhlenbergii*			X
Yellow crownbeard	*Verbesina occidentalis*			X
Yellow fairy bells	*Disporum lanuginosum*		X	X
Yellow flat sedge	*Cyperus flavescens*	X	X	X

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Table 2-4. Common Plant Species Found in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Loudon County	Rhea County	Roane County
Yellow fruit sedge	*Carex annectens*		X	X
Yellow giant hyssop	*Agastache nepetoides*			X
Yellow jasmine	*Gelsemium sempervirens*		X	
Yellow meadow parsnip	*Thaspium trifoliatum var. flavum*		X	X
Yellow passion flower	*Passiflora lutea*		X	X
Yellow screwstem	*Bartonia virginica*		X	
Yellow sweet clover	*Melilotus officinalis*			X
Yellow trillium	*Trillium luteum*	X	X	X
Yellowdicks	*Helenium amarum*	X		X
Yellow-fruit horse gentian	*Triosteum angustifolium*			X
Yellowroot	*Xanthorhiza simplicissima*		X	X
Yellowseed false pimpernel	*Lindernia dubia*		X	X
Zigzag bladderwort	*Utricularia subulata*		X	
Zigzag goldenrod	*Solidago flexicaulis*		X	X
Zigzag spiderwort	*Tradescantia subaspera*		X	

Source: Watts Bar Reservoir Land Management Plan, Appendix D (TVA 2009a).

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Table 2-5. Threatened and Endangered Plant Species in the Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Federal Status	State Status
Plants			
American barberry	*Berberis canadensis*	NL	Special Concern
American ginseng	*Panax quiquefolius*	NL	S-CE
American hart's-tongue fern	*Asplenium scolopendrium var. americanum*	Threatened	Endangered
Appalachian bugbane	*Cimicifuga rubrifolia*	NL	Threatened
Barren's silky aster	*Aster pratensis*	NL	Threatened
Bay starvine	*Schisandra glabra*	NL	Threatened
Butternut	*Juglans cinerea*	NL	Threatened
Canada lily	*Lilium canadense*	NL	Threatened
Catfoot	*Gnaphalium helleri*	NL	Special Concern
Cumberland rosemary	*Conradina verticillata*	Threatened	Threatened
Dwarf milkwort	*Polygala nana*	NL	Endangered
Ear-leaf foxglove	*Agalinis auriculata*	NL	Endangered
Fetter-bush	*Leucothoe racemosa*	NL	Threatened
Goldenseal	*Hydrastis canadensis*	NL	S-CE
Hairy sharp-scaled sedge	*Carex oxlepis var. pubescens*	NL	Special Concern
Heavy-fruited sedge	*Carex gravida*	NL	Special Concern
Large-flowered Barbara's buttons	*Marshallia grandiflora*	NL	Endangered
Loesel's twayblade	*Liparis loeselii*	NL	Proposed Threatened
Mcdowell's sunflower	*Helianthus occidentalis*	NL	Special Concern
Mountain bush-honeysuckle	*Diervilla rivularis*	NL	Threatened
Mountain honeysuckle	*Lonicera dioica*	NL	Special Concern
Northern bush-honeysuckle	*Diervilla lonicera*	NL	Threatened
Northern white cedar	*Thujja occidentalis*	NL	Special Concern
Pale green orchid	*Platanthera flava var. herbiola*	NL	Threatened
Pink lady-slipper	*Cypripedium acaule*	NL	E-CE
Prairie goldenrod	*Solidago ptarmicoides*	NL	Endangered
Pursh's wild-petunia	*Ruellia purshiana*	NL	Special Concern
River bull rush	*Scirpus fluviatilis*	NL	Special Concern
Shining ladies'-tresses	*Spiranthes lucida*	NL	Threatened
Short-head rush	*Juncus brachycephalus*	NL	Special Concern
Slender blazing-star	*Liatris cylindracea*	NL	Threatened
Spreading false-foxglove	*Aureolaria patula*	NL	Threatened
Swamp lousewort	*Pedicularis lanceolata*	NL	Special Concern
Tall larkspur	*Delphinium exaltatum*	NL	Endangered
Three parted violet	*Viola tripartata*	NL	Special Concern
Virginia spiraea	*Spiraea virginiana*	Threatened	Endangered
Waterweed	*Elodea nuttallii*	NL	Special Concern

Source: Watts Bar Reservoir Land Management Plan, Table 3.3-1 (TVA 2009a).
NL = Not listed.
S-CE = Special Concern, Commercially exploited.

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Table 2-6. Common Terrestrial and Wetland Wildlife Species in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Species By Common Name	Scientific Name	Forest Lands	Managed Open Lands	Wetland and Riparian Communities
Birds				
Bald eagle	*Haliaeetus leucocephalus*			X
Osprey	*Pandion haliaetus*			X
Sharp-shinned hawk	*Accipiter striatus*	X		
Cooper's hawk	*Accipiter cooperii*	X	X	
Broad-winged hawk	*Buteo platypterus*	X		
Red-shouldered hawk	*Buteo lineatus*	X		X
Red-tailed hawk	*Buteo jamaicensis*	X	X	
American kestrel	*Falco sparverius*		X	
Great horned owl	*Bubo virginianus*	X	X	X
Barred owl	*Strix varia*	X		X
Common screech owl	*Otus asio*	X	X	
Barn owl	*Tyto alba*		X	
Turkey vulture	*Cathartes aura*	X	X	
Black vulture	*Coragyps atratus*	X	X	
American crow	*Corvus brachyrhynchos*	X	X	
Hairy woodpecker	*Picoides villosus*	X		X
Pileated woodpecker	*Dryocopus pileatus*	X		X
Yellow-shafted flicker	*Colaptes auratus*	X	X	
Downy woodpecker	*Picoides pubescens*	X		X
Red-bellied woodpecker	*Melanerpes carolinus*	X	X	
Belted kingfisher	*Megaceryle alcyon*			X
Great blue heron	*Ardea herodias*			X
Green heron	*Butorides striatus*			X
Double-crested cormorant	*Phalacrocorax auritus*			X
Black-crowned night-heron	*Nycticorax nycticorax*			X
Spotted sandpiper	*Actitis macularia*			X
Ring-billed gull	*Larus delawarensis*			X
Black tern	*Chlidonias niger*			X
Wilson's snipe	*Gallinago gallinago*		X	X
American woodcock	*Scolopax minor*		X	X
Killdeer	*Charadrius vociferus*		X	X
Wild turkey	*Meleagris gallopavo*	X	X	
Bobwhite quail	*Colinus virginianus*		X	
Mourning dove	*Zenaida macroura*		X	
Canada goose	*Branta canadensis*		X	X

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Table 2-6. Common Terrestrial and Wetland Wildlife Species in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Species By Common Name	Scientific Name	Forest Lands	Managed Open Lands	Wetland and Riparian Communities
Birds (continued)				
Wood duck	*Aix sponsa*			X
Mallard	*Anas platyrhynchos*			X
Blue-winged teal	*Anas discors*			X
American black duck	*Anas rubripes*			X
Hooded merganser	*Lophodytes cucullatus*			X
Bufflehead	*Bucephala albeola*			X
Red-breasted merganser	*Mergus serrator*			X
Ring-necked duck	*Aythya collaris*			X
Pied-bill grebe	*Podilymbus podiceps*			X
Northern cardinal	*Cardinalis cardinalis*	X	X	
Eastern bluebird	*Sialia sialis*		X	
American goldfinch	*Carduelis tristis*	X	X	
Grasshopper sparrow	*Ammodramus savannarum*		X	
Blue jay	*Cyanocitta cristata*	X		
Carolina chickadee	*Parus carolinensis*	X	X	
Red-winged blackbird	*Agelaius phoeniceus*		X	X
Rufous-sided towhee	*Pipilo erythrophthalmus*	X	X	
American robin	*Turdus migratorius*	X	X	
Northern mockingbird	*Mimus polyglottos*		X	
Carolina wren	*Thryothorus ludovicianus*	X	X	
Indigo bunting	*Passerina cyanea*		X	
Tufted titmouse	*Parus bicolor*	X		
White-breasted nuthatch	*Sitta carolinensis*	X		X
Yellow-billed cuckoo	*Coccyzus americanus*	X	X	X
Black-and-white warbler	*Mniotilta varia*	X		
Wood thrush	*Hylocichla mustelina*	X		
Eastern wood pewee	*Contopus virens*	X		
Red-eyed vireo	*Vireo olivaceus*	X		
Pine warbler	*Dendroica pinus*	X		
Blue-gray gnatcatcher	*Polioptila caerulea*			X
Great crested flycatcher	*Myiarchus crinitus*	X		

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Table 2-6. Common Terrestrial and Wetland Wildlife Species in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Species By Common Name	Scientific Name	Forest Lands	Managed Open Lands	Wetland and Riparian Communities
Mammals				
Whitetail deer	*Odocoileus virginianus*	X	X	X
Gray squirrel	*Sciurus carolinensis*	X		
Southern flying squirrel	*Glaucomys volans*	X		
Eastern chipmunk	*Tamias striatus*	X	X	
Raccoon	*Procyon lotor*	X		X
Eastern cottontail rabbit	*Sylvilagus floridanus*		X	
Bobcat	*Lynx rufus*	X		X
Red fox	*Vulpes vulpes*		X	
Gray fox	*Urocyon cinereoargenteus*	X	X	
Coyote	*Canis latrans*		X	
Mink	*Mustela vison*			X
Muskrat	*Ondatra zibethicus*			X
Opossum	*Didelphis virginiana*	X	X	
Striped skunk	*Mephitis mephitis*	X	X	
Groundhog	*Marmota monax*	X	X	
White-footed mouse	*Peromyscus leucopus*	X	X	
Woodland jumping mouse	*Napaeozapus insignis*	X	X	X
Meadow jumping mouse	*Zapus hudsonius*	X	X	X
Deer mouse	*Peromyscus maniculatus*	X	X	
Allegheny woodrat	*Neotoma magister*	X		
Southern bog lemming	*Synaptomys cooperi*	X		X
Eastern mole	*Scalopus aquaticus*	X	X	
Least shrew	*Cryptotis parva*		X	X
Southeastern shrew	*Sorex longirostris*	X		X
Short-tailed shrew	*Blarina brevicauda*	X		X
Gray bat	*Myotis grisescens*			X
Indiana bat	*Myotis sodalis*	X		X
Eastern small-footed myotis	*Myotis leibii*	X		X

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Table 2-6. Common Terrestrial and Wetland Wildlife Species in the Vicinity of Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Species By Common Name	Scientific Name	Forest Lands	Managed Open Lands	Wetland and Riparian Communities
Amphibians				
Bullfrog	*Rana catesbeiana*			X
Eastern narrowmouth toad	*Gastrophryne carolinensis*			X
Green frog	*Rana clamitans*			X
Cope's gray treefrog	*Hyla chrysoscelis*	X		X
Spring peeper	*Pseudacris crucifer*			X
Fowler's toad	*Bufo woodhousii fowleri*	X		X
Spotted salamander	*Ambystoma maculatum*	X	X	
Dusky salamander	*Desmognathus fuscus*	X		X
Longtail salamander	*Eurycea longicauda*	X		
Spring salamander	*Gyrinophilus porphyriticus*			X
Northern slimy salamander	*Plethodon glutinosus*	X		
Ravine salamander	*Plethodon richmondi*	X		
Red salamander	*Pseudotriton ruber*			X
Reptiles				
Black rat snake	*Elaphe obsoleta obsoleta*	X	X	
Eastern garter snake	*Thamnophis sirtalis sirtalis*	X	X	X
Northern ringneck snake	*Diadophis punctatus edwardsii*	X		
Northern water snake	*Nerodia sipedon sipedon*			X
Northern fence lizard	*Sceloporus undulatus hyacinthinus*	X		
Five-lined skink	*Eumeces fasciatus*	X	X	
Broadhead skink	*Eumeces laticeps*	X		
Common snapping turtle	*Chelydra serpentina serpentina*			X
Painted turtle	*Chrysemys picta spp.*			X
Red-eared slider	*Trachemys scripta elegans*			X
Eastern box turtle	*Terrapene carolina carolina*	X	X	X

Source: Watts Bar Reservoir Land Management Plan, Appendix D (TVA 2009a).

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Table 2-7. Migratory Bird Species in the Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Status	Habitat
Black-bellied Plover	*Pluvialis squatarola*	Uncommon	Variety of habitats; drier portions of mudflats
American Golden-Plover	*Pluvialis dominica*	Uncommon	Mudflats; irrigated sod farms
Killdeer	*Charadrius vociferus*	Very common	Variety of habitats
Semipalmated Plover	*Charadrius semipalmatus*	Common	Variety of habitats
Piping Plover	*Charadrius melodus*	Endangered	Shoreline
Black-necked Stilt	*Himantopus mexicanus*	Rare	Shallow water
American Avocet	*Recurvirostra americana*	Uncommon	Shallow water
Greater Yellowlegs	*Tringa melanoleuca*	Fairly common	Mudflats; tailwaters; ponds
Lesser Yellowlegs	*Tringa flavipes*	Common	Mudflat
Solitary Sandpiper	*Tringa solitaria*	Fairly common	Mudflats, ponds, ditches, tailwaters, rivers
Spotted Sandpiper	*Actitis macularius*	Fairly common	Shoreline, tributary streams, tailwaters
Willet	*Catoptrophorus semipalmatus*	Rare	Island gravel bars
Marbled Godwit	*Limosa fedoa*	Extremely rare	Beach
Hudsonian Godwit	*Limosa haemastica*	Extremely rare	Embayment
Whimbrel	*Numenius phaeopus*	Extremely rare	Ash pond
Long-billed Curlew	*Numenius americanus*	Extremely rare	Creek
Upland Sandpiper	*Bartrania longicauda*	Uncommon	Grassy pastures and fields
Buff-breasted Sandpiper	*Tryngites subruficollis*	Uncommon	Vegetated mudflats
Ruddy Turnstone	*Arenaria interpres*	Extremely rare	Variety
Sanderling	*Calidris alba*	Uncommon	River
Red Knot	*Calidris canutus*	Accidental	Creek
Dunlin	*Calidris alpina*	Common	Mudflats, moderate water depts
Pectoral Sandpiper	*Calidris melanotos*	Common	Vegetated mudflats
White-rumped Sandpiper	*Calidris fuscicollis*	Uncommon to rare	Sinks
Baird's Sandpiper	*Calidris bairdii*	Uncommon	Off-reservoir
Semipalmated Sandpiper	*Calidris pusilla*	Common	Mudflats
Western Sandpiper	*Calidris mauri*	Uncommon	N/A
Least Sandpiper	*Charadrius vociferous*	Common	N/A
Stilt Sandpiper	*Calidris himantopus*	Uncommon	Shallow water
Long-billed Dowitcher	*Limnodromus scolopaceus*	Rare	Mudflats, deeper water
Short-billed Dowitcher	*Limnodromus griseus*	Uncommon	N/A
Ruff	*Philomachus pugnax*	Rare/accidental	N/A
Wilson's Snipe	*Gallinago delicata*	Common	Hides in vegetation and debris
American Woodcock	*Scolopax minor*	Uncommon	N/A
Wilson's Phalarope	*Phalaropus tricolor*	Rare	Deeper water
Red-necked Phalarope	*Phalaropus lobatus*	Rare	Oceanic species
Red Phalarope	*Phalaropus fulicarius*	Accidental	N/A

Source: Henry 2010 (draft report).
N/A = Not applicable.

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Table 2-8. Threatened and Endangered Bird Species in the Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Federal Status	State Status
Birds			
Bald Eagle	*Haliaeetus leucocephalus*	Protected	In need of management
Barn Owl	*Tyto alba*	NL	In need of management
Least Bittern	*Ixobrychus exilis*	NL	In need of management
Sharp-Shinned Hawk	*Accipiter striatus*	NL	In need of management
Bachman's Sparrow	*Aimophila aestivalis*	NL	Endangered

Source: Watts Bar Reservoir Land Management Plan, Table 3.3-2 (TVA 2009a).
NL = Not listed.

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Table 2-9. Threatened and Endangered Mammals Species in the Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Federal Status	State Status
Mammals			
Eastern Small-Footed Bat	*Myotis leibii*	NL	In need of management
Gray Bat	*Myotis grisescens*	Endangered	Endangered
Southeastern Shrew	*Sorex longirostris*	NL	In need of management
Southern Bog Lemming	*Synaptomys cooperi*	NL	In need of management

Source: Watts Bar Reservoir Land Management Plan, Table 3.3-2 (TVA 2009a).
NL = Not listed.

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Table 2-10. Threatened and Endangered Amphibian and Reptile Species in the Watts Bar Reservoir
Tennessee Valley Authority Kingston, Tennessee

Common Name	Scientific Name	Federal Status	State Status
Amphibians			
Berry Cave Salamander	*Gyrinophilus palleucus*	NL	Threatened
Eastern Hellbender	*Cryptobranchus alleganiensis alleganiensis*	NL	In need of management
Four-Toed Salamander	*Hemidactylium scutatum*	NL	In need of management
Green Salamander	*Aneides aeneus*	NL	Rare
Reptiles			
Eastern Slender Glass Lizard	*Ophisaurus altenuatus longicaudus*	NL	In need of management
Northern Pine Snake	*Pituophis melanoleucus melanoleucus*	NL	Threatened

Source: Watts Bar Reservoir Land Management Plan, Table 3.3-2 (TVA 2009a).
NL = Not listed.

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Table 2-11. Environmental Data by Media and Receptor
Tennessee Valley Authority Kingston, Tennessee

Environmental Sample Medium		Fish	Benthic Invertebrates	Aquatic Vegetation	Aquatic- or Riparian-Feeding Birds	Aquatic- or Riparian-Feeding Mammals	Aerial-Feeding Birds and Mammas	Amphibians	Reptiles
Ash Deposits		—	●	—	—	—	—	—	—
Seasonally-Exposed Sediments		—	●	●	●	●	—	●	●
Submerged Sediments	Vibracore	—	●	●	—	—	—	—	●
	Sediment Bioassay	—	●	—	—	—	—	—	●
Sediment Porewater	Porewater	—	●	●	—	—	—	—	—
	Residual Sediment	—	●	—	—	—	—	—	—
Surface Water	Mid-Column	●	—	●	●	●	●	●	●
	Epi-Benthic	●	●	●	—	—	—	—	—
Groundwater	Permanent Wells & Modeling	—	●	—	—	—	—	—	—
Benthic Invertebrates	Snails	—	●	—	—	—	—	—	—
	Mayfly Nymphs	—	●	—	●	●	—	—	—
	Mayfly Adults	—	●	—	—	—	●	—	—
Fish	Largemouth Bass	●	—	—	—	—	—	—	—
	Bluegill	●	—	—	—	—	—	—	—
	Channel Catfish	●	—	—	—	—	—	—	—
	Gizzard Shad	●	—	—	●	●	—	—	—
Mammals	Raccoons	—	—	—	—	●	—	—	—
Amphibians	Spring Peepers	—	—	—	—	●	—	●	—
	Upland Chorus Frogs	—	—	—	—	●	—	●	—
	American Toads	—	—	—	—	—	—	●	—
Reptiles	Common Musk Blood	—	—	—	—	—	—	—	●
	Snapping Turtle Blood	—	—	—	—	—	—	—	●
	Softshell Turtle Blood and Carapace	—	—	—	—	—	—	—	●
Birds	Tree Swallow Eggs	—	—	—	—	—	●	—	—
	Tree Swallow Nestlings	—	—	—	—	—	●	—	—
	Great Blue Heron Eggs	—	—	—	●	—	—	—	—
	Osprey Eggs	—	—	—	●	—	—	—	—

● Data for this sample media were used to evaluate this receptor.

— Data for this sample media were not used to evaluate this receptor.

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Table 2-12. Environmental Data Collection Schedule by Media

Tennessee Valley Authority **Kingston, Tennessee**

Media		2009												2010												2011											
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ash Release	✸																																				
Dredging				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X																			
Surface Water																					X	X	X														
Seasonally-Exposed Sediment																									X	X											
Submerged Sediment																							X	X	X	X	X	X	X								
Lab Bioassay Sediment																											X				X						
Porewater																											X				X						
Fish		X	X	X	X	X	X	X		X	X	X		X			X	X	X	X		X	X		X	X		X	X	X	X				X	X	
Snails									X	X										X	X										X		X				
Mayflies (Larval)							X	X		X								X	X											X	X						
Mayflies (Adult)							X	X	X										X	X											X	X					
Amphibians				X	X											X	X										X	X									
Heron Eggs				X												X												X									
Osprey Eggs				X												X																					
Goose Eggs				X	X											X	X											X	X								
Tree Swallow Eggs						X	X										X	X	X									X[1]	X[1]	X[1]	X[1]	X[1]					
Tree Swallow Nestlings						X	X	X										X	X	X									X[1]	X[1]	X[1]	X[1]					
Turtles											X	X	X					X	X	X	X	X						X[1]	X[1]	X[1]	X[1]	X[1]					
Vegetation																															X						
Periphyton																															X	X	X				
Raccoons											X	X	X									X	X		X									X	X	X	

[1] Tissue concentrations were not available for use in the BERA. Evaluations include reproductive and community data only.

X	Period of dredging.
X	Period of collection.
X	Abiotic media used in dietary uptake models.
X	Prey items used in dietary uptake models.
X	Available data was used semi-quantitatively in uncertainty sections.
	Not collected during the specified month.

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Table 2-13. Seasonally-Exposed Sediment Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics								
Aluminum	mg/kg	5 - 5	100%	2480 - 14800	– - –	8594	NA	No ESV
Antimony	mg/kg	0 - 5	0%	– - –	1.19 - 1.6	–	12	–
Arsenic	mg/kg	4 - 5	80%	1.83 - 5.4	1.36 - 1.36	3.38	7.24	no
Barium	mg/kg	5 - 5	100%	22.6 - 90.4	– - –	45.4	NA	No ESV
Beryllium	mg/kg	1 - 5	20%	0.769 - 0.769	0.476 - 0.619	0.77	NA	No ESV
Boron	mg/kg	0 - 5	0%	– - –	4.76 - 6.41	–	NA	No ESV
Cadmium	mg/kg	0 - 5	0%	– - –	0.119 - 0.16	–	1	–
Chromium	mg/kg	5 - 5	100%	3.21 - 13.8	– - –	9.01	52.3	no
Cobalt	mg/kg	5 - 5	100%	2.15 - 10.5	– - –	5.7	NA	No ESV
Copper	mg/kg	5 - 5	100%	4.03 - 6.83	– - –	5.46	18.7	no
Hex. Chromium	mg/kg	1 - 2	50%	0.37 - 0.37	1.6 - 1.6	0.37	NA	No ESV
Lead	mg/kg	5 - 5	100%	3.15 - 10.4	– - –	7.1	30.2	no
Manganese	mg/kg	5 - 5	100%	29.9 - 689	– - –	315	NA	No ESV
Mercury	mg/kg	0 - 5	0%	– - –	0.047 - 0.064	–	0.13	–
Molybdenum	mg/kg	0 - 5	0%	– - –	4.76 - 6.41	–	NA	No ESV
Nickel	mg/kg	5 - 5	100%	3.42 - 14.7	– - –	7.7	15.9	no
Selenium	mg/kg	0 - 5	0%	– - –	1.19 - 1.6	–	NA	No ESV
Silver	mg/kg	0 - 5	0%	– - –	0.595 - 0.801	–	2	–
Strontium	mg/kg	3 - 5	60%	5.31 - 16.3	5.43 - 6.19	9.5	NA	No ESV
Thallium	mg/kg	0 - 5	0%	– - –	1.19 - 1.6	–	NA	No ESV
Vanadium	mg/kg	5 - 5	100%	4.05 - 26.3	– - –	14.4	NA	No ESV
Zinc	mg/kg	5 - 5	100%	15 - 54.1	– - –	32.4	124	no
Inorganic-cations/anions								
Calcium	mg/kg	5 - 5	100%	322 - 1630	– - –	764	NA	No ESV
Iron	mg/kg	5 - 5	100%	3210 - 18500	– - –	11126	NA	No ESV
Magnesium	mg/kg	5 - 5	100%	189 - 1490	– - –	773	NA	No ESV
Potassium	mg/kg	5 - 5	100%	297 - 1480	– - –	836	NA	No ESV
Sodium	mg/kg	0 - 5	0%	– - –	119 - 160	–	NA	No ESV
Benzo(a)anthracene	mg/kg	2 - 2	100%	0.0013 - 0.016	– - –	0.009	0.33	no
Benzo(a)pyrene	mg/kg	2 - 2	100%	0.0015 - 0.016	– - –	0.009	0.33	no
Benzo(b)fluoranthene	mg/kg	2 - 2	100%	0.0019 - 0.028	– - –	0.015	NA	No ESV
Benzo(e)pyrene	mg/kg	2 - 2	100%	0.0012 - 0.015	– - –	0.008	NA	No ESV
Benzo(g,h,i)perylene	mg/kg	2 - 2	100%	0.001 - 0.0065	– - –	0.004	NA	No ESV

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Table 2-13. Seasonally-Exposed Sediment Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)								
Benzo(k)fluoranthene	mg/kg	2 - 2	100%	0.0017 - 0.017	– - –	0.009	NA	No ESV
C1-Chrysenes	mg/kg	1 - 2	50%	0.0084 - 0.0084	0.00061 - 0.00061	0.008	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	2 - 2	100%	0.002 - 0.023	– - –	0.013	NA	No ESV
C2-Chrysenes	mg/kg	1 - 2	50%	0.0045 - 0.0045	0.00061 - 0.00061	0.005	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	0 - 2	0%	– - –	0.00061 - 0.00084	–	NA	No ESV
C3-Chrysenes	mg/kg	0 - 2	0%	– - –	0.00061 - 0.00084	–	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	0 - 2	0%	– - –	0.00061 - 0.00084	–	NA	No ESV
C4-Chrysenes	mg/kg	0 - 2	0%	– - –	0.00061 - 0.00084	–	NA	No ESV
Chrysene	mg/kg	2 - 2	100%	0.0016 - 0.019	– - –	0.010	0.33	no
Dibenz(a,h)anthracene	mg/kg	1 - 2	50%	0.0022 - 0.0022	0.00061 - 0.00061	0.002	0.33	no
Fluoranthene	mg/kg	2 - 2	100%	0.0032 - 0.034	– - –	0.019	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	2 - 2	100%	0.001 - 0.0068	– - –	0.004	NA	No ESV
Perylene	mg/kg	1 - 2	50%	0.041 - 0.041	0.00061 - 0.00061	0.041	NA	No ESV
Pyrene	mg/kg	2 - 2	100%	0.0029 - 0.033	– - –	0.018	0.33	no
Total HPAH	mg/kg	2 - 2	100%	0.02418 - 0.27376	– - –	0.15	0.655	no
Acenaphthene	mg/kg	0 - 2	0%	– - –	0.00061 - 0.00084	–	0.33	–
Acenaphthylene	mg/kg	0 - 2	0%	– - –	0.00061 - 0.00084	–	0.33	–
Anthracene	mg/kg	1 - 2	50%	0.0023 - 0.0023	0.00061 - 0.00061	0.0023	0.33	no
C1-Fluorenes	mg/kg	1 - 2	50%	0.002 - 0.002	0.00061 - 0.00061	0.002	NA	No ESV
C1-Naphthalenes	mg/kg	1 - 2	50%	0.011 - 0.011	0.00061 - 0.00061	0.011	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	2 - 2	100%	0.00078 - 0.015	– - –	0.008	NA	No ESV
C2-Fluorenes	mg/kg	1 - 2	50%	0.0044 - 0.0044	0.00061 - 0.00061	0.0044	NA	No ESV
C2-Naphthalenes	mg/kg	2 - 2	100%	0.00091 - 0.028	– - –	0.014	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	1 - 2	50%	0.011 - 0.011	0.00061 - 0.00061	0.011	NA	No ESV
C3-Fluorenes	mg/kg	1 - 2	50%	0.0026 - 0.0026	0.00061 - 0.00061	0.0026	NA	No ESV
C3-Naphthalenes	mg/kg	1 - 2	50%	0.022 - 0.022	0.00061 - 0.00061	0.022	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	1 - 2	50%	0.005 - 0.005	0.00061 - 0.00061	0.005	NA	No ESV
C4-Naphthalenes	mg/kg	1 - 2	50%	0.013 - 0.013	0.00061 - 0.00061	0.013	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	1 - 2	50%	0.025 - 0.025	0.00061 - 0.00061	0.025	NA	No ESV
Fluorene	mg/kg	1 - 2	50%	0.0022 - 0.0022	0.00061 - 0.00061	0.0022	0.33	no
Naphthalene	mg/kg	1 - 2	50%	0.0039 - 0.0039	0.00061 - 0.00061	0.0039	0.33	no
Phenanthrene	mg/kg	2 - 2	100%	0.0022 - 0.017	– - –	0.0096	0.33	no
Total LPAH	mg/kg	2 - 2	100%	0.01243 - 0.16608	– - –	0.09	0.33	no

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Table 2-13. Seasonally-Exposed Sediment Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)								
Total Alkylated PAHs	mg/kg	2 - 2	100%	0.01284 - 0.17826	– - –	0.096	NA	No ESV
Total Unsubstituted PAHs	mg/kg	2 - 2	100%	0.02377 - 0.26158	– - –	0.14	NA	No ESV
PCB-1016	mg/kg	0 - 2	0%	– - –	0.0016 - 0.0021	–	0.033	–
PCB-1221	mg/kg	0 - 2	0%	– - –	0.0016 - 0.0021	–	0.067	–
PCB-1232	mg/kg	0 - 2	0%	– - –	0.0016 - 0.0021	–	0.033	–
PCB-1242	mg/kg	0 - 2	0%	– - –	0.0016 - 0.0021	–	0.033	–
PCB-1248	mg/kg	0 - 2	0%	– - –	0.0016 - 0.0021	–	0.033	–
PCB-1254	mg/kg	1 - 2	50%	0.0032 - 0.0032	0.0016 - 0.0016	0.0032	0.033	no
PCB-1260	mg/kg	1 - 2	50%	0.0046 - 0.0046	0.0016 - 0.0016	0.0046	0.033	no
PCB-1262	mg/kg	0 - 2	0%	-	0.0016 - 0.0021	–	0.033	0
PCB-1268	mg/kg	0 - 2	0%	-	0.0016 - 0.0021	–	0.033	0
Total PCBs	mg/kg	1 - 2	50%	0.0225 - 0.0225	0.0144 - 0.0144	0.023	0.033	no
Pesticides								
4,4'-DDD	mg/kg	0 - 2	0%	– - –	0.00062 - 0.00082	–	0.0033	–
4,4'-DDE	mg/kg	0 - 2	0%	– - –	0.00061 - 0.00083	–	0.0033	–
4,4'-DDT	mg/kg	0 - 2	0%	– - –	0.00062 - 0.00082	–	0.0033	–
Aldrin	mg/kg	0 - 2	0%	– - –	0.00031 - 0.00043	–	NA	No ESV
alpha-BHC	mg/kg	0 - 2	0%	– - –	0.00031 - 0.00043	–	NA	No ESV
alpha-Chlordane	mg/kg	0 - 2	0%	– - –	0.00031 - 0.00043	–	0.0017	–
beta-BHC	mg/kg	1 - 2	50%	0.00073 - 0.00073	0.00031 - 0.00031	0.00073	NA	No ESV
delta-BHC	mg/kg	0 - 2	0%	– - –	0.00031 - 0.00043	–	NA	No ESV
Dieldrin	mg/kg	0 - 2	0%	– - –	0.00061 - 0.00083	–	0.0033	–
Endosulfan I	mg/kg	0 - 2	0%	– - –	0.00031 - 0.00043	–	NA	No ESV
Endosulfan II	mg/kg	0 - 2	0%	– - –	0.00061 - 0.00083	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 2	0%	– - –	0.00061 - 0.00083	–	NA	No ESV
Endrin	mg/kg	0 - 2	0%	– - –	0.00061 - 0.00083	–	0.0033	–
Endrin aldehyde	mg/kg	0 - 2	0%	– - –	0.00061 - 0.00083	–	NA	No ESV
Endrin Ketone	mg/kg	0 - 2	0%	– - –	0.00061 - 0.00083	–	NA	No ESV
gamma-BHC (Lindane)	mg/kg	0 - 2	0%	– - –	0.00031 - 0.00043	–	0.0033	–
gamma-Chlordane	mg/kg	0 - 2	0%	– - –	0.00031 - 0.00043	–	0.0017	–
Heptachlor	mg/kg	0 - 2	0%	– - –	0.00031 - 0.00043	–	NA	No ESV
Heptachlor Epoxide	mg/kg	0 - 2	0%	– - –	0.00031 - 0.00043	–	NA	No ESV

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Table 2-13. Seasonally-Exposed Sediment Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Pesticides (continued)										
Methoxychlor	mg/kg	0 - 2	0%	–	–	0.0031	0.0043	–	NA	No ESV
Total Chlordane	mg/kg	0 - 2	0%	–	–	0.00062	0.00086	–	0.0017	–
Total DDx	mg/kg	0 - 2	0%	–	–	0.00185	0.00247	–	NA	No ESV
Total Pesticides	mg/kg	1 - 2	50%	0.05935	0.05935	0.04271	0.04271	0.06	NA	No ESV
Toxaphene	mg/kg	0 - 2	0%	–	–	0.031	0.043	–	NA	No ESV
Radionuclides										
Actinium-228	pCi/g	2 - 2	100%	0.605	0.734	-		0.67	NA	No ESV
Americium-241	pCi/g	0 - 2	0%	–	–	36.1	210	–	NA	No ESV
Bismuth-214	pCi/g	2 - 2	100%	0.598	0.689	-		0.64	NA	No ESV
Cesium-137	pCi/g	1 - 2	50%	0.049	0.049	0.0353	0.0353	0.049	NA	No ESV
Cobalt-60	pCi/g	0 - 2	0%	–	–	0.0297	0.0362	–	NA	No ESV
Lead-212	pCi/g	2 - 2	100%	0.619	0.691	-		0.66	NA	No ESV
Lead-214	pCi/g	2 - 2	100%	0.717	0.764	-		0.74	NA	No ESV
Potassium-40	pCi/g	2 - 2	100%	4.27	5.1	-		4.69	NA	No ESV
Radium-226	pCi/g	2 - 2	100%	0.598	0.689	-		0.64	NA	No ESV
Radium-228	pCi/g	2 - 2	100%	0.605	0.734	-		0.67	NA	No ESV
Thallium-208	pCi/g	2 - 2	100%	0.202	0.227	-		0.21	NA	No ESV
Thorium-228	pCi/g	2 - 2	100%	0.545	0.874	-		0.71	NA	No ESV
Thorium-230	pCi/g	2 - 2	100%	0.494	0.516	-		0.51	NA	No ESV
Thorium-232	pCi/g	2 - 2	100%	0.483	0.72	-		0.602	NA	No ESV
Thorium-234	pCi/g	1 - 2	50%	1.27	1.27	1.62	1.62	1.27	NA	No ESV
Uranium-234	pCi/g	2 - 2	100%	0.483	0.497	-		0.49	NA	No ESV
Uranium-235	pCi/g	2 - 2	100%	0.0453	0.0648	-		0.0551	NA	No ESV
Uranium-238	pCi/g	2 - 2	100%	0.513	0.515	-		0.514	NA	No ESV
Speciation										
Arsenate-speciation	mg/kg	2 - 2	100%	1.4	2.34	-		1.87	NA	No ESV
Arsenic-speciation	mg/kg	2 - 2	100%	2.94	2.96	-		2.95	NA	No ESV
Arsenite-speciation	mg/kg	2 - 2	100%	0.204	0.425	-		0.31	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	2 - 2	100%	1.83	2.54	-		2.19	NA	No ESV
Inorganic Mercury-speciation	mg/kg	2 - 2	100%	0.0164	0.0335	-		0.02	NA	No ESV
Inorganic Selenium-speciation	mg/kg	0 - 2	0%	–	–	0.424	0.525	–	NA	No ESV
Mercury-speciation	mg/kg	2 - 2	100%	0.0164	0.0345	-		0.025	NA	No ESV

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Table 2-13. Seasonally-Exposed Sediment Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Speciation (continued)										
Methyl mercury-speciation	mg/kg	2 - 2	100%	2.4E-05	0.00105	-		0.0005	NA	No ESV
Organic Arsenic-speciation	mg/kg	2 - 2	100%	0.415	1.11	-		0.76	NA	No ESV
Organic Selenium-speciation	mg/kg	0 - 2	0%	–	–	0.607	0.924	–	NA	No ESV
Selenate-speciation	mg/kg	0 - 2	0%	–	–	0.335	0.415	–	NA	No ESV
Selenite-speciation	mg/kg	0 - 2	0%	–	–	0.424	0.525	–	NA	No ESV
Selenium-speciation	mg/kg	0 - 2	0%	–	–	0.607	0.924	–	NA	No ESV
Physical Properties										
% Ash	%	0 - 1	0%	–	–	1	1	–	NA	No ESV
% Ash (> or < 50%)	%	0 - 5	0%	–	–	50	50	–	NA	No ESV
Fraction of Organic Carbon	%	2 - 2	100%	0.33	3.3	-		1.82	NA	No ESV
Total Organic Carbon	mg/kg	1 - 2	50%	27000	27000	2400	2400	27000	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-14. Seasonally-Exposed Sediment Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics								
Aluminum	mg/kg	12 - 12	100%	13800 - 76500	– - –	29850	NA	No ESV
Antimony	mg/kg	4 - 12	33%	1.27 - 1.8	1.18 - 1.96	1.56	12	no
Arsenic	mg/kg	12 - 12	100%	5.02 - 32.3	– - –	14.34	7.24	Yes
Barium	mg/kg	12 - 12	100%	84.5 - 245	– - –	142	NA	No ESV
Beryllium	mg/kg	11 - 12	92%	0.59 - 2.19	0.495 - 0.495	1.27	NA	No ESV
Boron	mg/kg	12 - 12	100%	6.01 - 88	– - –	23.3	NA	No ESV
Cadmium	mg/kg	0 - 12	0%	– - –	0.118 - 0.196	–	1	–
Chromium	mg/kg	12 - 12	100%	15.2 - 86	– - –	38.8	52.3	Yes
Cobalt	mg/kg	12 - 12	100%	7.74 - 46.6	– - –	18.8	NA	No ESV
Copper	mg/kg	12 - 12	100%	6.08 - 31.7	– - –	17.6	18.7	Yes
Hex. Chromium	mg/kg	2 - 3	67%	0.58 - 1.2	0.33 - 0.33	0.89	NA	No ESV
Lead	mg/kg	12 - 12	100%	12.5 - 126	– - –	27.6	30.2	Yes
Manganese	mg/kg	12 - 12	100%	289 - 2910	– - –	956	NA	No ESV
Mercury	mg/kg	6 - 12	50%	0.058 - 0.13	0.05 - 0.066	0.09	0.13	no
Molybdenum	mg/kg	0 - 12	0%	– - –	4.72 - 7.83	–	NA	No ESV
Nickel	mg/kg	12 - 12	100%	7.42 - 40.6	– - –	19.8	15.9	Yes
Selenium	mg/kg	3 - 12	25%	1.89 - 3.05	1.23 - 1.57	2.45	NA	No ESV
Silver	mg/kg	0 - 12	0%	– - –	0.59 - 0.978	–	2	–
Strontium	mg/kg	12 - 12	100%	9.94 - 149	-	39.9	NA	No ESV
Thallium	mg/kg	0 - 12	0%	– - –	1.18 - 1.96	–	NA	No ESV
Vanadium	mg/kg	12 - 12	100%	24.2 - 80.1	– - –	46.9	NA	No ESV
Zinc	mg/kg	12 - 12	100%	27.3 - 132	– - –	59	124	Yes
Inorganic-cations/anions								
Calcium	mg/kg	12 - 12	100%	521 - 3630	– - –	1712	NA	No ESV
Iron	mg/kg	12 - 12	100%	13300 - 48200	– - –	32967	NA	No ESV
Magnesium	mg/kg	12 - 12	100%	1010 - 9000	– - –	2544	NA	No ESV
Potassium	mg/kg	12 - 12	100%	1240 - 24700	– - –	4679	NA	No ESV
Sodium	mg/kg	3 - 12	25%	190 - 257	118 - 157	218	NA	No ESV
Benzo(a)anthracene	mg/kg	2 - 3	67%	0.0066 - 0.0077	0.00067 - 0.00067	0.0072	0.33	no
Benzo(a)pyrene	mg/kg	2 - 3	67%	0.0051 - 0.0079	0.00067 - 0.00067	0.0065	0.33	no
Benzo(b)fluoranthene	mg/kg	2 - 3	67%	0.0086 - 0.027	0.00067 - 0.00067	0.018	NA	No ESV
Benzo(e)pyrene	mg/kg	2 - 3	67%	0.0047 - 0.012	0.00067 - 0.00067	0.008	NA	No ESV
Benzo(g,h,i)perylene	mg/kg	2 - 3	67%	0.0021 - 0.0022	0.00067 - 0.00067	0.002	NA	No ESV
Benzo(k)fluoranthene	mg/kg	2 - 3	67%	0.0057 - 0.018	0.00067 - 0.00067	0.012	NA	No ESV

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Table 2-14. Seasonally-Exposed Sediment Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)								
C1-Chrysenes	mg/kg	2 - 3	67%	0.0043 - 0.0099	0.00067 - 0.00067	0.0071	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	2 - 3	67%	0.0057 - 0.015	0.00067 - 0.00067	0.01	NA	No ESV
C2-Chrysenes	mg/kg	2 - 3	67%	0.0021 - 0.005	0.00067 - 0.00067	0.004	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	2 - 3	67%	0.0051 - 0.013	0.00067 - 0.00067	0.009	NA	No ESV
C3-Chrysenes	mg/kg	0 - 3	0%	– - –	0.00067 - 0.00078	–	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	1 - 3	33%	0.0067 - 0.0067	0.00067 - 0.00078	0.0067	NA	No ESV
C4-Chrysenes	mg/kg	0 - 3	0%	– - –	0.00067 - 0.00078	–	NA	No ESV
Chrysene	mg/kg	2 - 3	67%	0.0061 - 0.013	0.00067 - 0.00067	0.01	0.33	no
Dibenz(a,h)anthracene	mg/kg	2 - 3	67%	0.00094 - 0.0012	0.00067 - 0.00067	0.001	0.33	no
Fluoranthene	mg/kg	2 - 3	67%	0.01 - 0.012	0.00067 - 0.00067	0.011	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	2 - 3	67%	0.0024 - 0.0029	0.00067 - 0.00067	0.003	NA	No ESV
Perylene	mg/kg	2 - 3	67%	0.0021 - 0.0058	0.00067 - 0.00067	0.004	NA	No ESV
Pyrene	mg/kg	2 - 3	67%	0.011 - 0.017	0.00067 - 0.00067	0.014	0.33	no
Total HPAH	mg/kg	2 - 3	67%	0.08698 - 0.17572	0.01273 - 0.01273	0.1	0.655	no
Acenaphthene	mg/kg	0 - 3	0%	– - –	0.00067 - 0.00078	–	0.33	–
Acenaphthylene	mg/kg	0 - 3	0%	– - –	0.00067 - 0.00078	–	0.33	–
Anthracene	mg/kg	1 - 3	33%	0.001 - 0.001	0.00067 - 0.00078	0.001	0.33	no
C1-Fluorenes	mg/kg	0 - 3	0%	– - –	0.00067 - 0.00078	–	NA	No ESV
C1-Naphthalenes	mg/kg	2 - 3	67%	0.0011 - 0.0013	0.00067 - 0.00067	0.0012	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	2 - 3	67%	0.0019 - 0.002	0.00067 - 0.00067	0.002	NA	No ESV
C2-Fluorenes	mg/kg	0 - 3	0%	– - –	0.00067 - 0.00078	–	NA	No ESV
C2-Naphthalenes	mg/kg	2 - 3	67%	0.0023 - 0.0053	0.00067 - 0.00067	0.0038	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	2 - 3	67%	0.002 - 0.0026	0.00067 - 0.00067	0.0023	NA	No ESV
C3-Fluorenes	mg/kg	0 - 3	0%	– - –	0.00067 - 0.00078	–	NA	No ESV
C3-Naphthalenes	mg/kg	2 - 3	67%	0.0018 - 0.003	0.00067 - 0.00067	0.0024	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	1 - 3	33%	0.0011 - 0.0011	0.00067 - 0.00076	0.0011	NA	No ESV
C4-Naphthalenes	mg/kg	2 - 3	67%	0.0016 - 0.021	0.00067 - 0.00067	0.0113	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	2 - 3	67%	0.0009 - 0.067	0.00067 - 0.00067	0.034	NA	No ESV
Fluorene	mg/kg	0 - 3	0%	– - –	0.00067 - 0.00078	–	0.33	–
Naphthalene	mg/kg	1 - 3	33%	0.00077 - 0.00077	0.00067 - 0.00078	0.00077	0.33	no
Phenanthrene	mg/kg	2 - 3	67%	0.0014 - 0.0021	0.00067 - 0.00067	0.002	0.33	no
Total LPAH	mg/kg	2 - 3	67%	0.02114 - 0.11059	0.01139 - 0.01139	0.066	0.33	no

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Table 2-14. Seasonally-Exposed Sediment Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)								
Total Alkylated PAHs	mg/kg	2 - 3	67%	0.03468 - 0.15626	0.01206 - 0.01206	0.095	NA	No ESV
Total Unsubstituted PAHs	mg/kg	2 - 3	67%	0.07344 - 0.13005	0.01206 - 0.01206	0.102	NA	No ESV
PCB-1016	mg/kg	0 - 3	0%	– - –	0.0017 - 0.0019	–	0.033	–
PCB-1221	mg/kg	0 - 3	0%	– - –	0.0017 - 0.0019	–	0.067	–
PCB-1232	mg/kg	0 - 3	0%	– - –	0.0017 - 0.0019	–	0.033	–
PCB-1242	mg/kg	0 - 3	0%	– - –	0.0017 - 0.0019	–	0.033	–
PCB-1248	mg/kg	0 - 3	0%	– - –	0.0017 - 0.0019	–	0.033	–
PCB-1254	mg/kg	0 - 3	0%	– - –	0.0017 - 0.0019	–	0.033	–
PCB-1260	mg/kg	0 - 3	0%	– - –	0.0017 - 0.0019	–	0.033	–
PCB-1262	mg/kg	0 - 3	0%	– - –	0.0017 - 0.0019	–	0.033	–
PCB-1268	mg/kg	0 - 3	0%	– - –	0.0017 - 0.0019	–	0.033	–
Total PCBs	mg/kg	0 - 3	0%	– - –	0.0153 - 0.0171	–	0.033	–
Pesticides								
4,4'-DDD	mg/kg	0 - 3	0%	– - –	0.00065 - 0.0077	–	0.0033	–
4,4'-DDE	mg/kg	0 - 3	0%	– - –	0.00065 - 0.0077	–	0.0033	–
4,4'-DDT	mg/kg	0 - 3	0%	– - –	0.00065 - 0.0077	–	0.0033	–
Aldrin	mg/kg	0 - 3	0%	– - –	0.00033 - 0.004	–	NA	No ESV
alpha-BHC	mg/kg	0 - 3	0%	– - –	0.00033 - 0.004	–	NA	No ESV
alpha-Chlordane	mg/kg	1 - 3	33%	0.023 - 0.023	0.00033 - 0.00039	0.023	0.0017	Yes
beta-BHC	mg/kg	1 - 3	33%	0.00062 - 0.00062	0.00033 - 0.004	0.00062	NA	No ESV
delta-BHC	mg/kg	0 - 3	0%	– - –	0.00033 - 0.004	–	NA	No ESV
Dieldrin	mg/kg	0 - 3	0%	– - –	0.00065 - 0.0077	–	0.0033	–
Endosulfan I	mg/kg	0 - 3	0%	– - –	0.00033 - 0.004	–	NA	No ESV
Endosulfan II	mg/kg	0 - 3	0%	– - –	0.00065 - 0.0077	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 3	0%	– - –	0.00065 - 0.0077	–	NA	No ESV
Endrin	mg/kg	0 - 3	0%	– - –	0.00065 - 0.0077	–	0.0033	–
Endrin aldehyde	mg/kg	0 - 3	0%	– - –	0.00065 - 0.0077	–	NA	No ESV
Endrin Ketone	mg/kg	0 - 3	0%	– - –	0.00065 - 0.0077	–	NA	No ESV
gamma-BHC (Lindane)	mg/kg	0 - 3	0%	– - –	0.00033 - 0.004	–	0.0033	–
gamma-Chlordane	mg/kg	1 - 3	33%	0.036 - 0.036	0.00033 - 0.00039	0.036	0.0017	Yes
Heptachlor	mg/kg	0 - 3	0%	– - –	0.00033 - 0.004	–	NA	No ESV
Heptachlor Epoxide	mg/kg	0 - 3	0%	– - –	0.00033 - 0.004	–	NA	No ESV
Methoxychlor	mg/kg	0 - 3	0%	– - –	0.0033 - 0.04	–	NA	No ESV

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Table 2-14. Seasonally-Exposed Sediment Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Pesticides (continued)								
Total Chlordane	mg/kg	1 - 3	33%	0.059 - 0.059	0.00066 - 0.00078	0.059	0.0017	Yes
Total DDx	mg/kg	0 - 3	0%	– - –	0.00195 - 0.0231	–	NA	No ESV
Total Pesticides	mg/kg	2 - 3	67%	0.05378 - 0.6003	0.04545 - 0.04545	0.33	NA	No ESV
Toxaphene	mg/kg	0 - 3	0%	– - –	0.033 - 0.4	–	NA	No ESV
Radionuclides								
Actinium-228	pCi/g	3 - 3	100%	1.23 - 1.68	-	1.48	NA	No ESV
Americium-241	pCi/g	0 - 3	0%	– - –	72 - 203	–	NA	No ESV
Bismuth-214	pCi/g	3 - 3	100%	0.969 - 1.08	– - –	1.03	NA	No ESV
Cesium-137	pCi/g	1 - 3	33%	0.406 - 0.406	0.0545 - 0.0728	0.406	NA	No ESV
Cobalt-60	pCi/g	0 - 3	0%	– - –	0.0526 - 0.0589	–	NA	No ESV
Lead-212	pCi/g	3 - 3	100%	1.44 - 1.91	– - –	1.60	NA	No ESV
Lead-214	pCi/g	3 - 3	100%	1.28 - 1.42	– - –	1.33	NA	No ESV
Potassium-40	pCi/g	3 - 3	100%	14.9 - 23.3	– - –	18.23	NA	No ESV
Radium-226	pCi/g	3 - 3	100%	0.969 - 1.08	– - –	1.03	NA	No ESV
Radium-228	pCi/g	3 - 3	100%	1.23 - 1.68	– - –	1.48	NA	No ESV
Thallium-208	pCi/g	3 - 3	100%	0.32 - 0.566	– - –	0.43	NA	No ESV
Thorium-228	pCi/g	3 - 3	100%	1.23 - 1.8	– - –	1.52	NA	No ESV
Thorium-230	pCi/g	3 - 3	100%	1.03 - 1.55	– - –	1.34	NA	No ESV
Thorium-232	pCi/g	3 - 3	100%	0.95 - 1.61	– - –	1.31	NA	No ESV
Thorium-234	pCi/g	1 - 3	33%	0.981 - 0.981	1.42 - 1.88	0.981	NA	No ESV
Uranium-234	pCi/g	3 - 3	100%	0.822 - 1.31	– - –	1.004	NA	No ESV
Uranium-235	pCi/g	0 - 3	0%	– - –	0.0797 - 0.167	–	NA	No ESV
Uranium-238	pCi/g	3 - 3	100%	0.999 - 1.26	– - –	1.12	NA	No ESV
Speciation								
Arsenate-speciation	mg/kg	3 - 3	100%	14 - 14.8	– - –	14.4	NA	No ESV
Arsenic-speciation	mg/kg	3 - 3	100%	11 - 24.6	– - –	17.43	NA	No ESV
Arsenite-speciation	mg/kg	3 - 3	100%	0.245 - 9.05	– - –	3.191	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	3 - 3	100%	14.3 - 23.9	– - –	17.63	NA	No ESV
Inorganic Mercury-speciation	mg/kg	3 - 3	100%	0.0194 - 0.0573	– - –	0.04	NA	No ESV
Inorganic Selenium-speciation	mg/kg	1 - 3	33%	0.485 - 0.485	0.327 - 0.512	0.485	NA	No ESV
Mercury-speciation	mg/kg	3 - 3	100%	0.0194 - 0.0574	– - –	0.04	NA	No ESV
Methyl mercury-speciation	mg/kg	3 - 3	100%	1.2E-05 - 0.00049	– - –	0.0002	NA	No ESV
Organic Arsenic-speciation	mg/kg	1 - 3	33%	2.01 - 2.01	1.5 - 3.51	2.01	NA	No ESV

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Table 2-14. Seasonally-Exposed Sediment Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Speciation (continued)										
Organic Selenium-speciation	mg/kg	2 - 3	67%	1.04	1.28	0.641	0.641	1.16	NA	No ESV
Selenate-speciation	mg/kg	0 - 3	0%	–	–	0.259	0.405	–	NA	No ESV
Selenite-speciation	mg/kg	1 - 3	33%	0.485	0.485	0.327	0.512	0.49	NA	No ESV
Selenium-speciation	mg/kg	3 - 3	100%	0.819	1.28	–	–	1.05	NA	No ESV
Physical Properties										
% Ash	%	0 - 1	0%	–	–	1	1	–	NA	No ESV
% Ash (> or < 50%)	%	2 - 12	17%	50	50	50	50	50	NA	No ESV
Fraction of Organic Carbon	%	3 - 3	100%	1	9.8	–	–	4.03	NA	No ESV
Total Organic Carbon	mg/kg	2 - 3	67%	3800	12000	2300	2300	7900	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-15. Seasonally-Exposed Sediment Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics								
Aluminum	mg/kg	18 - 18	100%	3320 - 39400	– - –	17586	NA	No ESV
Antimony	mg/kg	2 - 18	11%	1.39 - 2.26	1.22 - 1.85	1.83	12	no
Arsenic	mg/kg	17 - 18	94%	3.15 - 62.4	1.36 - 1.36	15.99	7.24	Yes
Barium	mg/kg	18 - 18	100%	20.4 - 478	– - –	125	NA	No ESV
Beryllium	mg/kg	15 - 18	83%	0.656 - 3.52	0.514 - 0.563	1.2	NA	No ESV
Boron	mg/kg	12 - 18	67%	5.31 - 51.8	4.98 - 7.39	19.2	NA	No ESV
Cadmium	mg/kg	0 - 18	0%	– - –	0.118 - 0.185	–	1	–
Chromium	mg/kg	18 - 18	100%	5.27 - 42.4	– - –	22.4	52.3	no
Cobalt	mg/kg	18 - 18	100%	2.59 - 38.1	– - –	13.7	NA	No ESV
Copper	mg/kg	18 - 18	100%	1.64 - 47.1	– - –	16.5	18.7	Yes
Hex. Chromium	mg/kg	2 - 5	40%	0.35 - 0.45	0.55 - 0.74	0.4	NA	No ESV
Lead	mg/kg	18 - 18	100%	3.06 - 79.5	– - –	21.4	30.2	Yes
Manganese	mg/kg	18 - 18	100%	43.6 - 4120	– - –	826	NA	No ESV
Mercury	mg/kg	7 - 18	39%	0.053 - 0.12	0.048 - 0.073	0.1	0.13	no
Molybdenum	mg/kg	0 - 18	0%	– - –	4.71 - 7.39	–	NA	No ESV
Nickel	mg/kg	18 - 18	100%	4.2 - 54.7	– - –	19.1	15.9	Yes
Selenium	mg/kg	3 - 18	17%	1.36 - 3.64	1.18 - 1.85	2.3	NA	No ESV
Silver	mg/kg	0 - 18	0%	– - –	0.589 - 0.924	–	2	–
Strontium	mg/kg	17 - 18	94%	5.66 - 321	5.46 - 5.46	45.5	NA	No ESV
Thallium	mg/kg	0 - 18	0%	– - –	1.18 - 1.85	–	NA	No ESV
Vanadium	mg/kg	18 - 18	100%	5.08 - 78.6	– - –	31.5	NA	No ESV
Zinc	mg/kg	18 - 18	100%	15.8 - 113	– - –	47	124	no
Inorganic-cations/anions								
Calcium	mg/kg	18 - 18	100%	232 - 58700	– - –	4811	NA	No ESV
Iron	mg/kg	18 - 18	100%	3420 - 40000	– - –	21851	NA	No ESV
Magnesium	mg/kg	18 - 18	100%	245 - 7070	– - –	1808	NA	No ESV
Potassium	mg/kg	18 - 18	100%	301 - 11700	– - –	2594	NA	No ESV
Sodium	mg/kg	1 - 18	6%	498 - 498	118 - 185	498	NA	No ESV
Benzo(a)anthracene	mg/kg	4 - 4	100%	0.002 - 0.055	– - –	0.02	0.33	no
Benzo(a)pyrene	mg/kg	4 - 4	100%	0.0018 - 0.061	– - –	0.021	0.33	no
Benzo(b)fluoranthene	mg/kg	4 - 4	100%	0.0031 - 0.09	– - –	0.03	NA	No ESV
Benzo(e)pyrene	mg/kg	4 - 4	100%	0.0018 - 0.051	– - –	0.02	NA	No ESV
Benzo(g,h,i)perylene	mg/kg	4 - 4	100%	0.0011 - 0.026	– - –	0.01	NA	No ESV
Benzo(k)fluoranthene	mg/kg	4 - 4	100%	0.002 - 0.065	– - –	0.02	NA	No ESV

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Table 2-15. Seasonally-Exposed Sediment Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)								
C1-Chrysenes	mg/kg	4 - 4	100%	0.002 - 0.029	– - –	0.01	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	5 - 5	100%	0.00088 - 0.059	– - –	0.02	NA	No ESV
C2-Chrysenes	mg/kg	4 - 4	100%	0.001 - 0.023	– - –	0.01	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	4 - 4	100%	0.002 - 0.04	– - –	0.02	NA	No ESV
C3-Chrysenes	mg/kg	0 - 4	0%	– - –	0.00065 - 0.0029	–	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	4 - 4	100%	0.0011 - 0.021	– - –	0.01	NA	No ESV
C4-Chrysenes	mg/kg	0 - 4	0%	– - –	0.00065 - 0.0029	–	NA	No ESV
Chrysene	mg/kg	4 - 4	100%	0.0022 - 0.08	– - –	0.03	0.33	no
Dibenz(a,h)anthracene	mg/kg	3 - 4	75%	0.00073 - 0.01	0.00065 - 0.00065	0.00	0.33	no
Fluoranthene	mg/kg	4 - 4	100%	0.0037 - 0.074	– - –	0.03	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	4 - 4	100%	0.0011 - 0.028	– - –	0.0098	NA	No ESV
Perylene	mg/kg	4 - 4	100%	0.0025 - 0.065	– - –	0.03	NA	No ESV
Pyrene	mg/kg	4 - 4	100%	0.0037 - 0.071	– - –	0.03	0.33	no
Total HPAH	mg/kg	5 - 5	100%	0.00088 - 0.8288	– - –	0.26	0.655	Yes
Acenaphthene	mg/kg	1 - 4	25%	0.0019 - 0.0019	0.00065 - 0.0029	0.0019	0.33	no
Acenaphthylene	mg/kg	0 - 4	0%	– - –	0.00065 - 0.0029	–	0.33	–
Anthracene	mg/kg	2 - 4	50%	0.0043 - 0.021	0.00065 - 0.00066	0.013	0.33	no
C1-Fluorenes	mg/kg	3 - 5	60%	0.0011 - 0.003	0.00065 - 0.0029	0.002	NA	No ESV
C1-Naphthalenes	mg/kg	5 - 5	100%	0.0017 - 0.016	– - –	0.008	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	5 - 5	100%	0.0018 - 0.022	– - –	0.012	NA	No ESV
C2-Fluorenes	mg/kg	4 - 5	80%	0.0023 - 0.0056	0.00065 - 0.00065	0.004	NA	No ESV
C2-Naphthalenes	mg/kg	5 - 5	100%	0.0041 - 0.042	– - –	0.021	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	5 - 5	100%	0.0016 - 0.015	– - –	0.008	NA	No ESV
C3-Fluorenes	mg/kg	3 - 4	75%	0.0024 - 0.0043	0.00065 - 0.00065	0.0034	NA	No ESV
C3-Naphthalenes	mg/kg	5 - 5	100%	0.0022 - 0.031	– - –	0.016	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	4 - 5	80%	0.0014 - 0.012	0.00065 - 0.00065	0.0065	NA	No ESV
C4-Naphthalenes	mg/kg	5 - 5	100%	0.0017 - 0.019	– - –	0.010	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	5 - 5	100%	0.0011 - 0.022	– - –	0.009	NA	No ESV
Fluorene	mg/kg	3 - 4	75%	0.00075 - 0.0041	0.00065 - 0.00065	0.003	0.33	no
Naphthalene	mg/kg	5 - 5	100%	0.0008 - 0.006	– - –	0.003	0.33	no
Phenanthrene	mg/kg	5 - 5	100%	0.0012 - 0.026	– - –	0.012	0.33	no
Total LPAH	mg/kg	5 - 5	100%	0.022 - 0.2266	– - –	0.12	0.33	no

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Table 2-15. Seasonally-Exposed Sediment Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)								
Total Alkylated PAHs	mg/kg	5 - 5	100%	0.0275 - 0.3235	– - –	0.16	NA	No ESV
Total Unsubstituted PAHs	mg/kg	5 - 5	100%	0.005 - 0.7091	– - –	0.23	NA	No ESV
PCB-1016	mg/kg	0 - 5	0%	– - –	0.0016 - 0.0024	–	0.033	–
PCB-1221	mg/kg	0 - 5	0%	– - –	0.0016 - 0.0024	–	0.067	–
PCB-1232	mg/kg	0 - 5	0%	– - –	0.0016 - 0.0024	–	0.033	–
PCB-1242	mg/kg	0 - 5	0%	– - –	0.0016 - 0.0024	–	0.033	–
PCB-1248	mg/kg	0 - 5	0%	– - –	0.0016 - 0.0024	–	0.033	–
PCB-1254	mg/kg	1 - 5	20%	0.0032 - 0.0032	0.0016 - 0.0024	0.0032	0.033	no
PCB-1260	mg/kg	2 - 5	40%	0.0032 - 0.0052	0.0016 - 0.0019	0.0042	0.033	no
PCB-1262	mg/kg	0 - 5	0%	– - –	0.0016 - 0.0024	–	0.033	–
PCB-1268	mg/kg	0 - 5	0%	– - –	0.0016 - 0.0024	–	0.033	–
Total PCBs	mg/kg	2 - 5	40%	0.0224 - 0.0238	0.0144 - 0.0171	0.023	0.033	no
Pesticides								
4,4'-DDD	mg/kg	0 - 5	0%	– - –	0.00064 - 0.00092	–	0.0033	–
4,4'-DDE	mg/kg	0 - 5	0%	– - –	0.00064 - 0.00093	–	0.0033	–
4,4'-DDT	mg/kg	1 - 5	20%	0.0033 - 0.0033	0.00064 - 0.00092	0.0033	0.0033	no
Aldrin	mg/kg	0 - 5	0%	– - –	0.00033 - 0.00048	–	NA	No ESV
alpha-BHC	mg/kg	0 - 5	0%	– - –	0.00033 - 0.00048	–	NA	No ESV
alpha-Chlordane	mg/kg	0 - 5	0%	– - –	0.00033 - 0.00048	–	0.0017	–
beta-BHC	mg/kg	1 - 5	20%	0.001 - 0.001	0.00033 - 0.00048	0.001	NA	No ESV
delta-BHC	mg/kg	0 - 5	0%	– - –	0.00033 - 0.00048	–	NA	No ESV
Dieldrin	mg/kg	0 - 5	0%	– - –	0.00064 - 0.00093	–	0.0033	–
Endosulfan I	mg/kg	0 - 5	0%	– - –	0.00033 - 0.00048	–	NA	No ESV
Endosulfan II	mg/kg	0 - 5	0%	– - –	0.00064 - 0.00093	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 5	0%	– - –	0.00064 - 0.00093	–	NA	No ESV
Endrin	mg/kg	0 - 5	0%	– - –	0.00064 - 0.00093	–	0.0033	–
Endrin aldehyde	mg/kg	0 - 5	0%	– - –	0.00064 - 0.00093	–	NA	No ESV
Endrin Ketone	mg/kg	0 - 5	0%	– - –	0.00064 - 0.00093	–	NA	No ESV
gamma-BHC (Lindane)	mg/kg	0 - 5	0%	– - –	0.00033 - 0.00048	–	0.0033	–
gamma-Chlordane	mg/kg	0 - 5	0%	– - –	0.00033 - 0.00048	–	0.0017	–
Heptachlor	mg/kg	1 - 5	20%	0.00055 - 0.00055	0.00033 - 0.00048	0.00055	NA	No ESV
Heptachlor Epoxide	mg/kg	0 - 5	0%	– - –	0.00033 - 0.00048	–	NA	No ESV
Methoxychlor	mg/kg	0 - 5	0%	– - –	0.0033 - 0.0048	–	NA	No ESV

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Table 2-15. Seasonally-Exposed Sediment Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Pesticides (continued)								
Total Chlordane	mg/kg	0 - 5	0%	– - –	0.00066 - 0.00096	–	0.0017	–
Total DDx	mg/kg	1 - 5	20%	0.00504 - 0.00504	0.00192 - 0.00277	0.005	NA	No ESV
Total Pesticides	mg/kg	2 - 5	40%	0.04763 - 0.063	0.04536 - 0.06595	0.055	NA	No ESV
Toxaphene	mg/kg	0 - 5	0%	– - –	0.033 - 0.048	–	NA	No ESV
Radionuclides								
Actinium-228	pCi/g	5 - 5	100%	0.705 - 2.82	– - –	1.39	NA	No ESV
Americium-241	pCi/g	0 - 5	0%	– - –	97.6 - 264	–	NA	No ESV
Bismuth-214	pCi/g	5 - 5	100%	0.681 - 3.68	– - –	1.36	NA	No ESV
Cesium-137	pCi/g	3 - 5	60%	0.0462 - 0.328	0.0649 - 0.0737	0.15	NA	No ESV
Cobalt-60	pCi/g	0 - 5		– - –	0.0252 - 0.0734	–	NA	No ESV
Lead-212	pCi/g	5 - 5	100%	0.737 - 3.07	– - –	1.46	NA	No ESV
Lead-214	pCi/g	5 - 5	100%	0.738 - 4.1	– - –	1.55	NA	No ESV
Potassium-40	pCi/g	5 - 5	100%	5.17 - 42.8	– - –	15.87	NA	No ESV
Radium-226	pCi/g	5 - 5	100%	0.681 - 3.68	– - –	1.36	NA	No ESV
Radium-228	pCi/g	5 - 5	100%	0.705 - 2.82	– - –	1.39	NA	No ESV
Thallium-208	pCi/g	5 - 5	100%	0.175 - 0.938	– - –	0.41	NA	No ESV
Thorium-228	pCi/g	5 - 5	100%	0.47 - 2.64	– - –	1.17	NA	No ESV
Thorium-230	pCi/g	5 - 5	100%	0.555 - 4.11	– - –	1.38	NA	No ESV
Thorium-232	pCi/g	5 - 5	100%	0.61 - 3.03	– - –	1.38	NA	No ESV
Thorium-234	pCi/g	1 - 5	20%	4.37 - 4.37	0.821 - 1.65	4.37	NA	No ESV
Uranium-234	pCi/g	5 - 5	100%	0.715 - 2.94	– - –	1.2	NA	No ESV
Uranium-235	pCi/g	4 - 5	80%	0.0473 - 0.13	0.105 - 0.105	0.08	NA	No ESV
Uranium-238	pCi/g	5 - 5	100%	0.7 - 3.53	– - –	1.4	NA	No ESV
Speciation								
Arsenate-speciation	mg/kg	5 - 5	100%	2 - 54.8	– - –	16.1	NA	No ESV
Arsenic-speciation	mg/kg	5 - 5	100%	3.15 - 59.8	– - –	21.5	NA	No ESV
Arsenite-speciation	mg/kg	5 - 5	100%	0.208 - 11.3	– - –	5.6	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	5 - 5	100%	3.65 - 63.9	– - –	21.7	NA	No ESV
Inorganic Mercury-speciation	mg/kg	5 - 5	100%	0.0088 - 0.0978	– - –	0.1	NA	No ESV
Inorganic Selenium-speciation	mg/kg	1 - 5	20%	1.58 - 1.58	0.343 - 0.529	1.58	NA	No ESV
Mercury-speciation	mg/kg	5 - 5	100%	0.00884 - 0.0983	– - –	0.1	NA	No ESV
Methyl mercury-speciation	mg/kg	5 - 5	100%	4.2E-05 - 0.0011	– - –	0.0005	NA	No ESV
Organic Arsenic-speciation	mg/kg	1 - 5	20%	1.52 - 1.52	0.599 - 10.7	1.52	NA	No ESV
Organic Selenium-speciation	mg/kg	3 - 4	75%	0.821 - 2.32	0.659 - 0.659	1.3	NA	No ESV

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Table 2-15. Seasonally-Exposed Sediment Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Speciation (continued)										
Selenate-speciation	mg/kg	0 - 5	0%	–	–	0.254	0.408	–	NA	No ESV
Selenite-speciation	mg/kg	1 - 5	20%	1.58	1.58	0.343	0.529	1.58	NA	No ESV
Selenium-speciation	mg/kg	5 - 5	100%	0.821	3.9	–	–	1.5	NA	No ESV
Physical Properties										
% Ash	%	2 - 2	100%	7	11	–	–	9	NA	No ESV
% Ash (> or < 50%)	%	2 - 18	11%	50	50	50	50	50	NA	No ESV
Fraction of Organic Carbon	%	5 - 5	100%	0.51	2.5	–	–	1.09	NA	No ESV
Total Organic Carbon	mg/kg	3 - 5	60%	3500	19000	1300	3000	11500	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-16. Seasonally-Exposed Sediment Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics								
Aluminum	mg/kg	10 - 10	100%	1900 - 27100	– - –	9164	NA	No ESV
Antimony	mg/kg	0 - 10	0%	– - –	1.26 - 1.58	–	12	–
Arsenic	mg/kg	7 - 10	70%	1.79 - 5.17	1.38 - 1.58	2.95	7.24	no
Barium	mg/kg	10 - 10	100%	17 - 447	– - –	92.48	NA	No ESV
Beryllium	mg/kg	3 - 10	30%	0.541 - 1.09	0.506 - 0.633	0.9	NA	No ESV
Boron	mg/kg	2 - 10	20%	9.05 - 10.3	5.06 - 6.33	9.68	NA	No ESV
Cadmium	mg/kg	0 - 10	0%	– - –	0.126 - 0.158	–	1	–
Chromium	mg/kg	10 - 10	100%	3.18 - 24.3	– - –	9.96	52.3	no
Cobalt	mg/kg	10 - 10	100%	2.62 - 20.4	– - –	7.1	NA	No ESV
Copper	mg/kg	10 - 10	100%	2 - 13.2	– - –	5.1	18.7	no
Hex. Chromium	mg/kg	0 - 2	0%	– - –	0.55 - 0.62	–	NA	No ESV
Lead	mg/kg	10 - 10	100%	2.45 - 14	– - –	6.7	30.2	no
Manganese	mg/kg	10 - 10	100%	34.4 - 2940	– - –	557	NA	No ESV
Mercury	mg/kg	0 - 10	0%	– - –	0.051 - 0.064	–	0.13	–
Molybdenum	mg/kg	0 - 10	0%	– - –	5.06 - 6.33	–	NA	No ESV
Nickel	mg/kg	10 - 10	100%	2.85 - 22.4	– - –	8.6	15.9	Yes
Selenium	mg/kg	0 - 10	0%	– - –	1.26 - 1.58	–	NA	No ESV
Silver	mg/kg	0 - 10	0%	– - –	0.632 - 0.791	–	2	–
Strontium	mg/kg	4 - 10	40%	6.35 - 19.9	5.15 - 6.33	11.8	NA	No ESV
Thallium	mg/kg	0 - 10	0%	– - –	1.26 - 1.58	–	NA	No ESV
Vanadium	mg/kg	10 - 10	100%	3.1 - 36.6	– - –	13.08	NA	No ESV
Zinc	mg/kg	10 - 10	100%	12 - 84.8	– - –	32.35	124	no
Inorganic-cations/anions								
Calcium	mg/kg	10 - 10	100%	146 - 1200	– - –	538	NA	No ESV
Iron	mg/kg	10 - 10	100%	3300 - 19100	– - –	9607	NA	No ESV
Magnesium	mg/kg	10 - 10	100%	142 - 2920	– - –	800	NA	No ESV
Potassium	mg/kg	10 - 10	100%	169 - 3340	– - –	1039	NA	No ESV
Sodium	mg/kg	1 - 10	10%	158 - 158	126 - 158	158	NA	No ESV

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Table 2-16. Seasonally-Exposed Sediment Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)										
Benzo(a)anthracene	mg/kg	2 - 2	100%	0.0017	0.019	–	–	0.010	0.33	no
Benzo(a)pyrene	mg/kg	2 - 2	100%	0.0017	0.021	–	–	0.011	0.33	no
Benzo(b)fluoranthene	mg/kg	2 - 2	100%	0.0026	0.036	–	–	0.019	NA	No ESV
Benzo(e)pyrene	mg/kg	2 - 2	100%	0.0016	0.021	–	–	0.011	NA	No ESV
Benzo(g,h,i)perylene	mg/kg	2 - 2	100%	0.00097	0.011	–	–	0.006	NA	No ESV
Benzo(k)fluoranthene	mg/kg	2 - 2	100%	0.0016	0.023	–	–	0.012	NA	No ESV
C1-Chrysenes	mg/kg	1 - 2	50%	0.01	0.01	0.0007	0.0007	0.01	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	2 - 2	100%	0.0028	0.025	–	–	0.014	NA	No ESV
C2-Chrysenes	mg/kg	1 - 2	50%	0.011	0.011	0.0007	0.0007	0.011	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	1 - 2	50%	0.029	0.029	0.0007	0.0007	0.029	NA	No ESV
C3-Chrysenes	mg/kg	0 - 2	0%	–	–	0.0007	0.0016	–	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	1 - 2	50%	0.012	0.012	0.0007	0.0007	0.012	NA	No ESV
C4-Chrysenes	mg/kg	0 - 2	0%	–	–	0.0007	0.0016	–	NA	No ESV
Chrysene	mg/kg	2 - 2	100%	0.002	0.027	–	–	0.01	0.33	no
Dibenz(a,h)anthracene	mg/kg	1 - 2	50%	0.0031	0.0031	0.0007	0.0007	0.0031	0.33	no
Fluoranthene	mg/kg	2 - 2	100%	0.0038	0.049	–	–	0.03	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	2 - 2	100%	0.00091	0.011	–	–	0.01	NA	No ESV
Perylene	mg/kg	2 - 2	100%	0.0066	0.037	–	–	0.02	NA	No ESV
Pyrene	mg/kg	2 - 2	100%	0.0033	0.041	–	–	0.02	0.33	no
Total HPAH	mg/kg	2 - 2	100%	0.03448	0.3893	–	–	0.21	0.655	no
Acenaphthene	mg/kg	0 - 2	0%	–	–	0.0007	0.0016	–	0.33	–
Acenaphthylene	mg/kg	0 - 2	0%	–	–	0.0007	0.0016	–	0.33	–
Anthracene	mg/kg	1 - 2	50%	0.0022	0.0022	0.0007	0.0007	0.0022	0.33	no
C1-Fluorenes	mg/kg	1 - 2	50%	0.0027	0.0027	0.0007	0.0007	0.0027	NA	No ESV
C1-Naphthalenes	mg/kg	2 - 2	100%	0.0012	0.021	–	–	0.01	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	2 - 2	100%	0.0017	0.022	–	–	0.012	NA	No ESV
C2-Fluorenes	mg/kg	0 - 2	0%	–	–	0.0007	0.0016	–	NA	No ESV
C2-Naphthalenes	mg/kg	2 - 2	100%	0.0029	0.045	–	–	0.024	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	2 - 2	100%	0.0019	0.016	–	–	0.009	NA	No ESV

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Table 2-16. Seasonally-Exposed Sediment Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)								
C3-Fluorenes	mg/kg	0 - 2	0%	– - –	0.0007 - 0.0016	–	NA	No ESV
C3-Naphthalenes	mg/kg	2 - 2	100%	0.0028 - 0.031	– - –	0.017	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	2 - 2	100%	0.00081 - 0.0091	– - –	0.005	NA	No ESV
C4-Naphthalenes	mg/kg	2 - 2	100%	0.0014 - 0.018	– - –	0.0097	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	2 - 2	100%	0.0015 - 0.045	– - –	0.023	NA	No ESV
Fluorene	mg/kg	1 - 2	50%	0.0024 - 0.0024	0.0007 - 0.0007	0.0024	0.33	no
Naphthalene	mg/kg	1 - 2	50%	0.0088 - 0.0088	0.0007 - 0.0007	0.0088	0.33	no
Phenanthrene	mg/kg	2 - 2	100%	0.0018 - 0.025	– - –	0.013	0.33	no
Total LPAH	mg/kg	2 - 2	100%	0.02161 - 0.2546	– - –	0.14	0.33	no
Total Alkylated PAHs	mg/kg	2 - 2	100%	0.02331 - 0.3032	– - –	0.16	NA	No ESV
Total Unsubstituted PAHs	mg/kg	2 - 2	100%	0.03278 - 0.3407	– - –	0.19	NA	No ESV
PCB-1016	mg/kg	0 - 2	0%	– - –	0.0018 - 0.0021	–	0.033	–
PCB-1221	mg/kg	0 - 2	0%	– - –	0.0018 - 0.0021	–	0.067	–
PCB-1232	mg/kg	0 - 2	0%	– - –	0.0018 - 0.0021	–	0.033	–
PCB-1242	mg/kg	0 - 2	0%	– - –	0.0018 - 0.0021	–	0.033	–
PCB-1248	mg/kg	0 - 2	0%	– - –	0.0018 - 0.0021	–	0.033	–
PCB-1254	mg/kg	1 - 2	50%	0.0029 - 0.0029	0.0018 - 0.0018	0.0029	0.033	no
PCB-1260	mg/kg	1 - 2	50%	0.0041 - 0.0041	0.0018 - 0.0018	0.0041	0.033	no
PCB-1262	mg/kg	0 - 2	0%	– - –	0.0018 - 0.0021	–	0.033	–
PCB-1268	mg/kg	0 - 2	0%	– - –	0.0018 - 0.0021	–	0.033	–
Total PCBs	mg/kg	1 - 2	50%	0.0217 - 0.0217	0.0162 - 0.0162	0.022	0.033	no
Pesticides								
4,4'-DDD	mg/kg	0 - 2	0%	– - –	0.00068 - 0.00079	–	0.0033	–
4,4'-DDE	mg/kg	0 - 2	0%	– - –	0.00069 - 0.00082	–	0.0033	–
4,4'-DDT	mg/kg	0 - 2	0%	– - –	0.00068 - 0.00079	–	0.0033	–
Aldrin	mg/kg	0 - 2	0%	– - –	0.00036 - 0.00042	–	NA	No ESV
alpha-BHC	mg/kg	0 - 2	0%	– - –	0.00036 - 0.00042	–	NA	No ESV
alpha-Chlordane	mg/kg	0 - 2	0%	– - –	0.00036 - 0.00042	–	0.0017	–
beta-BHC	mg/kg	0 - 2	0%	– - –	0.00036 - 0.00042	–	NA	No ESV
delta-BHC	mg/kg	0 - 2	0%	– - –	0.00036 - 0.00042	–	NA	No ESV

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Table 2-16. Seasonally-Exposed Sediment Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Pesticides (continued)										
Dieldrin	mg/kg	0 - 2	0%	–	–	0.00069	0.00082	–	0.0033	–
Endosulfan I	mg/kg	0 - 2	0%	–	–	0.00036	0.00042	–	NA	No ESV
Endosulfan II	mg/kg	0 - 2	0%	–	–	0.00069	0.00082	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 2	0%	–	–	0.00069	0.00082	–	NA	No ESV
Endrin	mg/kg	0 - 2	0%	–	–	0.00069	0.00082	–	0.0033	–
Endrin aldehyde	mg/kg	0 - 2	0%	–	–	0.00069	0.00082	–	NA	No ESV
Endrin Ketone	mg/kg	0 - 2	0%	–	–	0.00069	0.00082	–	NA	No ESV
gamma-BHC (Lindane)	mg/kg	0 - 2	0%	–	–	0.00036	0.00042	–	0.0033	–
gamma-Chlordane	mg/kg	0 - 2	0%	–	–	0.00036	0.00042	–	0.0017	–
Heptachlor	mg/kg	0 - 2	0%	–	–	0.00036	0.00042	–	NA	No ESV
Heptachlor Epoxide	mg/kg	0 - 2	0%	–	–	0.00036	0.00042	–	NA	No ESV
Methoxychlor	mg/kg	0 - 2	0%	–	–	0.0036	0.0042	–	NA	No ESV
Total Chlordane	mg/kg	0 - 2	0%	–	–	0.00072	0.00084	–	0.0017	–
Total DDx	mg/kg	0 - 2	0%	–	–	0.00205	0.0024	–	NA	No ESV
Total Pesticides	mg/kg	0 - 2	0%	–	–	0.04939	0.05772	–	NA	No ESV
Toxaphene	mg/kg	0 - 2	0%	–	–	0.036	0.042	–	NA	No ESV
Radionuclides										
Actinium-228	pCi/g	2 - 2	100%	0.622	1.07	–	–	0.85	NA	No ESV
Americium-241	pCi/g	0 - 2	0%	–	–	94.6	185	–	NA	No ESV
Bismuth-214	pCi/g	2 - 2	100%	0.541	0.945	–	–	0.74	NA	No ESV
Cesium-137	pCi/g	1 - 2	50%	0.0496	0.0496	0.0307	0.0307	0.05	NA	No ESV
Cobalt-60	pCi/g	0 - 2	0%	–	–	0.0299	0.03	–	NA	No ESV
Lead-212	pCi/g	2 - 2	100%	0.553	1.16	–	–	0.86	NA	No ESV
Lead-214	pCi/g	2 - 2	100%	0.693	1.18	–	–	0.94	NA	No ESV
Potassium-40	pCi/g	2 - 2	100%	3.64	7.43	–	–	5.54	NA	No ESV
Radium-226	pCi/g	2 - 2	100%	0.541	0.945	–	–	0.74	NA	No ESV
Radium-228	pCi/g	2 - 2	100%	0.622	1.07	–	–	0.85	NA	No ESV
Thallium-208	pCi/g	2 - 2	100%	0.183	0.309	–	–	0.25	NA	No ESV
Thorium-228	pCi/g	2 - 2	100%	0.492	0.81	–	–	0.65	NA	No ESV
Thorium-230	pCi/g	2 - 2	100%	0.38	5.21	–	–	2.80	NA	No ESV
Thorium-232	pCi/g	2 - 2	100%	0.338	0.961	–	–	0.65	NA	No ESV

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Table 2-16. Seasonally-Exposed Sediment Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Radionuclides (continued)								
Thorium-234	pCi/g	1 - 2	50%	2.36 - 2.36	1.68 - 1.68	2.36	NA	No ESV
Uranium-234	pCi/g	2 - 2	100%	0.484 - 0.871	– - –	0.68	NA	No ESV
Uranium-235	pCi/g	2 - 2	100%	0.0331 - 0.0532	– - –	0.04	NA	No ESV
Uranium-238	pCi/g	2 - 2	100%	0.476 - 0.809	– - –	0.64	NA	No ESV
Speciation								
Arsenate-speciation	mg/kg	2 - 2	100%	1.15 - 2.02	– - –	1.59	NA	No ESV
Arsenic-speciation	mg/kg	2 - 2	100%	2.76 - 3.08	– - –	2.92	NA	No ESV
Arsenite-speciation	mg/kg	2 - 2	100%	0.214 - 0.98	– - –	0.6	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	2 - 2	100%	2.13 - 2.23	– - –	2.18	NA	No ESV
Inorganic Mercury-speciation	mg/kg	2 - 2	100%	0.0236 - 0.0239	– - –	0.02	NA	No ESV
Inorganic Selenium-speciation	mg/kg	0 - 2	0%	– - –	0.397 - 0.452	–	NA	No ESV
Mercury-speciation	mg/kg	2 - 2	100%	0.0236 - 0.0243	– - –	0.02	NA	No ESV
Methyl mercury-speciation	mg/kg	2 - 2	100%	9.3E-05 - 0.00038	– - –	0.0002	NA	No ESV
Organic Arsenic-speciation	mg/kg	2 - 2	100%	0.624 - 0.847	– - –	0.74	NA	No ESV
Organic Selenium-speciation	mg/kg	0 - 2	0%	– - –	0.699 - 0.779	–	NA	No ESV
Selenate-speciation	mg/kg	0 - 2	0%	– - –	0.314 - 0.315	–	NA	No ESV
Selenite-speciation	mg/kg	0 - 2	0%	– - –	0.397 - 0.452	–	NA	No ESV
Selenium-speciation	mg/kg	0 - 2	0%	– - –	0.699 - 0.779	–	NA	No ESV
Physical Properties								
% Ash	%	0 - 1	0%	– - –	1 - 1	–	NA	No ESV
% Ash (> or < 50%)	%	0 - 10	0%	– - –	50 - 50	–	NA	No ESV
Fraction of Organic Carbon	%	2 - 2	100%	1.2 - 2.1	– - –	1.65	NA	No ESV
Total Organic Carbon	mg/kg	2 - 2	100%	8800 - 12000	– - –	10400	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-17. Seasonally-Exposed Sediment Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics								
Aluminum	mg/kg	12 - 12	100%	7370 - 143000	– - –	44081	NA	No ESV
Antimony	mg/kg	3 - 12	25%	1.32 - 2.52	1.25 - 1.63	1.8	12	no
Arsenic	mg/kg	12 - 12	100%	5.2 - 63.4	– - –	19.2	7.24	Yes
Barium	mg/kg	12 - 12	100%	50.7 - 190	– - –	110	NA	No ESV
Beryllium	mg/kg	10 - 12	83%	0.623 - 4.39	0.502 - 0.524	1.3	NA	No ESV
Boron	mg/kg	12 - 12	100%	8.63 - 60.5	– - –	42.7	NA	No ESV
Cadmium	mg/kg	0 - 12	0%	– - –	0.125 - 0.164	–	1	–
Chromium	mg/kg	12 - 12	100%	14.8 - 125	– - –	50.15	52.3	Yes
Cobalt	mg/kg	12 - 12	100%	4.52 - 18	– - –	11.0	NA	No ESV
Copper	mg/kg	12 - 12	100%	5.52 - 90.4	– - –	24.0	18.7	Yes
Hex. Chromium	mg/kg	1 - 3	33%	0.83 - 0.83	0.27 - 0.29	0.83	NA	No ESV
Lead	mg/kg	12 - 12	100%	12.1 - 102	– - –	32.8	30.2	Yes
Manganese	mg/kg	12 - 12	100%	160 - 1700	– - –	666	NA	No ESV
Mercury	mg/kg	10 - 12	83%	0.07 - 0.39	0.055 - 0.059	0.1674	0.13	Yes
Molybdenum	mg/kg	0 - 12	0%	– - –	5.02 - 6.55	–	NA	No ESV
Nickel	mg/kg	12 - 12	100%	3.24 - 135	– - –	26.8	15.9	Yes
Selenium	mg/kg	0 - 12	0%	– - –	1.25 - 1.64	–	NA	No ESV
Silver	mg/kg	0 - 12	0%	– - –	0.627 - 0.819	–	2	–
Strontium	mg/kg	12 - 12	100%	6.27 - 43.6	– - –	21.5	NA	No ESV
Thallium	mg/kg	0 - 12	0%	– - –	1.25 - 1.64	–	NA	No ESV
Vanadium	mg/kg	12 - 12	100%	21.1 - 193	– - –	60.5	NA	No ESV
Zinc	mg/kg	12 - 12	100%	27.5 - 460	– - –	123	124	Yes
Inorganic-cations/anions								
Calcium	mg/kg	12 - 12	100%	440 - 3430	– - –	1669	NA	No ESV
Iron	mg/kg	12 - 12	100%	14500 - 93800	– - –	39600	NA	No ESV
Magnesium	mg/kg	12 - 12	100%	400 - 5780	– - –	2746	NA	No ESV
Potassium	mg/kg	12 - 12	100%	443 - 8880	– - –	5066	NA	No ESV
Sodium	mg/kg	4 - 12	33%	199 - 284	125 - 163	259	NA	No ESV
Benzo(a)anthracene	mg/kg	3 - 3	100%	0.00078 - 0.0083	– - –	0.005	0.33	no
Benzo(a)pyrene	mg/kg	3 - 3	100%	0.00087 - 0.0091	– - –	0.006	0.33	no
Benzo(b)fluoranthene	mg/kg	3 - 3	100%	0.0012 - 0.011	– - –	0.007	NA	No ESV
Benzo(e)pyrene	mg/kg	3 - 3	100%	0.00086 - 0.0067	– - –	0.004	NA	No ESV
Benzo(g,h,i)perylene	mg/kg	3 - 3	100%	0.00082 - 0.0064	– - –	0.004	NA	No ESV
Benzo(k)fluoranthene	mg/kg	3 - 3	100%	0.00091 - 0.0097	– - –	0.006	NA	No ESV

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Table 2-17. Seasonally-Exposed Sediment Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)										
C1-Chrysenes	mg/kg	3 - 3	100%	0.00075	0.0082	–	–	0.005	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	3 - 3	100%	0.0015	0.011	–	–	0.008	NA	No ESV
C2-Chrysenes	mg/kg	2 - 3	67%	0.0039	0.0045	0.00071	0.00071	0.004	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	3 - 3	100%	0.0015	0.0095	–	–	0.007	NA	No ESV
C3-Chrysenes	mg/kg	2 - 3	67%	0.0015	0.0026	0.00071	0.00071	0.002	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	3 - 3	100%	0.00075	0.0051	–	–	0.003	NA	No ESV
C4-Chrysenes	mg/kg	2 - 3	67%	0.00087	0.0013	0.00071	0.00071	0.001	NA	No ESV
Chrysene	mg/kg	3 - 3	100%	0.0012	0.0093	–	–	0.006	0.33	no
Dibenz(a,h)anthracene	mg/kg	2 - 3	67%	0.0015	0.0022	0.00071	0.00071	0.002	0.33	no
Fluoranthene	mg/kg	3 - 3	100%	0.002	0.018	–	–	0.011	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	2 - 3	67%	0.0039	0.0061	0.00071	0.00071	0.005	NA	No ESV
Perylene	mg/kg	2 - 3	67%	0.025	0.034	0.00071	0.00071	0.03	NA	No ESV
Pyrene	mg/kg	3 - 3	100%	0.0016	0.013	–	–	0.009	0.33	no
Total HPAH	mg/kg	3 - 3	100%	0.019	0.16277	–	–	0.11	0.655	no
Acenaphthene	mg/kg	0 - 3	0%	–	–	0.00064	0.00073	–	0.33	–
Acenaphthylene	mg/kg	1 - 3	33%	0.00079	0.00079	0.00064	0.00071	0.0008	0.33	no
Anthracene	mg/kg	2 - 3	67%	0.0009	0.0011	0.00071	0.00071	0.001	0.33	no
C1-Fluorenes	mg/kg	1 - 3	33%	0.0015	0.0015	0.00071	0.00073	0.002	NA	No ESV
C1-Naphthalenes	mg/kg	3 - 3	100%	0.0017	0.0063	–	–	0.004	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.0016	0.0076	–	–	0.005	NA	No ESV
C2-Fluorenes	mg/kg	2 - 3	67%	0.0014	0.0024	0.00071	0.00071	0.002	NA	No ESV
C2-Naphthalenes	mg/kg	3 - 3	100%	0.004	0.016	–	–	0.009	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.0012	0.0063	–	–	0.004	NA	No ESV
C3-Fluorenes	mg/kg	2 - 3	67%	0.00079	0.0037	0.00071	0.00071	0.002	NA	No ESV
C3-Naphthalenes	mg/kg	3 - 3	100%	0.0023	0.014	–	–	0.008	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.00076	0.0039	–	–	0.002	NA	No ESV
C4-Naphthalenes	mg/kg	3 - 3	100%	0.0021	0.0094	–	–	0.005	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	2 - 3	67%	0.00083	0.0017	0.00071	0.00071	0.001	NA	No ESV
Fluorene	mg/kg	1 - 3	33%	0.00081	0.00081	0.00071	0.00073	0.001	0.33	no
Naphthalene	mg/kg	3 - 3	100%	0.0008	0.0024	–	–	0.001	0.33	no
Phenanthrene	mg/kg	3 - 3	100%	0.0012	0.0081	–	–	0.005	0.33	no
Total LPAH	mg/kg	3 - 3	100%	0.02134	0.08469	–	–	0.05	0.33	no

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Table 2-17. Seasonally-Exposed Sediment Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)								
Total Alkylated PAHs	mg/kg	3 - 3	100%	0.02313 - 0.1129	– - –	0.07	NA	No ESV
Total Unsubstituted PAHs	mg/kg	3 - 3	100%	0.01721 - 0.13745	– - –	0.09	NA	No ESV
PCB-1016	mg/kg	0 - 3	0%	– - –	0.0016 - 0.0018	–	0.033	–
PCB-1221	mg/kg	0 - 3	0%	– - –	0.0016 - 0.0018	–	0.067	–
PCB-1232	mg/kg	0 - 3	0%	– - –	0.0016 - 0.0018	–	0.033	–
PCB-1242	mg/kg	0 - 3	0%	– - –	0.0016 - 0.0018	–	0.033	–
PCB-1248	mg/kg	0 - 3	0%	– - –	0.0016 - 0.0018	–	0.033	–
PCB-1254	mg/kg	1 - 3	33%	0.0082 - 0.0082	0.0018 - 0.0018	0.008	0.033	no
PCB-1260	mg/kg	2 - 3	67%	0.0027 - 0.0061	0.0018 - 0.0018	0.004	0.033	no
PCB-1262	mg/kg	0 - 3	0%	– - –	0.0016 - 0.0018	–	0.033	–
PCB-1268	mg/kg	0 - 3	0%	– - –	0.0016 - 0.0018	–	0.033	–
Total PCBs	mg/kg	2 - 3	67%	0.0171 - 0.0255	0.0162 - 0.0162	0.021	0.033	no
Pesticides								
4,4'-DDD	mg/kg	0 - 3	0%	– - –	0.00064 - 0.00071	–	0.0033	–
4,4'-DDE	mg/kg	0 - 3	0%	– - –	0.00064 - 0.00071	–	0.0033	–
4,4'-DDT	mg/kg	0 - 3	0%	– - –	0.00064 - 0.00071	–	0.0033	–
Aldrin	mg/kg	0 - 3	0%	– - –	0.00033 - 0.00037	–	NA	No ESV
alpha-BHC	mg/kg	0 - 3	0%	– - –	0.00033 - 0.00037	–	NA	No ESV
alpha-Chlordane	mg/kg	0 - 3	0%	– - –	0.00033 - 0.00037	–	0.0017	–
beta-BHC	mg/kg	1 - 3	33%	0.00083 - 0.00083	0.00036 - 0.00037	0.0008	NA	No ESV
delta-BHC	mg/kg	0 - 3	0%	– - –	0.00033 - 0.00037	–	NA	No ESV
Dieldrin	mg/kg	0 - 3	0%	– - –	0.00064 - 0.00071	–	0.0033	–
Endosulfan I	mg/kg	0 - 3	0%	– - –	0.00033 - 0.00037	–	NA	No ESV
Endosulfan II	mg/kg	0 - 3	0%	– - –	0.00064 - 0.00071	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 3	0%	– - –	0.00064 - 0.00071	–	NA	No ESV
Endrin	mg/kg	0 - 3	0%	– - –	0.00064 - 0.00071	–	0.0033	–
Endrin aldehyde	mg/kg	0 - 3	0%	– - –	0.00064 - 0.00071	–	NA	No ESV
Endrin Ketone	mg/kg	0 - 3	0%	– - –	0.00064 - 0.00071	–	NA	No ESV
gamma-BHC (Lindane)	mg/kg	0 - 3	0%	– - –	0.00033 - 0.00037	–	0.0033	–
gamma-Chlordane	mg/kg	0 - 3	0%	– - –	0.00033 - 0.00037	–	0.0017	–
Heptachlor	mg/kg	1 - 3	33%	0.00035 - 0.00035	0.00036 - 0.00037	0.0004	NA	No ESV
Heptachlor Epoxide	mg/kg	0 - 3	0%	– - –	0.00033 - 0.00037	–	NA	No ESV

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Table 2-17. Seasonally-Exposed Sediment Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Pesticides (continued)										
Methoxychlor	mg/kg	0 - 3	0%	–	–	0.0033	0.0037	–	NA	No ESV
Total Chlordane	mg/kg	0 - 3	0%	–	–	0.00066	0.00074	–	0.0017	–
Total DDx	mg/kg	0 - 3	0%	–	–	0.00192	0.00213	–	NA	No ESV
Total Pesticides	mg/kg	1 - 3	33%	0.04588	0.04588	0.04959	0.05079	0.05	NA	No ESV
Toxaphene	mg/kg	0 - 3	0%	–	–	0.033	0.037	–	NA	No ESV
Radionuclides										
Actinium-228	pCi/g	3 - 3	100%	0.453	2.02	–	–	1.32	NA	No ESV
Americium-241	pCi/g	0 - 3	0%	–	–	119	451	–	NA	No ESV
Bismuth-214	pCi/g	3 - 3	100%	0.417	1.63	–	–	0.93	NA	No ESV
Cesium-137	pCi/g	2 - 3	67%	1.01	1.07	0.0852	0.0852	1.04	NA	No ESV
Cobalt-60	pCi/g	0 - 3	0%	–	–	0.038	0.0749	–	NA	No ESV
Lead-212	pCi/g	3 - 3	100%	0.577	2.16	–	–	1.42	NA	No ESV
Lead-214	pCi/g	3 - 3	100%	0.536	1.92	–	–	1.14	NA	No ESV
Potassium-40	pCi/g	3 - 3	100%	3.32	21.6	–	–	12.31	NA	No ESV
Radium-226	pCi/g	3 - 3	100%	0.417	1.63	–	–	0.93	NA	No ESV
Radium-228	pCi/g	3 - 3	100%	0.453	2.02	–	–	1.32	NA	No ESV
Thallium-208	pCi/g	3 - 3	100%	0.19	0.691	–	–	0.42	NA	No ESV
Thorium-228	pCi/g	3 - 3	100%	0.547	2.51	–	–	1.5	NA	No ESV
Thorium-230	pCi/g	3 - 3	100%	0.571	1.61	–	–	0.99	NA	No ESV
Thorium-232	pCi/g	3 - 3	100%	0.492	1.84	–	–	1.21	NA	No ESV
Thorium-234	pCi/g	0 - 3	0%	–	–	1.01	3.38	–	NA	No ESV
Uranium-234	pCi/g	3 - 3	100%	0.419	1.52	–	–	0.94	NA	No ESV
Uranium-235	pCi/g	2 - 3	67%	0.0783	0.206	0.0877	0.0877	0.14	NA	No ESV
Uranium-238	pCi/g	3 - 3	100%	0.317	1.42	–	–	0.86	NA	No ESV
Speciation										
Arsenate-speciation	mg/kg	2 - 3	67%	1.9	23.3	8.61	8.61	12.6	NA	No ESV
Arsenic-speciation	mg/kg	3 - 3	100%	8.43	30.2	–	–	17.3	NA	No ESV
Arsenite-speciation	mg/kg	3 - 3	100%	0.192	2.99	–	–	1.7	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	3 - 3	100%	2.09	25.1	–	–	11.98	NA	No ESV
Inorganic Mercury-speciation	mg/kg	3 - 3	100%	0.114	0.366	–	–	0.21	NA	No ESV
Inorganic Selenium-speciation	mg/kg	2 - 3	67%	0.404	0.454	0.315	0.315	0.43	NA	No ESV

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Table 2-17. Seasonally-Exposed Sediment Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Speciation (continued)								
Mercury-speciation	mg/kg	3 - 3	100%	0.114 - 0.366	– - –	0.21	NA	No ESV
Methyl mercury-speciation	mg/kg	3 - 3	100%	2.8E-05 - 0.00013	– - –	0.0001	NA	No ESV
Organic Arsenic-speciation	mg/kg	2 - 3	67%	5.06 - 11.1	8.61 - 8.61	8.08	NA	No ESV
Organic Selenium-speciation	mg/kg	1 - 3	33%	0.733 - 0.733	0.43 - 0.679	0.73	NA	No ESV
Selenate-speciation	mg/kg	0 - 3	0%	– - –	0.25 - 0.278	–	NA	No ESV
Selenite-speciation	mg/kg	2 - 3	67%	0.404 - 0.454	0.315 - 0.315	0.43	NA	No ESV
Selenium-speciation	mg/kg	3 - 3	100%	0.733 - 1.04	– - –	0.87	NA	No ESV
Physical Properties								
% Ash	%	0 - 1	0%	– - –	1 - 1	–	NA	No ESV
% Ash (> or < 50%)	%	0 - 12	0%	– - –	50 - 50	–	NA	No ESV
Fraction of Organic Carbon	%	3 - 3	100%	0.55 - 1.4	– - –	0.9	NA	No ESV
Total Organic Carbon	mg/kg	2 - 3	67%	1600 - 1800	1400 - 1400	1700	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-18. Seasonally-Exposed Sediment Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics								
Aluminum	mg/kg	13 - 13	100%	9870 - 59400	– - –	27144	NA	No ESV
Antimony	mg/kg	3 - 13	23%	1.3 - 1.73	1.23 - 2.95	1.53	12	no
Arsenic	mg/kg	13 - 13	100%	7.31 - 82.6	– - –	18.07	7.24	Yes
Barium	mg/kg	13 - 13	100%	50.2 - 216	– - –	113	NA	No ESV
Beryllium	mg/kg	8 - 13	62%	0.498 - 1.7	0.491 - 1.18	0.96	NA	No ESV
Boron	mg/kg	12 - 13	92%	8.02 - 45.7	11.8 - 11.8	19.8	NA	No ESV
Cadmium	mg/kg	0 - 13	0%	– - –	0.12 - 0.295	–	1	–
Chromium	mg/kg	13 - 13	100%	13.4 - 71.3	– - –	39.7	52.3	Yes
Cobalt	mg/kg	13 - 13	100%	4.55 - 23.8	– - –	14.7	NA	No ESV
Copper	mg/kg	13 - 13	100%	7.2 - 46.8	– - –	16.4	18.7	Yes
Hex. Chromium	mg/kg	2 - 4	50%	0.34 - 0.84	0.26 - 0.33	0.59	NA	No ESV
Lead	mg/kg	13 - 13	100%	12.3 - 86.7	– - –	28.52	30.2	Yes
Manganese	mg/kg	13 - 13	100%	145 - 3540	– - –	1183	NA	No ESV
Mercury	mg/kg	11 - 13	85%	0.065 - 1	0.051 - 0.055	0.31	0.13	Yes
Molybdenum	mg/kg	0 - 13	0%	– - –	4.8 - 11.8	–	NA	No ESV
Nickel	mg/kg	13 - 13	100%	5.81 - 36.9	– - –	15.3	15.9	Yes
Selenium	mg/kg	1 - 13	8%	1.77 - 1.77	1.2 - 2.95	1.77	NA	No ESV
Silver	mg/kg	0 - 13	0%	– - –	0.6 - 1.48	–	2	–
Strontium	mg/kg	13 - 13	100%	7.27 - 42.1	– - –	17.28	NA	No ESV
Thallium	mg/kg	3 - 13	23%	1.35 - 3.11	1.2 - 2.95	2.11	NA	No ESV
Vanadium	mg/kg	13 - 13	100%	22.9 - 63.5	– - –	42.75	NA	No ESV
Zinc	mg/kg	13 - 13	100%	30.3 - 194	– - –	66.75	124	Yes
Inorganic-cations/anions								
Calcium	mg/kg	13 - 13	100%	262 - 4140	– - –	1570	NA	No ESV
Iron	mg/kg	13 - 13	100%	14800 - 49200	– - –	28877	NA	No ESV
Magnesium	mg/kg	13 - 13	100%	807 - 7150	– - –	2284	NA	No ESV
Potassium	mg/kg	13 - 13	100%	983 - 18100	– - –	4377	NA	No ESV
Sodium	mg/kg	3 - 13	23%	178 - 219	120 - 295	195	NA	No ESV
Benzo(a)anthracene	mg/kg	3 - 3	100%	0.0008 - 0.015	– - –	0.0057	0.33	no
Benzo(a)pyrene	mg/kg	3 - 3	100%	0.00096 - 0.014	– - –	0.01	0.33	no
Benzo(b)fluoranthene	mg/kg	3 - 3	100%	0.0015 - 0.023	– - –	0.01	NA	No ESV
Benzo(e)pyrene	mg/kg	3 - 3	100%	0.00097 - 0.016	– - –	0.0062	NA	No ESV
Benzo(g,h,i)perylene	mg/kg	3 - 3	100%	0.00067 - 0.01	– - –	0.00	NA	No ESV
Benzo(k)fluoranthene	mg/kg	3 - 3	100%	0.001 - 0.016	– - –	0.01	NA	No ESV

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Table 2-18. Seasonally-Exposed Sediment Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)								
C1-Chrysenes	mg/kg	3 - 3	100%	0.00099 - 0.014	– - –	0.01	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	3 - 3	100%	0.0014 - 0.027	– - –	0.01	NA	No ESV
C2-Chrysenes	mg/kg	1 - 3	33%	0.015 - 0.015	0.00061 - 0.00082	0.015	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	3 - 3	100%	0.0014 - 0.024	– - –	0.01	NA	No ESV
C3-Chrysenes	mg/kg	1 - 3	33%	0.0072 - 0.0072	0.00061 - 0.00082	0.0072	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	3 - 3	100%	0.001 - 0.012	– - –	0.0047	NA	No ESV
C4-Chrysenes	mg/kg	1 - 3	33%	0.002 - 0.002	0.00061 - 0.00082	0.002	NA	No ESV
Chrysene	mg/kg	3 - 3	100%	0.0011 - 0.018	– - –	0.007	0.33	no
Dibenz(a,h)anthracene	mg/kg	1 - 3	33%	0.0031 - 0.0031	0.00061 - 0.00082	0.0031	0.33	no
Fluoranthene	mg/kg	3 - 3	100%	0.0016 - 0.026	– - –	0.010	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	3 - 3	100%	0.00065 - 0.0086	– - –	0.003	NA	No ESV
Perylene	mg/kg	2 - 3	67%	0.0054 - 0.038	0.00061 - 0.00061	0.022	NA	No ESV
Pyrene	mg/kg	3 - 3	100%	0.0015 - 0.03	– - –	0.011	0.33	no
Total HPAH	mg/kg	3 - 3	100%	0.019 - 0.3189	– - –	0.12	0.655	no
Acenaphthene	mg/kg	0 - 3	0%	– - –	0.00061 - 0.00082	–	0.33	–
Acenaphthylene	mg/kg	0 - 3	0%	– - –	0.00061 - 0.00082	–	0.33	–
Anthracene	mg/kg	1 - 3	33%	0.0019 - 0.0019	0.00061 - 0.00082	0.0019	0.33	no
C1-Fluorenes	mg/kg	1 - 3	33%	0.0028 - 0.0028	0.00061 - 0.00082	0.0028	NA	No ESV
C1-Naphthalenes	mg/kg	3 - 3	100%	0.00071 - 0.016	– - –	0.006	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.0011 - 0.018	– - –	0.007	NA	No ESV
C2-Fluorenes	mg/kg	2 - 3	67%	0.00094 - 0.0051	0.00082 - 0.00082	0.003	NA	No ESV
C2-Naphthalenes	mg/kg	3 - 3	100%	0.002 - 0.04	– - –	0.0149	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.0011 - 0.015	– - –	0.0059	NA	No ESV
C3-Fluorenes	mg/kg	2 - 3	67%	0.0013 - 0.0068	0.00082 - 0.00082	0.004	NA	No ESV
C3-Naphthalenes	mg/kg	3 - 3	100%	0.0017 - 0.034	– - –	0.012	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	2 - 3	67%	0.00091 - 0.01	0.00082 - 0.00082	0.0055	NA	No ESV
C4-Naphthalenes	mg/kg	2 - 3	67%	0.0013 - 0.02	0.00061 - 0.00061	0.011	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.00093 - 0.014	– - –	0.008	NA	No ESV
Fluorene	mg/kg	1 - 3	33%	0.0019 - 0.0019	0.00061 - 0.00082	0.0019	0.33	no
Naphthalene	mg/kg	1 - 3	33%	0.0061 - 0.0061	0.00061 - 0.00082	0.0061	0.33	no
Phenanthrene	mg/kg	3 - 3	100%	0.0009 - 0.013	– - –	0.005	0.33	no
Total LPAH	mg/kg	3 - 3	100%	0.01586 - 0.2023	– - –	0.08	0.33	no

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Table 2-18. Seasonally-Exposed Sediment Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)										
Total Alkylated PAHs	mg/kg	3 - 3	100%	0.01894	0.278	–	–	0.11	NA	No ESV
Total Unsubstituted PAHs	mg/kg	3 - 3	100%	0.01592	0.2432	–	–	0.096	NA	No ESV
PCB-1016	mg/kg	0 - 3	0%	–	–	0.0016	0.0021	–	0.033	–
PCB-1221	mg/kg	0 - 3	0%	–	–	0.0016	0.0021	–	0.067	–
PCB-1232	mg/kg	0 - 3	0%	–	–	0.0016	0.0021	–	0.033	–
PCB-1242	mg/kg	0 - 3	0%	–	–	0.0016	0.0021	–	0.033	–
PCB-1248	mg/kg	0 - 3	0%	–	–	0.0016	0.0021	–	0.033	–
PCB-1254	mg/kg	1 - 3	33%	0.014	0.014	0.0016	0.0021	0.014	0.033	no
PCB-1260	mg/kg	1 - 3	33%	0.011	0.011	0.0016	0.0021	0.011	0.033	no
PCB-1262	mg/kg	0 - 3	0%	–	–	0.0016	0.0021	–	0.033	–
PCB-1268	mg/kg	0 - 3	0%	–	–	0.0016	0.0021	–	0.033	–
Total PCBs	mg/kg	1 - 3	33%	0.0369	0.0369	0.0144	0.0189	0.037	0.033	Yes
Pesticides										
4,4'-DDD	mg/kg	1 - 3	33%	0.0012	0.0012	0.00061	0.0008	0.0012	0.0033	no
4,4'-DDE	mg/kg	0 - 3	0%	–	–	0.00061	0.0008	–	0.0033	–
4,4'-DDT	mg/kg	0 - 3	0%	–	–	0.00061	0.0008	–	0.0033	–
Aldrin	mg/kg	0 - 3	0%	–	–	0.00031	0.00041	–	NA	No ESV
alpha-BHC	mg/kg	1 - 3	33%	0.00047	0.00047	0.00031	0.00033	0.00047	NA	No ESV
alpha-Chlordane	mg/kg	0 - 3	0%	–	–	0.00031	0.00041	–	0.0017	–
beta-BHC	mg/kg	1 - 3	33%	0.00067	0.00067	0.00031	0.00033	0.00067	NA	No ESV
delta-BHC	mg/kg	0 - 3	0%	–	–	0.00031	0.00041	–	NA	No ESV
Dieldrin	mg/kg	0 - 3	0%	–	–	0.00061	0.0008	–	0.0033	–
Endosulfan I	mg/kg	0 - 3	0%	–	–	0.00031	0.00041	–	NA	No ESV
Endosulfan II	mg/kg	0 - 3	0%	–	–	0.00061	0.0008	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 3	0%	–	–	0.00061	0.0008	–	NA	No ESV
Endrin	mg/kg	0 - 3	0%	–	–	0.00061	0.0008	–	0.0033	–
Endrin aldehyde	mg/kg	0 - 3	0%	–	–	0.00061	0.0008	–	NA	No ESV
Endrin Ketone	mg/kg	0 - 3	0%	–	–	0.00061	0.0008	–	NA	No ESV
gamma-BHC (Lindane)	mg/kg	0 - 3	0%	–	–	0.00031	0.00041	–	0.0033	–
gamma-Chlordane	mg/kg	0 - 3	0%	–	–	0.00031	0.00041	–	0.0017	–
Heptachlor	mg/kg	0 - 3	0%	–	–	0.00031	0.00041	–	NA	No ESV
Heptachlor Epoxide	mg/kg	0 - 3	0%	–	–	0.00031	0.00041	–	NA	No ESV

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Table 2-18. Seasonally-Exposed Sediment Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Pesticides (continued)								
Methoxychlor	mg/kg	0 - 3	0%	– - –	0.0031 - 0.0041	–	NA	No ESV
Total Chlordane	mg/kg	0 - 3	0%	– - –	0.00062 - 0.00082	–	0.0017	–
Total DDx	mg/kg	1 - 3	33%	0.00252 - 0.00252	0.00183 - 0.0024	0.0025	NA	No ESV
Total Pesticides	mg/kg	2 - 3	67%	0.04728 - 0.05672	0.04269 - 0.04269	0.052	NA	No ESV
Toxaphene	mg/kg	0 - 3	0%	– - –	0.031 - 0.041	–	NA	No ESV
Radionuclides								
Actinium-228	pCi/g	3 - 3	100%	0.826 - 1.88	– - –	1.26	NA	No ESV
Americium-241	pCi/g	0 - 3	0%	– - –	119 - 268	–	NA	No ESV
Bismuth-214	pCi/g	3 - 3	100%	0.61 - 0.925	– - –	0.79	NA	No ESV
Cesium-137	pCi/g	3 - 3	100%	0.376 - 2.84	– - –	1.23	NA	No ESV
Cobalt-60	pCi/g	0 - 3	0%	– - –	0.0433 - 0.0719	–	NA	No ESV
Lead-212	pCi/g	3 - 3	100%	1.03 - 1.59	– - –	1.34	NA	No ESV
Lead-214	pCi/g	3 - 3	100%	0.823 - 0.873	– - –	0.85	NA	No ESV
Potassium-40	pCi/g	3 - 3	100%	6.94 - 28.1	– - –	19.6	NA	No ESV
Radium-226	pCi/g	3 - 3	100%	0.61 - 0.925	– - –	0.79	NA	No ESV
Radium-228	pCi/g	3 - 3	100%	0.826 - 1.88	– - –	1.26	NA	No ESV
Thallium-208	pCi/g	3 - 3	100%	0.267 - 0.411	– - –	0.36	NA	No ESV
Thorium-228	pCi/g	3 - 3	100%	0.835 - 1.42	– - –	1.20	NA	No ESV
Thorium-230	pCi/g	3 - 3	100%	0.952 - 1.24	– - –	1.05	NA	No ESV
Thorium-232	pCi/g	3 - 3	100%	0.69 - 1.36	– - –	1.13	NA	No ESV
Thorium-234	pCi/g	1 - 3	33%	2.08 - 2.08	1.82 - 2.3	2.08	NA	No ESV
Uranium-234	pCi/g	3 - 3	100%	0.79 - 1.2	– - –	0.96	NA	No ESV
Uranium-235	pCi/g	0 - 3	0%	– - –	0.0835 - 0.145	–	NA	No ESV
Uranium-238	pCi/g	3 - 3	100%	1.04 - 1.15	– - –	1.09	NA	No ESV
Speciation								
Arsenate-speciation	mg/kg	3 - 3	100%	7.39 - 10.9	– - –	9.05	NA	No ESV
Arsenic-speciation	mg/kg	3 - 3	100%	5.4 - 13.1	– - –	9.63	NA	No ESV
Arsenite-speciation	mg/kg	3 - 3	100%	1.17 - 3.74	– - –	2.86	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	3 - 3	100%	8.56 - 14.6	– - –	11.92	NA	No ESV
Inorganic Mercury-speciation	mg/kg	3 - 3	100%	0.0673 - 1.21	– - –	0.45	NA	No ESV
Inorganic Selenium-speciation	mg/kg	0 - 3	0%	– - –	0.301 - 0.439	–	NA	No ESV
Mercury-speciation	mg/kg	3 - 3	100%	0.0675 - 1.21	– - –	0.45	NA	No ESV
Methyl mercury-speciation	mg/kg	3 - 3	100%	0.00017 - 0.00125	– - –	0.001	NA	No ESV

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Table 2-18. Seasonally-Exposed Sediment Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Speciation (continued)								
Organic Arsenic-speciation	mg/kg	0 - 3	0%	– - –	1.23 - 1.88	–	NA	No ESV
Organic Selenium-speciation	mg/kg	3 - 3	100%	0.766 - 0.961	– - –	0.85	NA	No ESV
Selenate-speciation	mg/kg	0 - 3	0%	– - –	0.239 - 0.348	–	NA	No ESV
Selenite-speciation	mg/kg	0 - 3	0%	– - –	0.301 - 0.439	–	NA	No ESV
Selenium-speciation	mg/kg	3 - 3	100%	0.766 - 0.961	– - –	0.85	NA	No ESV
Physical Properties								
% Ash	%	1 - 2	50%	1 - 1	1 - 1	1	NA	No ESV
% Ash (> or < 50%)	%	0 - 12	0%	– - –	50 - 50	–	NA	No ESV
Fraction of Organic Carbon	%	4 - 4	100%	0.69 - 0.84	– - –	0.76	NA	No ESV
Total Organic Carbon	mg/kg	2 - 4	50%	3000 - 4500	1300 - 1500	3750	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-19. Submerged Sediment Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics								
Aluminum	mg/kg	4 - 4	100%	2430 - 29300	– - –	11548	NA	No ESV
Antimony	mg/kg	0 - 4	0%	– - –	1.31 - 1.81	–	12	–
Arsenic	mg/kg	3 - 4	75%	2.88 - 6.33	1.4 - 1.4	4.03	7.24	no
Barium	mg/kg	4 - 4	100%	18.5 - 273	– - –	104	NA	No ESV
Beryllium	mg/kg	1 - 4	25%	1.57 - 1.57	0.525 - 0.726	1.57	NA	No ESV
Boron	mg/kg	1 - 4	25%	10.5 - 10.5	5.25 - 7.26	10.5	NA	No ESV
Cadmium	mg/kg	0 - 4	0%	– - –	0.131 - 0.181	–	1	–
Chromium	mg/kg	4 - 4	100%	4.89 - 30.2	– - –	12.9	52.3	no
Cobalt	mg/kg	4 - 4	100%	3.02 - 37.2	– - –	13.92	NA	No ESV
Copper	mg/kg	4 - 4	100%	2.88 - 13	– - –	7.16	18.7	no
Hex. Chromium	mg/kg	0 - 1	0%	– - –	1 - 1	–	NA	No ESV
Lead	mg/kg	4 - 4	100%	3.55 - 22.2	– - –	10.98	30.2	no
Manganese	mg/kg	4 - 4	100%	48 - 450	– - –	233	NA	No ESV
Mercury	mg/kg	1 - 4	25%	0.055 - 0.055	0.043 - 0.057	0.055	0.13	no
Molybdenum	mg/kg	0 - 4	0%	– - –	5.25 - 7.26	–	NA	No ESV
Nickel	mg/kg	4 - 4	100%	4.92 - 30.8	– - –	14.01	15.9	Yes
Selenium	mg/kg	0 - 4	0%	– - –	1.31 - 1.81	–	NA	No ESV
Silver	mg/kg	0 - 4	0%	– - –	0.657 - 0.907	–	2	–
Strontium	mg/kg	3 - 4	75%	6.43 - 22.7	5.59 - 5.59	12.38	NA	No ESV
Thallium	mg/kg	0 - 4	0%	– - –	1.31 - 1.81	–	NA	No ESV
Vanadium	mg/kg	4 - 4	100%	3.72 - 41.6	– - –	16.73	NA	No ESV
Zinc	mg/kg	4 - 4	100%	15.4 - 73.3	– - –	41.55	124	no
Inorganic-cations/anions								
Calcium	mg/kg	4 - 4	100%	228 - 1660	– - –	720	NA	No ESV
Iron	mg/kg	4 - 4	100%	3980 - 12700	– - –	10020	NA	No ESV
Magnesium	mg/kg	4 - 4	100%	187 - 2030	– - –	944	NA	No ESV
Potassium	mg/kg	4 - 4	100%	453 - 3870	– - –	1457.75	NA	No ESV
Sodium	mg/kg	1 - 4	25%	167 - 167	131 - 181	167	NA	No ESV
Benzo(a)anthracene	mg/kg	1 - 1	100%	0.043 - 0.043	– - –	0.043	0.33	no
Benzo(a)pyrene	mg/kg	1 - 1	100%	0.041 - 0.041	– - –	0.041	0.33	no
Benzo(b)fluoranthene	mg/kg	1 - 1	100%	0.067 - 0.067	– - –	0.067	NA	No ESV
Benzo(e)pyrene	mg/kg	1 - 1	100%	0.04 - 0.04	– - –	0.04	NA	No ESV

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Table 2-19. Submerged Sediment Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)								
Benzo(g,h,i)perylene	mg/kg	1 - 1	100%	0.016 - 0.016	– - –	0.016	NA	No ESV
Benzo(k)fluoranthene	mg/kg	1 - 1	100%	0.045 - 0.045	– - –	0.045	NA	No ESV
C1-Chrysenes	mg/kg	1 - 1	100%	0.034 - 0.034	– - –	0.034	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	1 - 1	100%	0.056 - 0.056	– - –	0.056	NA	No ESV
C2-Chrysenes	mg/kg	1 - 1	100%	0.016 - 0.016	– - –	0.016	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	1 - 1	100%	0.056 - 0.056	– - –	0.056	NA	No ESV
C3-Chrysenes	mg/kg	0 - 1	0%	– - –	0.00092 - 0.00092	–	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	1 - 1	100%	0.017 - 0.017	– - –	0.017	NA	No ESV
C4-Chrysenes	mg/kg	0 - 1	0%	– - –	0.00092 - 0.00092	–	NA	No ESV
Chrysene	mg/kg	1 - 1	100%	0.058 - 0.058	– - –	0.058	0.33	no
Dibenz(a,h)anthracene	mg/kg	1 - 1	100%	0.0056 - 0.0056	– - –	0.0056	0.33	no
Fluoranthene	mg/kg	1 - 1	100%	0.089 - 0.089	– - –	0.089	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	1 - 1	100%	0.017 - 0.017	– - –	0.017	NA	No ESV
Perylene	mg/kg	1 - 1	100%	0.07 - 0.07	– - –	0.07	NA	No ESV
Pyrene	mg/kg	1 - 1	100%	0.14 - 0.14	– - –	0.14	0.33	no
Total HPAH	mg/kg	1 - 1	100%	0.80744 - 0.80744	– - –	0.81	0.655	Yes
Acenaphthene	mg/kg	1 - 1	100%	0.003 - 0.003	– - –	0.003	0.33	no
Acenaphthylene	mg/kg	1 - 1	100%	0.0022 - 0.0022	– - –	0.0022	0.33	no
Anthracene	mg/kg	1 - 1	100%	0.009 - 0.009	– - –	0.009	0.33	no
C1-Fluorenes	mg/kg	1 - 1	100%	0.0034 - 0.0034	– - –	0.0034	NA	No ESV
C1-Naphthalenes	mg/kg	1 - 1	100%	0.039 - 0.039	– - –	0.039	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.038 - 0.038	– - –	0.038	NA	No ESV
C2-Fluorenes	mg/kg	0 - 1	0%	– - –	0.00092 - 0.00092	–	NA	No ESV
C2-Naphthalenes	mg/kg	1 - 1	100%	0.081 - 0.081	– - –	0.081	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.019 - 0.019	– - –	0.019	NA	No ESV
C3-Fluorenes	mg/kg	0 - 1	0%	– - –	0.00092 - 0.00092	–	NA	No ESV
C3-Naphthalenes	mg/kg	1 - 1	100%	0.058 - 0.058	– - –	0.058	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.0085 - 0.0085	– - –	0.0085	NA	No ESV
C4-Naphthalenes	mg/kg	1 - 1	100%	0.028 - 0.028	– - –	0.028	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.024 - 0.024	– - –	0.024	NA	No ESV
Fluorene	mg/kg	1 - 1	100%	0.0056 - 0.0056	– - –	0.0056	0.33	no

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Table 2-19. Submerged Sediment Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)										
Naphthalene	mg/kg	1 - 1	100%	0.016	0.016	–	–	0.016	0.33	no
Phenanthrene	mg/kg	1 - 1	100%	0.057	0.057	–	–	0.057	0.33	no
Total LPAH	mg/kg	1 - 1	100%	0.36444	0.36444	–	–	0.36	0.33	Yes
Total Alkylated PAHs	mg/kg	1 - 1	100%	0.46448	0.46448	–	–	0.46	NA	No ESV
Total Unsubstituted PAHs	mg/kg	1 - 1	100%	0.7184	0.7184	–	–	0.72	NA	No ESV
PCB-1016	mg/kg	0 - 1	0%	–	–	0.0023	0.0023	–	0.033	–
PCB-1221	mg/kg	0 - 1	0%	–	–	0.0023	0.0023	–	0.067	–
PCB-1232	mg/kg	0 - 1	0%	–	–	0.0023	0.0023	–	0.033	–
PCB-1242	mg/kg	0 - 1	0%	–	–	0.0023	0.0023	–	0.033	–
PCB-1248	mg/kg	0 - 1	0%	–	–	0.0023	0.0023	–	0.033	–
PCB-1254	mg/kg	0 - 1	0%	–	–	0.0023	0.0023	–	0.033	–
PCB-1260	mg/kg	1 - 1	100%	0.013	0.013	–	–	0.013	0.033	no
Total PCBs	mg/kg	1 - 1	100%	0.0268	0.0268	–	–	0.027	0.033	no
Pesticides										
4,4'-DDD	mg/kg	0 - 1	0%	–	–	0.00091	0.00091	–	0.0033	–
4,4'-DDE	mg/kg	0 - 1	0%	–	–	0.00091	0.00091	–	0.0033	–
4,4'-DDT	mg/kg	1 - 1	100%	0.001	0.001	–	–	0.001	0.0033	no
Aldrin	mg/kg	0 - 1	0%	–	–	0.00047	0.00047	–	NA	No ESV
alpha-BHC	mg/kg	0 - 1	0%	–	–	0.00047	0.00047	–	NA	No ESV
alpha-Chlordane	mg/kg	1 - 1	100%	0.00058	0.00058	–	–	0.00058	0.0017	no
beta-BHC	mg/kg	1 - 1	100%	0.00098	0.00098	–	–	0.00098	NA	No ESV
delta-BHC	mg/kg	0 - 1	0%	–	–	0.00047	0.00047	–	NA	No ESV
Dieldrin	mg/kg	0 - 1	0%	–	–	0.00091	0.00091	–	0.0033	–
Endosulfan I	mg/kg	0 - 1	0%	–	–	0.00047	0.00047	–	NA	No ESV
Endosulfan II	mg/kg	0 - 1	0%	–	–	0.00091	0.00091	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 1	0%	–	–	0.00091	0.00091	–	NA	No ESV
Endrin	mg/kg	0 - 1	0%	–	–	0.00091	0.00091	–	0.0033	–
Endrin aldehyde	mg/kg	0 - 1	0%	–	–	0.00091	0.00091	–	NA	No ESV
Endrin Ketone	mg/kg	0 - 1	0%	–	–	0.00091	0.00091	–	NA	No ESV
gamma-BHC (Lindane)	mg/kg	0 - 1	0%	–	–	0.00047	0.00047	–	0.0033	–
gamma-Chlordane	mg/kg	1 - 1	100%	0.00071	0.00071	–	–	0.00071	0.0017	no

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Table 2-19. Submerged Sediment Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Pesticides (continued)										
Heptachlor	mg/kg	0 - 1	0%	–	–	0.00047	0.00047	–	NA	No ESV
Heptachlor Epoxide	mg/kg	0 - 1	0%	–	–	0.00047	0.00047	–	NA	No ESV
Methoxychlor	mg/kg	0 - 1	0%	–	–	0.0047	0.0047	–	NA	No ESV
Total Chlordane	mg/kg	1 - 1	100%	0.00129	0.00129	–	–	0.0013	0.0017	no
Total DDx	mg/kg	1 - 1	100%	0.00282	0.00282	–	–	0.0028	NA	No ESV
Total Pesticides	mg/kg	1 - 1	100%	0.06542	0.06542	–	–	0.0654	NA	No ESV
Toxaphene	mg/kg	0 - 1	0%	–	–	0.047	0.047	–	NA	No ESV
Radionuclides										
Actinium-228	pCi/g	1 - 1	100%	0.779	0.779	–	–	0.78	NA	No ESV
Americium-241	pCi/g	0 - 1	0%	–	–	108	108	–	NA	No ESV
Bismuth-214	pCi/g	0 - 1	0%	–	–	0.344	0.344	–	NA	No ESV
Cesium-137	pCi/g	1 - 1	100%	0.093	0.093	–	–	0.093	NA	No ESV
Cobalt-60	pCi/g	0 - 1	0%	–	–	0.0639	0.0639	–	NA	No ESV
Lead-212	pCi/g	1 - 1	100%	0.627	0.627	–	–	0.63	NA	No ESV
Lead-214	pCi/g	1 - 1	100%	0.884	0.884	–	–	0.88	NA	No ESV
Potassium-40	pCi/g	1 - 1	100%	4.68	4.68	–	–	4.68	NA	No ESV
Radium-226	pCi/g	0 - 1	0%	–	–	0.344	0.344	–	NA	No ESV
Radium-228	pCi/g	1 - 1	100%	0.779	0.779	–	–	0.78	NA	No ESV
Thallium-208	pCi/g	1 - 1	100%	0.198	0.198	–	–	0.2	NA	No ESV
Thorium-228	pCi/g	1 - 1	100%	0.628	0.628	–	–	0.63	NA	No ESV
Thorium-230	pCi/g	1 - 1	100%	0.642	0.642	–	–	0.64	NA	No ESV
Thorium-232	pCi/g	1 - 1	100%	0.61	0.61	–	–	0.61	NA	No ESV
Thorium-234	pCi/g	1 - 1	100%	1.94	1.94	–	–	1.94	NA	No ESV
Uranium-234	pCi/g	1 - 1	100%	0.597	0.597	–	–	0.60	NA	No ESV
Uranium-235	pCi/g	1 - 1	100%	0.0503	0.0503	–	–	0.05	NA	No ESV
Uranium-238	pCi/g	1 - 1	100%	0.573	0.573	–	–	0.57	NA	No ESV
Speciation										
Arsenate-speciation	mg/kg	1 - 1	100%	0.942	0.942	–	–	0.94	NA	No ESV
Arsenic-speciation	mg/kg	1 - 1	100%	2.44	2.44	–	–	2.44	7.24	no
Arsenite-speciation	mg/kg	1 - 1	100%	1.07	1.07	–	–	1.07	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	1 - 1	100%	1.98	1.98	–	–	1.98	NA	No ESV
Inorganic Mercury-speciation	mg/kg	1 - 1	100%	0.033	0.033	–	–	0.033	NA	No ESV
Inorganic Selenium-speciation	mg/kg	0 - 1	0%	–	–	0.458	0.458	–	NA	No ESV

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Table 2-19. Submerged Sediment Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Speciation (continued)										
Mercury-speciation	mg/kg	1 - 1	100%	0.0332	0.0332	–	–	0.033	0.13	no
Methyl mercury-speciation	mg/kg	1 - 1	100%	0.00064	0.00064	–	–	0.0006	NA	No ESV
Organic Arsenic-speciation	mg/kg	1 - 1	100%	0.459	0.459	–	–	0.459	NA	No ESV
Organic Selenium-speciation	mg/kg	1 - 1	100%	0.826	0.826	–	–	0.826	NA	No ESV
Selenate-speciation	mg/kg	0 - 1	0%	–	–	0.362	0.362	–	NA	No ESV
Selenite-speciation	mg/kg	0 - 1	0%	–	–	0.458	0.458	–	NA	No ESV
Selenium-speciation	mg/kg	1 - 1	100%	0.826	0.826	–	–	0.826	NA	No ESV
Physical Properties										
% Ash	%	1 - 1	100%	1	1	–	–	1	NA	No ESV
% Ash (> or < 50%)	%	0 - 4	0%	–	–	50	50	–	NA	No ESV
Fraction of Organic Carbon	%	1 - 1	100%	2.5	2.5	–	–	2.5	NA	No ESV
Total Organic Carbon	mg/kg	1 - 1	100%	30000	30000	–	–	30000	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-20. Submerged Sediment Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics								
Aluminum	mg/kg	12 - 12	100%	9760 - 25600	– - –	15747	NA	No ESV
Antimony	mg/kg	0 - 12	0%	– - –	1.5 - 2.21	–	12	–
Arsenic	mg/kg	12 - 12	100%	19.5 - 32.2	– - –	25	7.24	Yes
Barium	mg/kg	12 - 12	100%	163 - 291	– - –	236	NA	No ESV
Beryllium	mg/kg	12 - 12	100%	1.26 - 2.48	– - –	1.8	NA	No ESV
Boron	mg/kg	12 - 12	100%	15 - 27.9	– - –	20.8	NA	No ESV
Cadmium	mg/kg	0 - 12	0%	– - –	0.15 - 0.221	–	1	–
Chromium	mg/kg	12 - 12	100%	14.8 - 33.2	– - –	22.4	52.3	no
Cobalt	mg/kg	12 - 12	100%	9.53 - 21.6	– - –	15.5	NA	No ESV
Copper	mg/kg	12 - 12	100%	17.6 - 36	– - –	26.1	18.7	Yes
Hex. Chromium	mg/kg	0 - 3	0%	– - –	0.69 - 0.9	–	NA	No ESV
Lead	mg/kg	12 - 12	100%	11.2 - 23.3	– - –	15.3	30.2	no
Manganese	mg/kg	12 - 12	100%	201 - 971	– - –	444	NA	No ESV
Mercury	mg/kg	11 - 12	92%	0.068 - 0.24	0.064 - 0.064	0.13	0.13	Yes
Molybdenum	mg/kg	0 - 12	0%	– - –	6.01 - 8.83	–	NA	No ESV
Nickel	mg/kg	12 - 12	100%	16.6 - 35.5	– - –	25.6	15.9	Yes
Selenium	mg/kg	12 - 12	100%	1.86 - 3.34	– - –	2.6	NA	No ESV
Silver	mg/kg	0 - 12	0%	– - –	0.751 - 1.1	–	2	–
Strontium	mg/kg	12 - 12	100%	81.9 - 170	– - –	128.5	NA	No ESV
Thallium	mg/kg	0 - 12	0%	– - –	1.5 - 2.21	–	NA	No ESV
Vanadium	mg/kg	12 - 12	100%	30.1 - 63.1	– - –	45.14	NA	No ESV
Zinc	mg/kg	12 - 12	100%	37.3 - 86.6	– - –	55.98	124	no
Inorganic-cations/anions								
Calcium	mg/kg	12 - 12	100%	2470 - 4360	– - –	3423	NA	No ESV
Iron	mg/kg	12 - 12	100%	17400 - 34200	– - –	26833	NA	No ESV
Magnesium	mg/kg	12 - 12	100%	1010 - 2450	– - –	1502	NA	No ESV
Potassium	mg/kg	12 - 12	100%	958 - 3280	– - –	1852	NA	No ESV
Sodium	mg/kg	10 - 12	83%	170 - 266	186 - 211	215.3	NA	No ESV
Benzo(a)anthracene	mg/kg	3 - 3	100%	0.008 - 0.021	– - –	0.013	0.33	no
Benzo(a)pyrene	mg/kg	3 - 3	100%	0.0089 - 0.02	– - –	0.013	0.33	no
Benzo(b)fluoranthene	mg/kg	3 - 3	100%	0.014 - 0.038	– - –	0.022	NA	No ESV
Benzo(e)pyrene	mg/kg	3 - 3	100%	0.0089 - 0.023	– - –	0.014	NA	No ESV
Benzo(g,h,i)perylene	mg/kg	3 - 3	100%	0.0048 - 0.0068	– - –	0.0056	NA	No ESV

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Table 2-20. Submerged Sediment Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)								
Benzo(k)fluoranthene	mg/kg	3 - 3	100%	0.0096 - 0.027	– - –	0.0162	NA	No ESV
C1-Chrysenes	mg/kg	3 - 3	100%	0.0056 - 0.027	– - –	0.015	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	3 - 3	100%	0.013 - 0.037	– - –	0.02	NA	No ESV
C2-Chrysenes	mg/kg	3 - 3	100%	0.0029 - 0.013	– - –	0.007	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	3 - 3	100%	0.014 - 0.034	– - –	0.022	NA	No ESV
C3-Chrysenes	mg/kg	2 - 3	67%	0.00098 - 0.0062	0.0009 - 0.0009	0.0036	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	2 - 3	67%	0.0052 - 0.017	0.00098 - 0.00098	0.011	NA	No ESV
C4-Chrysenes	mg/kg	1 - 3	33%	0.0019 - 0.0019	0.0009 - 0.00098	0.0019	NA	No ESV
Chrysene	mg/kg	3 - 3	100%	0.01 - 0.027	– - –	0.016	0.33	no
Dibenz(a,h)anthracene	mg/kg	3 - 3	100%	0.0015 - 0.0024	– - –	0.0018	0.33	no
Fluoranthene	mg/kg	3 - 3	100%	0.017 - 0.054	– - –	0.03	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	3 - 3	100%	0.0046 - 0.0065	– - –	0.0053	NA	No ESV
Perylene	mg/kg	3 - 3	100%	0.0084 - 0.036	– - –	0.018	NA	No ESV
Pyrene	mg/kg	3 - 3	100%	0.017 - 0.054	– - –	0.03	0.33	no
Total HPAH	mg/kg	3 - 3	100%	0.15974 - 0.4518	– - –	0.263	0.655	no
Acenaphthene	mg/kg	2 - 3	67%	0.00097 - 0.0021	0.00098 - 0.00098	0.0015	0.33	no
Acenaphthylene	mg/kg	1 - 3	33%	0.0017 - 0.0017	0.0009 - 0.00098	0.0017	0.33	no
Anthracene	mg/kg	3 - 3	100%	0.0013 - 0.0068	– - –	0.004	0.33	no
C1-Fluorenes	mg/kg	3 - 3	100%	0.0012 - 0.0049	– - –	0.003	NA	No ESV
C1-Naphthalenes	mg/kg	3 - 3	100%	0.0086 - 0.039	– - –	0.019	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.0094 - 0.035	– - –	0.018	NA	No ESV
C2-Fluorenes	mg/kg	3 - 3	100%	0.0027 - 0.013	– - –	0.0062	NA	No ESV
C2-Naphthalenes	mg/kg	3 - 3	100%	0.021 - 0.084	– - –	0.043	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.0072 - 0.024	– - –	0.013	NA	No ESV
C3-Fluorenes	mg/kg	3 - 3	100%	0.0022 - 0.0097	– - –	0.005	NA	No ESV
C3-Naphthalenes	mg/kg	3 - 3	100%	0.018 - 0.06	– - –	0.032	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.0037 - 0.012	– - –	0.007	NA	No ESV
C4-Naphthalenes	mg/kg	3 - 3	100%	0.0095 - 0.038	– - –	0.02	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.0068 - 0.038	– - –	0.021	NA	No ESV
Fluorene	mg/kg	3 - 3	100%	0.0014 - 0.0035	– - –	0.0023	0.33	no

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Table 2-20. Submerged Sediment Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)								
Naphthalene	mg/kg	3 - 3	100%	0.0039 - 0.018	– - –	0.0089	0.33	no
Phenanthrene	mg/kg	3 - 3	100%	0.0097 - 0.031	– - –	0.017	0.33	no
Total LPAH	mg/kg	3 - 3	100%	0.11797 - 0.398	– - –	0.221	0.33	Yes
Total Alkylated PAHs	mg/kg	3 - 3	100%	0.1489 - 0.4747	– - –	0.263	NA	No ESV
Total Unsubstituted PAHs	mg/kg	3 - 3	100%	0.13936 - 0.3751	– - –	0.22	NA	No ESV
PCB-1016	mg/kg	0 - 3	0%	– - –	0.0023 - 0.003	–	0.033	–
PCB-1221	mg/kg	0 - 3	0%	– - –	0.0023 - 0.003	–	0.067	–
PCB-1232	mg/kg	0 - 3	0%	– - –	0.0023 - 0.003	–	0.033	–
PCB-1242	mg/kg	0 - 3	0%	– - –	0.0023 - 0.003	–	0.033	–
PCB-1248	mg/kg	0 - 3	0%	– - –	0.0023 - 0.003	–	0.033	–
PCB-1254	mg/kg	1 - 3	33%	0.0035 - 0.0035	0.0023 - 0.0025	0.0035	0.033	no
PCB-1260	mg/kg	3 - 3	100%	0.0027 - 0.0054	– - –	0.004	0.033	no
PCB-1262	mg/kg	0 - 3	0%	– - –	0.0023 - 0.003	–	0.033	–
PCB-1268	mg/kg	0 - 3	0%	– - –	0.0023 - 0.003	–	0.033	–
Total PCBs	mg/kg	3 - 3	100%	0.0211 - 0.0299	– - –	0.025	0.033	no
Pesticides								
4,4'-DDD	mg/kg	0 - 3	0%	– - –	0.0009 - 0.0012	–	0.0033	–
4,4'-DDE	mg/kg	0 - 3	0%	– - –	0.00089 - 0.0012	–	0.0033	–
4,4'-DDT	mg/kg	0 - 3	0%	– - –	0.0009 - 0.0012	–	0.0033	–
Aldrin	mg/kg	0 - 3	0%	– - –	0.00046 - 0.0006	–	NA	No ESV
alpha-BHC	mg/kg	0 - 3	0%	– - –	0.00046 - 0.0006	–	NA	No ESV
alpha-Chlordane	mg/kg	0 - 3	0%	– - –	0.00046 - 0.0006	–	0.0017	–
beta-BHC	mg/kg	1 - 3	33%	0.001 - 0.001	0.00046 - 0.00051	0.001	NA	No ESV
delta-BHC	mg/kg	0 - 3	0%	– - –	0.00046 - 0.0006	–	NA	No ESV
Dieldrin	mg/kg	0 - 3	0%	– - –	0.00089 - 0.0012	–	0.0033	–
Endosulfan I	mg/kg	0 - 3	0%	– - –	0.00046 - 0.0006	–	NA	No ESV
Endosulfan II	mg/kg	0 - 3	0%	– - –	0.00089 - 0.0012	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 3	0%	– - –	0.00089 - 0.0012	–	NA	No ESV
Endrin	mg/kg	0 - 3	0%	– - –	0.00089 - 0.0012	–	0.0033	–
Endrin aldehyde	mg/kg	0 - 3	0%	– - –	0.00089 - 0.0012	–	NA	No ESV

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Table 2-20. Submerged Sediment Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Pesticides (continued)										
Endrin Ketone	mg/kg	0 - 3	0%	–	–	0.00089	0.0012	–	NA	No ESV
gamma-BHC (Lindane)	mg/kg	0 - 3	0%	–	–	0.00046	0.0006	–	0.0033	–
gamma-Chlordane	mg/kg	0 - 3	0%	–	–	0.00046	0.0006	–	0.0017	–
Heptachlor	mg/kg	0 - 3	0%	–	–	0.00046	0.0006	–	NA	No ESV
Heptachlor Epoxide	mg/kg	0 - 3	0%	–	–	0.00046	0.0006	–	NA	No ESV
Methoxychlor	mg/kg	0 - 3	0%	–	–	0.0046	0.006	–	NA	No ESV
Total Chlordane	mg/kg	0 - 3	0%	–	–	0.00092	0.0012	–	0.0017	–
Total DDx	mg/kg	0 - 3	0%	–	–	0.00269	0.0036	–	NA	No ESV
Total Pesticides	mg/kg	1 - 3	33%	0.0832	0.0832	0.06323	0.07011	0.083	NA	No ESV
Toxaphene	mg/kg	0 - 3	0%	–	–	0.046	0.06	–	NA	No ESV
Radionuclides										
Actinium-228	pCi/g	3 - 3	100%	1.37	2.15	–	–	1.8	NA	No ESV
Americium-241	pCi/g	0 - 3	0%	–	–	230	478	–	NA	No ESV
Bismuth-214	pCi/g	3 - 3	100%	2.01	2.37	–	–	2.23	NA	No ESV
Cesium-137	pCi/g	2 - 3	67%	0.136	0.443	0.0726	0.0726	0.29	NA	No ESV
Cobalt-60	pCi/g	0 - 3	0%	–	–	0.05	0.0695	–	NA	No ESV
Lead-212	pCi/g	3 - 3	100%	1.66	2.2	–	–	1.96	NA	No ESV
Lead-214	pCi/g	3 - 3	100%	2.11	2.97	–	–	2.61	NA	No ESV
Potassium-40	pCi/g	3 - 3	100%	11.8	15.3	–	–	13.2	NA	No ESV
Radium-226	pCi/g	3 - 3	100%	2.01	2.37	–	–	2.23	NA	No ESV
Radium-228	pCi/g	3 - 3	100%	1.37	2.15	–	–	1.81	NA	No ESV
Thallium-208	pCi/g	3 - 3	100%	0.433	0.606	–	–	0.53	NA	No ESV
Thorium-228	pCi/g	3 - 3	100%	1.6	2.09	–	–	1.88	NA	No ESV
Thorium-230	pCi/g	3 - 3	100%	2.11	2.58	–	–	2.37	NA	No ESV
Thorium-232	pCi/g	3 - 3	100%	1.61	1.95	–	–	1.8	NA	No ESV
Thorium-234	pCi/g	1 - 3	33%	9.28	9.28	1.94	3.8	9.3	NA	No ESV
Uranium-234	pCi/g	3 - 3	100%	1.89	2.96	–	–	2.4	NA	No ESV
Uranium-235	pCi/g	3 - 3	100%	0.101	0.267	–	–	0.19	NA	No ESV
Uranium-238	pCi/g	3 - 3	100%	1.99	2.95	–	–	2.41	NA	No ESV
Speciation										
Arsenate-speciation	mg/kg	2 - 3	67%	10.7	25.8	3.46	3.46	18.3	NA	No ESV
Arsenic-speciation	mg/kg	3 - 3	100%	19.2	27.5	–	–	24.2	7.24	Yes
Arsenite-speciation	mg/kg	3 - 3	100%	6.23	14.4	–	–	11.51	NA	No ESV

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Table 2-20. Submerged Sediment Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Speciation (continued)								
Inorganic Arsenic-speciation	mg/kg	3 - 3	100%	14.9 - 32.1	– - –	23.9	NA	No ESV
Inorganic Mercury-speciation	mg/kg	3 - 3	100%	0.0767 - 0.198	– - –	0.122	NA	No ESV
Inorganic Selenium-speciation	mg/kg	0 - 3	0%	– - –	0.556 - 1.12	–	NA	No ESV
Mercury-speciation	mg/kg	3 - 3	100%	0.0782 - 0.2	– - –	0.12	0.13	Yes
Methyl mercury-speciation	mg/kg	3 - 3	100%	0.00149 - 0.00248	– - –	0.002	NA	No ESV
Organic Arsenic-speciation	mg/kg	1 - 3	33%	4.33 - 4.33	5.49 - 6.01	4.33	NA	No ESV
Organic Selenium-speciation	mg/kg	3 - 3	100%	1.6 - 2.72	– - –	2.02	NA	No ESV
Selenate-speciation	mg/kg	0 - 3	0%	– - –	0.338 - 0.494	–	NA	No ESV
Selenite-speciation	mg/kg	0 - 3	0%	– - –	0.556 - 1.12	–	NA	No ESV
Selenium-speciation	mg/kg	3 - 3	100%	2.33 - 2.72	– - –	2.59	NA	No ESV
Physical Properties								
% Ash	%	7 - 7	100%	44 - 57	– - –	51.4	NA	No ESV
% Ash (> or < 50%)	%	7 - 12	58%	50 - 50	50 - 50	50	NA	No ESV
Fraction of Organic Carbon	%	3 - 3	100%	1.7 - 2.4	– - –	2.1	NA	No ESV
Total Organic Carbon	mg/kg	3 - 3	100%	12000 - 20000	– - –	17000	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-21. Submerged Sediment Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics								
Aluminum	mg/kg	18 - 18	100%	1750 - 30600	– - –	13791	NA	No ESV
Antimony	mg/kg	5 - 18	28%	1.72 - 3.44	1.28 - 1.92	2.4	12	no
Arsenic	mg/kg	17 - 18	94%	3.23 - 89.5	1.4 - 1.4	24.2	7.24	Yes
Barium	mg/kg	18 - 18	100%	17.8 - 398	– - –	161	NA	No ESV
Beryllium	mg/kg	16 - 18	89%	0.579 - 3.84	0.559 - 0.58	1.64	NA	No ESV
Boron	mg/kg	11 - 18	61%	5.95 - 52.6	5.21 - 8.22	24.2	NA	No ESV
Cadmium	mg/kg	0 - 18	0%	– - –	0.125 - 0.192	–	1	–
Chromium	mg/kg	18 - 18	100%	2.6 - 43	– - –	18.4	52.3	no
Cobalt	mg/kg	18 - 18	100%	2.46 - 22.7	– - –	11.1	NA	No ESV
Copper	mg/kg	18 - 18	100%	1.9 - 52.3	– - –	20.6	18.7	Yes
Hex. Chromium	mg/kg	1 - 5	20%	0.36 - 0.36	0.37 - 0.81	0.36	NA	No ESV
Lead	mg/kg	18 - 18	100%	3.41 - 28.4	– - –	13.9	30.2	no
Manganese	mg/kg	18 - 18	100%	55.6 - 1260	– - –	319	NA	No ESV
Mercury	mg/kg	12 - 18	67%	0.052 - 0.16	0.043 - 0.057	0.091	0.13	Yes
Molybdenum	mg/kg	0 - 18	0%	– - –	4.98 - 7.68	–	NA	No ESV
Nickel	mg/kg	18 - 18	100%	3.72 - 42.3	– - –	19.1	15.9	Yes
Selenium	mg/kg	6 - 18	33%	1.87 - 4.59	1.28 - 1.92	3.42	NA	No ESV
Silver	mg/kg	0 - 18	0%	– - –	0.623 - 0.96	–	2	–
Strontium	mg/kg	17 - 18	94%	10.6 - 256	5.59 - 5.59	92.93	NA	No ESV
Thallium	mg/kg	1 - 18	6%	2.82 - 2.82	1.25 - 1.92	2.82	NA	No ESV
Vanadium	mg/kg	18 - 18	100%	3.69 - 88.2	– - –	36.68	NA	No ESV
Zinc	mg/kg	18 - 18	100%	18.7 - 78.8	– - –	45.81	124	no
Inorganic-cations/anions								
Calcium	mg/kg	18 - 18	100%	284 - 5600	– - –	1971	NA	No ESV
Iron	mg/kg	18 - 18	100%	3890 - 30100	– - –	16377	NA	No ESV
Magnesium	mg/kg	18 - 18	100%	178 - 2630	– - –	1092	NA	No ESV
Potassium	mg/kg	18 - 18	100%	199 - 4000	– - –	1569	NA	No ESV
Sodium	mg/kg	6 - 18	33%	178 - 477	128 - 192	328	NA	No ESV
Benzo(a)anthracene	mg/kg	4 - 4	100%	0.0059 - 0.021	– - –	0.016	0.33	no
Benzo(a)pyrene	mg/kg	4 - 4	100%	0.0052 - 0.022	– - –	0.017	0.33	no
Benzo(b)fluoranthene	mg/kg	4 - 4	100%	0.0085 - 0.03	– - –	0.023	NA	No ESV
Benzo(e)pyrene	mg/kg	4 - 4	100%	0.0066 - 0.021	– - –	0.017	NA	No ESV
Benzo(g,h,i)perylene	mg/kg	4 - 4	100%	0.0028 - 0.011	– - –	0.0081	NA	No ESV

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Table 2-21. Submerged Sediment Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)								
Benzo(k)fluoranthene	mg/kg	4 - 4	100%	0.0071 - 0.025	– - –	0.02	NA	No ESV
C1-Chrysenes	mg/kg	4 - 4	100%	0.0059 - 0.021	– - –	0.011	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	5 - 5	100%	0.00094 - 0.036	– - –	0.022	NA	No ESV
C2-Chrysenes	mg/kg	4 - 4	100%	0.0044 - 0.015	– - –	0.011	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	5 - 5	100%	0.00099 - 0.043	– - –	0.026	NA	No ESV
C3-Chrysenes	mg/kg	3 - 4	75%	0.0053 - 0.0085	0.0014 - 0.0014	0.007	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	5 - 5	100%	0.00072 - 0.017	– - –	0.01	NA	No ESV
C4-Chrysenes	mg/kg	2 - 4	50%	0.0036 - 0.0039	0.001 - 0.0014	0.0038	NA	No ESV
Chrysene	mg/kg	4 - 4	100%	0.0085 - 0.028	– - –	0.022	0.33	no
Dibenz(a,h)anthracene	mg/kg	3 - 4	75%	0.0027 - 0.0032	0.0014 - 0.0014	0.003	0.33	no
Fluoranthene	mg/kg	4 - 4	100%	0.018 - 0.047	– - –	0.04	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	4 - 4	100%	0.002 - 0.0099	– - –	0.0071	NA	No ESV
Perylene	mg/kg	4 - 4	100%	0.012 - 0.24	– - –	0.13	NA	No ESV
Pyrene	mg/kg	4 - 4	100%	0.015 - 0.037	– - –	0.03	0.33	no
Total HPAH	mg/kg	5 - 5	100%	0.00265 - 0.6317	– - –	0.34	0.655	no
Acenaphthene	mg/kg	2 - 4	50%	0.0011 - 0.0012	0.0011 - 0.0014	0.001	0.33	no
Acenaphthylene	mg/kg	3 - 4	75%	0.0013 - 0.0017	0.0014 - 0.0014	0.002	0.33	no
Anthracene	mg/kg	3 - 4	75%	0.0028 - 0.0036	0.0014 - 0.0014	0.003	0.33	no
C1-Fluorenes	mg/kg	5 - 5	100%	0.0011 - 0.0044	– - –	0.0029	NA	No ESV
C1-Naphthalenes	mg/kg	5 - 5	100%	0.0089 - 0.033	– - –	0.022	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	5 - 5	100%	0.0037 - 0.039	– - –	0.024	NA	No ESV
C2-Fluorenes	mg/kg	5 - 5	100%	0.0025 - 0.0096	– - –	0.007	NA	No ESV
C2-Naphthalenes	mg/kg	5 - 5	100%	0.026 - 0.076	– - –	0.052	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	5 - 5	100%	0.0033 - 0.022	– - –	0.014	NA	No ESV
C3-Fluorenes	mg/kg	5 - 5	100%	0.0032 - 0.0085	– - –	0.006	NA	No ESV
C3-Naphthalenes	mg/kg	5 - 5	100%	0.023 - 0.055	– - –	0.039	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	5 - 5	100%	0.0022 - 0.011	– - –	0.0072	NA	No ESV
C4-Naphthalenes	mg/kg	5 - 5	100%	0.015 - 0.034	– - –	0.025	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	5 - 5	100%	0.0022 - 0.026	– - –	0.012	NA	No ESV
Fluorene	mg/kg	3 - 4	75%	0.0024 - 0.0036	0.0014 - 0.0014	0.003	0.33	no

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Table 2-21. Submerged Sediment Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)								
Naphthalene	mg/kg	5 - 5	100%	0.0044 - 0.013	– - –	0.0088	0.33	no
Phenanthrene	mg/kg	5 - 5	100%	0.0015 - 0.024	– - –	0.0161	0.33	no
Total LPAH	mg/kg	5 - 5	100%	0.1041 - 0.3444	– - –	0.24	0.33	Yes
Total Alkylated PAHs	mg/kg	5 - 5	100%	0.10085 - 0.4411	– - –	0.29	NA	No ESV
Total Unsubstituted PAHs	mg/kg	5 - 5	100%	0.0059 - 0.535	– - –	0.292	NA	No ESV
PCB-1016	mg/kg	0 - 5	0%	– - –	0.0018 - 0.0037	–	0.033	–
PCB-1221	mg/kg	0 - 5	0%	– - –	0.0018 - 0.0037	–	0.067	–
PCB-1232	mg/kg	0 - 5	0%	– - –	0.0018 - 0.0037	–	0.033	–
PCB-1242	mg/kg	0 - 5	0%	– - –	0.0018 - 0.0037	–	0.033	–
PCB-1248	mg/kg	0 - 5	0%	– - –	0.0018 - 0.0037	–	0.033	–
PCB-1254	mg/kg	4 - 5	80%	0.0064 - 0.0083	0.0018 - 0.0018	0.0075	0.033	no
PCB-1260	mg/kg	4 - 5	80%	0.0047 - 0.0064	0.0018 - 0.0018	0.0059	0.033	no
Total PCBs	mg/kg	4 - 5	80%	0.0241 - 0.033	0.0126 - 0.0126	0.028	0.033	no
4,4'-DDD	mg/kg	0 - 5	0%	– - –	0.00069 - 0.0014	–	0.0033	–
4,4'-DDE	mg/kg	0 - 5	0%	– - –	0.00069 - 0.0014	–	0.0033	–
4,4'-DDT	mg/kg	0 - 5	0%	– - –	0.00069 - 0.0014	–	0.0033	–
Aldrin	mg/kg	0 - 5	0%	– - –	0.00036 - 0.00072	–	NA	No ESV
alpha-BHC	mg/kg	0 - 5	0%	– - –	0.00036 - 0.00072	–	NA	No ESV
alpha-Chlordane	mg/kg	0 - 5	0%	– - –	0.00036 - 0.00072	–	0.0017	–
beta-BHC	mg/kg	0 - 5	0%	– - –	0.00036 - 0.00072	–	NA	No ESV
delta-BHC	mg/kg	0 - 5	0%	– - –	0.00036 - 0.00072	–	NA	No ESV
Dieldrin	mg/kg	0 - 5	0%	– - –	0.00069 - 0.0014	–	0.0033	–
Endosulfan I	mg/kg	0 - 5	0%	– - –	0.00036 - 0.00072	–	NA	No ESV
Endosulfan II	mg/kg	0 - 5	0%	– - –	0.00069 - 0.0014	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 5	0%	– - –	0.00069 - 0.0014	–	NA	No ESV
Endrin	mg/kg	0 - 5	0%	– - –	0.00069 - 0.0014	–	0.0033	–
Endrin aldehyde	mg/kg	0 - 5	0%	– - –	0.00069 - 0.0014	–	NA	No ESV
Endrin Ketone	mg/kg	0 - 5	0%	– - –	0.00069 - 0.0014	–	NA	No ESV
gamma-BHC (Lindane)	mg/kg	0 - 5	0%	– - –	0.00036 - 0.00072	–	0.0033	–
gamma-Chlordane	mg/kg	0 - 5	0%	– - –	0.00036 - 0.00072	–	0.0017	–

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Table 2-21. Submerged Sediment Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)										
Heptachlor	mg/kg	0 - 5	0%	–	–	0.00036	0.00072	–	NA	No ESV
Heptachlor Epoxide	mg/kg	0 - 5	0%	–	–	0.00036	0.00072	–	NA	No ESV
Methoxychlor	mg/kg	0 - 5	0%	–	–	0.0036	0.0072	–	NA	No ESV
Total Chlordane	mg/kg	0 - 5	0%	–	–	0.00072	0.00144	–	0.0017	–
Total DDx	mg/kg	0 - 5	0%	–	–	0.00207	0.0042	–	NA	No ESV
Total Pesticides	mg/kg	0 - 5	0%	–	–	0.04941	0.099	–	NA	No ESV
Toxaphene	mg/kg	0 - 5	0%	–	–	0.036	0.072	–	NA	No ESV
Radionuclides										
Actinium-228	pCi/g	5 - 5	100%	0.925	3.03	–	–	1.88	NA	No ESV
Americium-241	pCi/g	0 - 5	0%	–	–	151	389	–	NA	No ESV
Bismuth-214	pCi/g	5 - 5	100%	0.861	3.67	–	–	2.06	NA	No ESV
Cesium-137	pCi/g	4 - 5	80%	0.0842	0.289	0.0783	0.0783	0.16	NA	No ESV
Cobalt-60	pCi/g	0 - 5	0%	–	–	0.0411	0.112	–	NA	No ESV
Lead-212	pCi/g	5 - 5	100%	0.966	2.91	–	–	1.89	NA	No ESV
Lead-214	pCi/g	5 - 5	100%	1.13	3.99	–	–	2.48	NA	No ESV
Potassium-40	pCi/g	5 - 5	100%	7.37	18.6	–	–	12.53	NA	No ESV
Radium-226	pCi/g	5 - 5	100%	0.861	3.67	–	–	2.06	NA	No ESV
Radium-228	pCi/g	5 - 5	100%	0.925	3.03	–	–	1.88	NA	No ESV
Thallium-208	pCi/g	5 - 5	100%	0.283	0.971	–	–	0.58	NA	No ESV
Thorium-228	pCi/g	5 - 5	100%	0.55	3.02	–	–	1.82	NA	No ESV
Thorium-230	pCi/g	5 - 5	100%	0.835	3.73	–	–	2.16	NA	No ESV
Thorium-232	pCi/g	5 - 5	100%	0.699	2.61	–	–	1.61	NA	No ESV
Thorium-234	pCi/g	3 - 5	60%	3.38	6.99	1.32	2.57	4.86	NA	No ESV
Uranium-234	pCi/g	5 - 5	100%	0.872	3.81	–	–	2.15	NA	No ESV
Uranium-235	pCi/g	2 - 5	40%	0.164	0.261	0.113	0.117	0.21	NA	No ESV
Uranium-238	pCi/g	5 - 5	100%	0.803	4.05	–	–	2.05	NA	No ESV
Speciation										
Arsenate-speciation	mg/kg	4 - 5	80%	2.9	30.9	2.71	2.71	14.06	NA	No ESV
Arsenic-speciation	mg/kg	5 - 5	100%	6.13	51.8	–	–	22.56	7.24	Yes
Arsenite-speciation	mg/kg	5 - 5	100%	3.92	29.9	–	–	14.18	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	5 - 5	100%	6.81	51.7	–	–	25.67	NA	No ESV
Inorganic Mercury-speciation	mg/kg	5 - 5	100%	0.0579	0.197	–	–	0.106	NA	No ESV
Inorganic Selenium-speciation	mg/kg	1 - 5	20%	1.06	1.06	0.567	3.07	1.06	NA	No ESV

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Table 2-21. Submerged Sediment Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Speciation (continued)								
Mercury-speciation	mg/kg	5 - 5	100%	0.0595 - 0.198	– - –	0.11	0.13	Yes
Methyl mercury-speciation	mg/kg	5 - 5	100%	0.00049 - 0.00158	– - –	0.0009	NA	No ESV
Organic Arsenic-speciation	mg/kg	0 - 5	0%	– - –	0.832 - 12.5	–	NA	No ESV
Organic Selenium-speciation	mg/kg	4 - 5	80%	1.3 - 2.68	0.465 - 0.465	2.04	NA	No ESV
Selenate-speciation	mg/kg	0 - 5	0%	– - –	0.313 - 0.517	–	NA	No ESV
Selenite-speciation	mg/kg	1 - 5	20%	1.06 - 1.06	0.567 - 3.07	1.06	NA	No ESV
Selenium-speciation	mg/kg	5 - 5	100%	1.3 - 3.74	– - –	2.5	NA	No ESV
Physical Properties								
% Ash	%	11 - 12	92%	9 - 89	1 - 1	43.7	NA	No ESV
% Ash (> or < 50%)	%	9 - 18	50%	50 - 50	50 - 50	50	NA	No ESV
Fraction of Organic Carbon	%	5 - 5	100%	0.48 - 2.3	– - –	1.6	NA	No ESV
Total Organic Carbon	mg/kg	4 - 5	80%	9900 - 16000	360 - 360	13725	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-22. Submerged Sediment Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics								
Aluminum	mg/kg	10 - 10	100%	1430 - 38800	– - –	11697	NA	No ESV
Antimony	mg/kg	0 - 10	0%	– - –	1.14 - 2.7	–	12	–
Arsenic	mg/kg	6 - 10	60%	2.15 - 76.9	1.14 - 1.47	17.1	7.24	Yes
Barium	mg/kg	10 - 10	100%	11.9 - 305	– - –	84.6	NA	No ESV
Beryllium	mg/kg	3 - 10	30%	0.903 - 2.86	0.455 - 0.691	1.76	NA	No ESV
Boron	mg/kg	4 - 10	40%	7.49 - 40.2	4.55 - 6.91	21.7	NA	No ESV
Cadmium	mg/kg	0 - 10	0%	– - –	0.114 - 0.27	–	1	–
Chromium	mg/kg	10 - 10	100%	2.28 - 39.5	– - –	13.3	52.3	no
Cobalt	mg/kg	10 - 10	100%	1.53 - 21.6	– - –	7.89	NA	No ESV
Copper	mg/kg	8 - 10	80%	1.21 - 49	1.29 - 1.47	12.5	18.7	Yes
Hex. Chromium	mg/kg	0 - 2	0%	– - –	2.2 - 2.8	–	NA	No ESV
Lead	mg/kg	10 - 10	100%	2.15 - 29	– - –	9.91	30.2	no
Manganese	mg/kg	10 - 10	100%	24.5 - 660	– - –	273	NA	No ESV
Mercury	mg/kg	2 - 10	20%	0.098 - 0.1	0.037 - 0.068	0.099	0.13	no
Molybdenum	mg/kg	0 - 10	0%	– - –	4.55 - 10.8	–	NA	No ESV
Nickel	mg/kg	10 - 10	100%	2.65 - 35	– - –	12.6	15.9	Yes
Selenium	mg/kg	1 - 9	11%	5.16 - 5.16	1.14 - 2.7	5.16	NA	No ESV
Silver	mg/kg	0 - 10	0%	– - –	0.569 - 1.35	–	2	–
Strontium	mg/kg	5 - 10	50%	4.62 - 202	5.06 - 6.91	55.9	NA	No ESV
Thallium	mg/kg	0 - 10	0%	– - –	1.14 - 2.7	–	NA	No ESV
Vanadium	mg/kg	8 - 10	80%	4.73 - 75.8	2.82 - 2.93	26.4	NA	No ESV
Zinc	mg/kg	10 - 10	100%	9.4 - 111	– - –	39.4	124	no
Inorganic-cations/anions								
Calcium	mg/kg	8 - 10	80%	224 - 3820	114 - 129	1140	NA	No ESV
Iron	mg/kg	10 - 10	100%	2480 - 32200	– - –	11925	NA	No ESV
Magnesium	mg/kg	9 - 10	90%	135 - 3460	141 - 141	1056	NA	No ESV
Potassium	mg/kg	10 - 10	100%	171 - 6310	– - –	1649	NA	No ESV
Sodium	mg/kg	1 - 10	10%	404 - 404	114 - 270	404	NA	No ESV
Benzo(a)anthracene	mg/kg	3 - 3	100%	0.0066 - 0.049	– - –	0.024	0.33	no
Benzo(a)pyrene	mg/kg	3 - 3	100%	0.0041 - 0.046	– - –	0.023	0.33	no
Benzo(b)fluoranthene	mg/kg	3 - 3	100%	0.0087 - 0.053	– - –	0.030	NA	No ESV
Benzo(e)pyrene	mg/kg	3 - 3	100%	0.0071 - 0.035	– - –	0.021	NA	No ESV
Benzo(g,h,i)perylene	mg/kg	3 - 3	100%	0.0036 - 0.018	– - –	0.011	NA	No ESV

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Table 2-22. Submerged Sediment Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)								
Benzo(k)fluoranthene	mg/kg	3 - 3	100%	0.0054 - 0.048	– - –	0.025	NA	No ESV
C1-Chrysenes	mg/kg	3 - 3	100%	0.014 - 0.018	– - –	0.016	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	3 - 3	100%	0.019 - 0.055	– - –	0.034	NA	No ESV
C2-Chrysenes	mg/kg	3 - 3	100%	0.0053 - 0.016	– - –	0.010	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	3 - 3	100%	0.025 - 0.052	– - –	0.036	NA	No ESV
C3-Chrysenes	mg/kg	1 - 3	33%	0.007 - 0.007	0.0014 - 0.0023	0.01	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	3 - 3	100%	0.011 - 0.017	– - –	0.014	NA	No ESV
C4-Chrysenes	mg/kg	0 - 3	0%	– - –	0.0011 - 0.0023	–	NA	No ESV
Chrysene	mg/kg	3 - 3	100%	0.0092 - 0.051	– - –	0.028	0.33	no
Dibenz(a,h)anthracene	mg/kg	2 - 3	67%	0.0038 - 0.0062	0.0023 - 0.0023	0.005	0.33	no
Fluoranthene	mg/kg	3 - 3	100%	0.022 - 0.092	– - –	0.051	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	3 - 3	100%	0.0024 - 0.017	– - –	0.01	NA	No ESV
Perylene	mg/kg	3 - 3	100%	0.036 - 0.31	– - –	0.2	NA	No ESV
Pyrene	mg/kg	3 - 3	100%	0.018 - 0.067	– - –	0.04	0.33	no
Total HPAH	mg/kg	3 - 3	100%	0.2083 - 0.7863	– - –	0.54	0.655	Yes
Acenaphthene	mg/kg	1 - 3	33%	0.0014 - 0.0014	0.0014 - 0.0023	0.0014	0.33	no
Acenaphthylene	mg/kg	1 - 3	33%	0.0028 - 0.0028	0.0014 - 0.0023	0.0028	0.33	no
Anthracene	mg/kg	2 - 3	67%	0.0027 - 0.0081	0.0023 - 0.0023	0.0054	0.33	no
C1-Fluorenes	mg/kg	3 - 3	100%	0.0032 - 0.0043	– - –	0.004	NA	No ESV
C1-Naphthalenes	mg/kg	3 - 3	100%	0.024 - 0.027	– - –	0.025	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.022 - 0.035	– - –	0.029	NA	No ESV
C2-Fluorenes	mg/kg	2 - 3	67%	0.0071 - 0.008	0.0023 - 0.0023	0.0076	NA	No ESV
C2-Naphthalenes	mg/kg	3 - 3	100%	0.049 - 0.07	– - –	0.058	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.015 - 0.023	– - –	0.02	NA	No ESV
C3-Fluorenes	mg/kg	2 - 3	67%	0.0065 - 0.0071	0.0023 - 0.0023	0.007	NA	No ESV
C3-Naphthalenes	mg/kg	3 - 3	100%	0.034 - 0.061	– - –	0.046	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.0074 - 0.013	– - –	0.01	NA	No ESV
C4-Naphthalenes	mg/kg	3 - 3	100%	0.019 - 0.041	– - –	0.029	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.0094 - 0.02	– - –	0.015	NA	No ESV
Fluorene	mg/kg	3 - 3	100%	0.0026 - 0.004	– - –	0.0032	0.33	no

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Table 2-22. Submerged Sediment Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)								
Naphthalene	mg/kg	3 - 3	100%	0.0094 - 0.011	– - –	0.01	0.33	no
Phenanthrene	mg/kg	3 - 3	100%	0.015 - 0.034	– - –	0.022	0.33	no
Total LPAH	mg/kg	3 - 3	100%	0.2316 - 0.3251	– - –	0.29	0.33	no
Total Alkylated PAHs	mg/kg	3 - 3	100%	0.2974 - 0.4205	– - –	0.36	NA	No ESV
Total Unsubstituted PAHs	mg/kg	3 - 3	100%	0.1609 - 0.6819	– - –	0.47	NA	No ESV
PCB-1016	mg/kg	0 - 3	0%	– - –	0.0023 - 0.0036	–	0.033	–
PCB-1221	mg/kg	0 - 3	0%	– - –	0.0023 - 0.0036	–	0.067	–
PCB-1232	mg/kg	0 - 3	0%	– - –	0.0023 - 0.0036	–	0.033	–
PCB-1242	mg/kg	0 - 3	0%	– - –	0.0023 - 0.0036	–	0.033	–
PCB-1248	mg/kg	0 - 3	0%	– - –	0.0023 - 0.0036	–	0.033	–
PCB-1254	mg/kg	0 - 3	0%	– - –	0.0023 - 0.0036	–	0.033	–
PCB-1260	mg/kg	3 - 3	100%	0.0029 - 0.034	– - –	0.015	0.033	Yes
Total PCBs	mg/kg	3 - 3	100%	0.0167 - 0.0556	– - –	0.032	0.033	Yes
Pesticides								
4,4'-DDD	mg/kg	0 - 3	0%	– - –	0.00091 - 0.0014	–	0.0033	–
4,4'-DDE	mg/kg	0 - 3	0%	– - –	0.00091 - 0.0014	–	0.0033	–
4,4'-DDT	mg/kg	0 - 3	0%	– - –	0.00091 - 0.0014	–	0.0033	–
Aldrin	mg/kg	0 - 3	0%	– - –	0.00047 - 0.00072	–	NA	No ESV
alpha-BHC	mg/kg	1 - 3	33%	0.00067 - 0.00067	0.00047 - 0.00072	0.00067	NA	No ESV
alpha-Chlordane	mg/kg	0 - 3	0%	– - –	0.00047 - 0.00072	–	0.0017	–
beta-BHC	mg/kg	1 - 3	33%	0.00087 - 0.00087	0.00047 - 0.00072	0.00087	NA	No ESV
delta-BHC	mg/kg	1 - 3	33%	0.00072 - 0.00072	0.00047 - 0.00072	0.00072	NA	No ESV
Dieldrin	mg/kg	0 - 3	0%	– - –	0.00091 - 0.0014	–	0.0033	–
Endosulfan I	mg/kg	0 - 3	0%	– - –	0.00047 - 0.00072	–	NA	No ESV
Endosulfan II	mg/kg	0 - 3	0%	– - –	0.00091 - 0.0014	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 3	0%	– - –	0.00091 - 0.0014	–	NA	No ESV
Endrin	mg/kg	0 - 3	0%	– - –	0.00091 - 0.0014	–	0.0033	–
Endrin aldehyde	mg/kg	0 - 3	0%	– - –	0.00091 - 0.0014	–	NA	No ESV
Endrin Ketone	mg/kg	0 - 3	0%	– - –	0.00091 - 0.0014	–	NA	No ESV
gamma-BHC (Lindane)	mg/kg	0 - 3	0%	– - –	0.00047 - 0.00072	–	0.0033	–
gamma-Chlordane	mg/kg	0 - 3	0%	– - –	0.00047 - 0.00072	–	0.0017	–

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Table 2-22. Submerged Sediment Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Pesticides (continued)								
Heptachlor	mg/kg	0 - 3	0%	– - –	0.00047 - 0.00072	–	NA	No ESV
Heptachlor Epoxide	mg/kg	0 - 3	0%	– - –	0.00047 - 0.00072	–	NA	No ESV
Methoxychlor	mg/kg	0 - 3	0%	– - –	0.0047 - 0.0072	–	NA	No ESV
Total Chlordane	mg/kg	0 - 3	0%	– - –	0.00094 - 0.00144	–	0.0017	–
Total DDx	mg/kg	0 - 3	0%	– - –	0.00273 - 0.0042	–	NA	No ESV
Total Pesticides	mg/kg	1 - 3	33%	0.07768 - 0.07768	0.06459 - 0.099	0.078	NA	No ESV
Toxaphene	mg/kg	0 - 3	0%	– - –	0.047 - 0.072	–	NA	No ESV
Radionuclides								
Actinium-228	pCi/g	2 - 3	67%	0.976 - 2.75	0.653 - 0.653	1.86	NA	No ESV
Americium-241	pCi/g	0 - 3	0%	– - –	62.4 - 583	–	NA	No ESV
Bismuth-214	pCi/g	3 - 3	100%	0.841 - 3.16	– - –	1.72	NA	No ESV
Cesium-137	pCi/g	2 - 3	67%	0.181 - 0.246	0.0575 - 0.0575	0.214	NA	No ESV
Cobalt-60	pCi/g	0 - 3	0%	– - –	0.0514 - 0.0847	–	NA	No ESV
Lead-212	pCi/g	3 - 3	100%	0.705 - 2.79	– - –	1.72	NA	No ESV
Lead-214	pCi/g	3 - 3	100%	0.961 - 3.99	– - –	2.15	NA	No ESV
Potassium-40	pCi/g	3 - 3	100%	6.42 - 20.4	– - –	14.9	NA	No ESV
Radium-226	pCi/g	3 - 3	100%	0.841 - 3.16	– - –	1.72	NA	No ESV
Radium-228	pCi/g	2 - 3	67%	0.976 - 2.75	0.653 - 0.653	1.86	NA	No ESV
Thallium-208	pCi/g	3 - 3	100%	0.236 - 0.721	– - –	0.47	NA	No ESV
Thorium-228	pCi/g	3 - 3	100%	0.724 - 2.39	– - –	1.56	NA	No ESV
Thorium-230	pCi/g	3 - 3	100%	0.677 - 3.29	– - –	1.68	NA	No ESV
Thorium-232	pCi/g	3 - 3	100%	0.656 - 2.49	– - –	1.51	NA	No ESV
Thorium-234	pCi/g	1 - 3	33%	0.86 - 0.86	2.91 - 4.65	0.86	NA	No ESV
Uranium-234	pCi/g	3 - 3	100%	0.852 - 3.3	– - –	1.79	NA	No ESV
Uranium-235	pCi/g	2 - 3	67%	0.0962 - 0.13	0.0599 - 0.0599	0.11	NA	No ESV
Uranium-238	pCi/g	3 - 3	100%	0.933 - 2.99	– - –	1.79	NA	No ESV
Speciation								
Arsenate-speciation	mg/kg	2 - 3	67%	3.57 - 17.8	1.19 - 1.19	10.7	NA	No ESV
Arsenic-speciation	mg/kg	3 - 3	100%	3.64 - 52.5	– - –	20.2	7.24	Yes
Arsenite-speciation	mg/kg	3 - 3	100%	1.72 - 46.9	– - –	17.1	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	3 - 3	100%	1.82 - 64.8	– - –	24.3	NA	No ESV
Inorganic Mercury-speciation	mg/kg	3 - 3	100%	0.0546 - 0.123	– - –	0.091	NA	No ESV
Inorganic Selenium-speciation	mg/kg	1 - 3	33%	2.34 - 2.34	0.604 - 0.648	2.34	NA	No ESV

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Table 2-22. Submerged Sediment Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Speciation (continued)								
Mercury-speciation	mg/kg	3 - 3	100%	0.056 - 0.124	– - –	0.092	0.13	no
Methyl mercury-speciation	mg/kg	3 - 3	100%	0.00055 - 0.00139	– - –	0.00084	NA	No ESV
Organic Arsenic-speciation	mg/kg	1 - 3	33%	1.82 - 1.82	1.38 - 11.1	1.82	NA	No ESV
Organic Selenium-speciation	mg/kg	2 - 3	67%	0.709 - 2.37	1.18 - 1.18	1.54	NA	No ESV
Selenate-speciation	mg/kg	0 - 3	0%	– - –	0.432 - 0.513	–	NA	No ESV
Selenite-speciation	mg/kg	1 - 3	33%	2.34 - 2.34	0.604 - 0.648	2.34	NA	No ESV
Selenium-speciation	mg/kg	2 - 3	67%	0.709 - 4.71	1.18 - 1.18	2.71	NA	No ESV
Physical Properties								
% Ash	%	1 - 3	33%	64 - 64	1 - 1	64	NA	No ESV
% Ash (> or < 50%)	%	1 - 10	10%	50 - 50	50 - 50	50	NA	No ESV
Fraction of Organic Carbon	%	3 - 3	100%	1.6 - 3.3	– - –	2.533	NA	No ESV
Total Organic Carbon	mg/kg	3 - 3	100%	13000 - 37000	– - –	23667	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-23. Submerged Sediment Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics										
Aluminum	mg/kg	3 - 3	100%	10700	11900	–	–	11333	NA	No ESV
Antimony	mg/kg	0 - 3	0%	–	–	1.47	1.56	–	12	–
Arsenic	mg/kg	3 - 3	100%	4.87	9.16	–	–	6.37	7.24	Yes
Barium	mg/kg	3 - 3	100%	64.4	88	–	–	73.77	NA	No ESV
Beryllium	mg/kg	1 - 3	33%	0.686	0.686	0.586	0.624	0.69	NA	No ESV
Boron	mg/kg	3 - 3	100%	11.3	15.1	–	–	12.57	NA	No ESV
Cadmium	mg/kg	0 - 3	0%	–	–	0.147	0.156	–	1	–
Chromium	mg/kg	3 - 3	100%	15.9	27.9	–	–	20.5	52.3	no
Cobalt	mg/kg	3 - 3	100%	9.38	11.7	–	–	10.3	NA	No ESV
Copper	mg/kg	3 - 3	100%	8.47	15.5	–	–	10.98	18.7	no
Hex. Chromium	mg/kg	0 - 1	0%	–	–	0.32	0.32	–	NA	No ESV
Lead	mg/kg	3 - 3	100%	12.2	19.2	–	–	14.7	30.2	no
Manganese	mg/kg	3 - 3	100%	872	1160	–	–	1057	NA	No ESV
Mercury	mg/kg	3 - 3	100%	0.35	5	–	–	2.03	0.13	Yes
Molybdenum	mg/kg	0 - 3	0%	–	–	5.86	6.24	–	NA	No ESV
Nickel	mg/kg	3 - 3	100%	10.5	19.4	–	–	13.6	15.9	Yes
Selenium	mg/kg	0 - 3	0%	–	–	1.47	1.56	–	NA	No ESV
Silver	mg/kg	0 - 3	0%	–	–	0.733	0.78	–	2	–
Strontium	mg/kg	3 - 3	100%	10.6	17.6	–	–	13.1	NA	No ESV
Thallium	mg/kg	0 - 3	0%	–	–	1.47	1.56	–	NA	No ESV
Vanadium	mg/kg	3 - 3	100%	15.4	21.3	–	–	17.8	NA	No ESV
Zinc	mg/kg	3 - 3	100%	52.1	67.9	–	–	57.5	124	no
Inorganic-cations/anions										
Calcium	mg/kg	3 - 3	100%	2160	3110	–	–	2487	NA	No ESV
Iron	mg/kg	3 - 3	100%	14700	18900	–	–	16200	NA	No ESV
Magnesium	mg/kg	3 - 3	100%	1610	1900	–	–	1793	NA	No ESV
Potassium	mg/kg	3 - 3	100%	1740	2490	–	–	2050	NA	No ESV
Sodium	mg/kg	0 - 3	0%	–	–	147	156	–	NA	No ESV
Benzo(a)anthracene	mg/kg	1 - 1	100%	0.0091	0.0091	–	–	0.0091	0.33	no
Benzo(a)pyrene	mg/kg	1 - 1	100%	0.01	0.01	–	–	0.01	0.33	no
Benzo(b)fluoranthene	mg/kg	1 - 1	100%	0.016	0.016	–	–	0.016	NA	No ESV
Benzo(e)pyrene	mg/kg	1 - 1	100%	0.01	0.01	–	–	0.01	NA	No ESV

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Table 2-23. Submerged Sediment Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)										
Benzo(g,h,i)perylene	mg/kg	1 - 1	100%	0.0085	0.0085	–	–	0.0085	NA	No ESV
Benzo(k)fluoranthene	mg/kg	1 - 1	100%	0.011	0.011	–	–	0.011	NA	No ESV
C1-Chrysenes	mg/kg	1 - 1	100%	0.0096	0.0096	–	–	0.0096	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	1 - 1	100%	0.019	0.019	–	–	0.019	NA	No ESV
C2-Chrysenes	mg/kg	1 - 1	100%	0.0047	0.0047	–	–	0.0047	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	1 - 1	100%	0.016	0.016	–	–	0.016	NA	No ESV
C3-Chrysenes	mg/kg	1 - 1	100%	0.0021	0.0021	–	–	0.0021	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	1 - 1	100%	0.0065	0.0065	–	–	0.0065	NA	No ESV
C4-Chrysenes	mg/kg	0 - 1	0%	–	–	0.00085	0.00085	–	NA	No ESV
Chrysene	mg/kg	1 - 1	100%	0.012	0.012	–	–	0.012	0.33	no
Dibenz(a,h)anthracene	mg/kg	1 - 1	100%	0.0028	0.0028	–	–	0.0028	0.33	no
Fluoranthene	mg/kg	1 - 1	100%	0.022	0.022	–	–	0.022	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	1 - 1	100%	0.0082	0.0082	–	–	0.0082	NA	No ESV
Perylene	mg/kg	1 - 1	100%	0.033	0.033	–	–	0.033	NA	No ESV
Pyrene	mg/kg	1 - 1	100%	0.016	0.016	–	–	0.016	0.33	no
Total HPAH	mg/kg	1 - 1	100%	0.21735	0.21735	–	–	0.2	0.655	no
Acenaphthene	mg/kg	0 - 1	0%	–	–	0.00085	0.00085	–	0.33	–
Acenaphthylene	mg/kg	0 - 1	0%	–	–	0.00085	0.00085	–	0.33	–
Anthracene	mg/kg	1 - 1	100%	0.0013	0.0013	–	–	0.0013	0.33	no
C1-Fluorenes	mg/kg	1 - 1	100%	0.0038	0.0038	–	–	0.0038	NA	No ESV
C1-Naphthalenes	mg/kg	1 - 1	100%	0.014	0.014	–	–	0.014	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.014	0.014	–	–	0.014	NA	No ESV
C2-Fluorenes	mg/kg	1 - 1	100%	0.0029	0.0029	–	–	0.0029	NA	No ESV
C2-Naphthalenes	mg/kg	1 - 1	100%	0.033	0.033	–	–	0.033	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.0096	0.0096	–	–	0.0096	NA	No ESV
C3-Fluorenes	mg/kg	1 - 1	100%	0.0024	0.0024	–	–	0.0024	NA	No ESV
C3-Naphthalenes	mg/kg	1 - 1	100%	0.023	0.023	–	–	0.023	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.0051	0.0051	–	–	0.0051	NA	No ESV
C4-Naphthalenes	mg/kg	1 - 1	100%	0.013	0.013	–	–	0.013	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.0014	0.0014	–	–	0.0014	NA	No ESV
Fluorene	mg/kg	1 - 1	100%	0.0013	0.0013	–	–	0.0013	0.33	no

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Table 2-23. Submerged Sediment Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)								
Naphthalene	mg/kg	1 - 1	100%	0.0054 - 0.0054	– - –	0.0054	0.33	no
Phenanthrene	mg/kg	1 - 1	100%	0.012 - 0.012	– - –	0.012	0.33	no
Total LPAH	mg/kg	1 - 1	100%	0.1439 - 0.1439	– - –	0.144	0.33	no
Total Alkylated PAHs	mg/kg	1 - 1	100%	0.18095 - 0.18095	– - –	0.181	NA	No ESV
Total Unsubstituted PAHs	mg/kg	1 - 1	100%	0.1803 - 0.1803	– - –	0.18	NA	No ESV
PCB-1016	mg/kg	0 - 1	0%	– - –	0.0022 - 0.0022	–	0.033	–
PCB-1221	mg/kg	0 - 1	0%	– - –	0.0022 - 0.0022	–	0.067	–
PCB-1232	mg/kg	0 - 1	0%	– - –	0.0022 - 0.0022	–	0.033	–
PCB-1242	mg/kg	0 - 1	0%	– - –	0.0022 - 0.0022	–	0.033	–
PCB-1248	mg/kg	0 - 1	0%	– - –	0.0022 - 0.0022	–	0.033	–
PCB-1254	mg/kg	1 - 1	100%	0.016 - 0.016	– - –	0.016	0.033	no
PCB-1260	mg/kg	1 - 1	100%	0.01 - 0.01	– - –	0.01	0.033	no
PCB-1262	mg/kg	0 - 1	0%	– - –	0.0022 - 0.0022	–	0.033	–
PCB-1268	mg/kg	0 - 1	0%	– - –	0.0022 - 0.0022	–	0.033	–
Total PCBs	mg/kg	1 - 1	100%	0.0414 - 0.0414	– - –	0.0414	0.033	Yes
Pesticides								
4,4'-DDD	mg/kg	0 - 1	0%	– - –	0.00086 - 0.00086	–	0.0033	–
4,4'-DDE	mg/kg	0 - 1	0%	– - –	0.00086 - 0.00086	–	0.0033	–
4,4'-DDT	mg/kg	0 - 1	0%	– - –	0.00086 - 0.00086	–	0.0033	–
Aldrin	mg/kg	0 - 1	0%	– - –	0.00044 - 0.00044	–	NA	No ESV
alpha-BHC	mg/kg	1 - 1	100%	0.0005 - 0.0005	– - –	0.0005	NA	No ESV
alpha-Chlordane	mg/kg	0 - 1	0%	– - –	0.00044 - 0.00044	–	0.0017	–
beta-BHC	mg/kg	1 - 1	100%	0.0016 - 0.0016	– - –	0.0016	NA	No ESV
delta-BHC	mg/kg	0 - 1	0%	– - –	0.00044 - 0.00044	–	NA	No ESV
Dieldrin	mg/kg	0 - 1	0%	– - –	0.00086 - 0.00086	–	0.0033	–
Endosulfan I	mg/kg	0 - 1	0%	– - –	0.00044 - 0.00044	–	NA	No ESV
Endosulfan II	mg/kg	0 - 1	0%	– - –	0.00086 - 0.00086	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 1	0%	– - –	0.00086 - 0.00086	–	NA	No ESV
Endrin	mg/kg	0 - 1	0%	– - –	0.00086 - 0.00086	–	0.0033	–
Endrin aldehyde	mg/kg	0 - 1	0%	– - –	0.00086 - 0.00086	–	NA	No ESV
Endrin Ketone	mg/kg	0 - 1	0%	– - –	0.00086 - 0.00086	–	NA	No ESV

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Table 2-23. Submerged Sediment Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Pesticides (continued)										
gamma-BHC (Lindane)	mg/kg	0 - 1	0%	–	–	0.00044	0.00044	–	0.0033	–
gamma-Chlordane	mg/kg	0 - 1	0%	–	–	0.00044	0.00044	–	0.0017	–
Heptachlor	mg/kg	0 - 1	0%	–	–	0.00044	0.00044	–	NA	No ESV
Heptachlor Epoxide	mg/kg	0 - 1	0%	–	–	0.00044	0.00044	–	NA	No ESV
Methoxychlor	mg/kg	0 - 1	0%	–	–	0.0044	0.0044	–	NA	No ESV
Total Chlordane	mg/kg	0 - 1	0%	–	–	0.00088	0.00088	–	0.0017	–
Total DDx	mg/kg	0 - 1	0%	–	–	0.00258	0.00258	–	NA	No ESV
Total Pesticides	mg/kg	1 - 1	100%	0.06176	0.06176	–	–	0.06176	NA	No ESV
Toxaphene	mg/kg	0 - 1	0%	–	–	0.044	0.044	–	NA	No ESV
Radionuclides										
Actinium-228	pCi/g	1 - 1	100%	0.746	0.746	–	–	0.75	NA	No ESV
Americium-241	pCi/g	0 - 1	0%	–	–	134	134	–	NA	No ESV
Bismuth-214	pCi/g	1 - 1	100%	0.561	0.561	–	–	0.561	NA	No ESV
Cesium-137	pCi/g	1 - 1	100%	2.23	2.23	–	–	2.23	NA	No ESV
Cobalt-60	pCi/g	0 - 1	0%	–	–	0.0481	0.0481	–	NA	No ESV
Lead-212	pCi/g	1 - 1	100%	0.731	0.731	–	–	0.731	NA	No ESV
Lead-214	pCi/g	1 - 1	100%	0.711	0.711	–	–	0.711	NA	No ESV
Potassium-40	pCi/g	1 - 1	100%	8.57	8.57	–	–	8.57	NA	No ESV
Radium-226	pCi/g	1 - 1	100%	0.561	0.561	–	–	0.561	NA	No ESV
Radium-228	pCi/g	1 - 1	100%	0.746	0.746	–	–	0.746	NA	No ESV
Thallium-208	pCi/g	1 - 1	100%	0.21	0.21	–	–	0.21	NA	No ESV
Thorium-228	pCi/g	1 - 1	100%	0.413	0.413	–	–	0.413	NA	No ESV
Thorium-230	pCi/g	1 - 1	100%	0.79	0.79	–	–	0.79	NA	No ESV
Thorium-232	pCi/g	1 - 1	100%	0.668	0.668	–	–	0.668	NA	No ESV
Thorium-234	pCi/g	0 - 1	0%	–	–	1.22	1.22	–	NA	No ESV
Uranium-234	pCi/g	1 - 1	100%	0.459	0.459	–	–	0.459	NA	No ESV
Uranium-235	pCi/g	0 - 1	0%	–	–	0.099	0.099	–	NA	No ESV
Uranium-238	pCi/g	1 - 1	100%	0.489	0.489	–	–	0.489	NA	No ESV
Speciation										
Arsenate-speciation	mg/kg	1 - 1	100%	5.15	5.15	–	–	5.15	NA	No ESV
Arsenic-speciation	mg/kg	1 - 1	100%	2.33	2.33	–	–	2.33	7.24	no
Arsenite-speciation	mg/kg	0 - 1	0%	–	–	1.72	1.72	–	NA	No ESV

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Table 2-23. Submerged Sediment Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Speciation (continued)										
Inorganic Arsenic-speciation	mg/kg	1 - 1	100%	5.15	5.15	–	–	5.15	NA	No ESV
Inorganic Mercury-speciation	mg/kg	1 - 1	100%	0.635	0.635	–	–	0.635	NA	No ESV
Inorganic Selenium-speciation	mg/kg	0 - 1	0%	–	–	0.312	0.312	–	NA	No ESV
Mercury-speciation	mg/kg	1 - 1	100%	0.635	0.635	–	–	0.635	0.13	Yes
Methyl mercury-speciation	mg/kg	1 - 1	100%	0.00055	0.00055	–	–	0.000554	NA	No ESV
Organic Arsenic-speciation	mg/kg	0 - 1	0%	–	–	4.31	4.31	–	NA	No ESV
Organic Selenium-speciation	mg/kg	0 - 1	0%	–	–	0.728	0.728	–	NA	No ESV
Selenate-speciation	mg/kg	0 - 1	0%	–	–	0.247	0.247	–	NA	No ESV
Selenite-speciation	mg/kg	0 - 1	0%	–	–	0.312	0.312	–	NA	No ESV
Selenium-speciation	mg/kg	0 - 1	0%	–	–	0.728	0.728	–	NA	No ESV
Physical Properties										
% Ash	%	0 - 1	0%	–	–	1	1	–	NA	No ESV
% Ash (> or < 50%)	%	0 - 3	0%	–	–	50	50	–	NA	No ESV
Fraction of Organic Carbon	%	1 - 1	100%	1.2	1.2	–	–	1.2	NA	No ESV
Total Organic Carbon	mg/kg	1 - 1	100%	4300	4300	–	–	4300	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-24. Submerged Sediment Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics								
Aluminum	mg/kg	12 - 12	100%	15200 - 44200	– - –	25383	NA	No ESV
Antimony	mg/kg	0 - 12	0%	– - –	1.23 - 2.63	–	12	–
Arsenic	mg/kg	12 - 12	100%	3.89 - 27.8	– - –	17.32	7.24	Yes
Barium	mg/kg	12 - 12	100%	130 - 320	– - –	234	NA	No ESV
Beryllium	mg/kg	12 - 12	100%	0.788 - 2.73	– - –	1.84	NA	No ESV
Boron	mg/kg	12 - 12	100%	14.2 - 106	– - –	38.9	NA	No ESV
Cadmium	mg/kg	0 - 12	0%	– - –	0.123 - 0.263	–	1	–
Chromium	mg/kg	12 - 12	100%	18.1 - 50.8	– - –	29.84	52.3	no
Cobalt	mg/kg	12 - 12	100%	7.91 - 23.2	– - –	17.1	NA	No ESV
Copper	mg/kg	12 - 12	100%	6.28 - 62.4	– - –	37.02	18.7	Yes
Hex. Chromium	mg/kg	0 - 3	0%	– - –	0.37 - 0.54	–	NA	No ESV
Lead	mg/kg	12 - 12	100%	10.5 - 31	– - –	22.03	30.2	Yes
Manganese	mg/kg	12 - 12	100%	450 - 2180	– - –	1190	NA	No ESV
Mercury	mg/kg	11 - 12	92%	0.066 - 1.3	0.05 - 0.05	0.63	0.13	Yes
Molybdenum	mg/kg	0 - 12	0%	– - –	4.93 - 10.5	–	NA	No ESV
Nickel	mg/kg	12 - 12	100%	12.2 - 39.3	– - –	27.4	15.9	Yes
Selenium	mg/kg	8 - 12	67%	1.56 - 3.01	1.23 - 2.15	2.46	NA	No ESV
Silver	mg/kg	0 - 12	0%	– - –	0.616 - 1.31	–	2	–
Strontium	mg/kg	3 - 3	100%	86.7 - 160	– - –	127.9	NA	No ESV
Thallium	mg/kg	0 - 12	0%	– - –	1.23 - 2.63	–	NA	No ESV
Vanadium	mg/kg	12 - 12	100%	25.6 - 81.2	– - –	50.4	NA	No ESV
Zinc	mg/kg	12 - 12	100%	39.4 - 130	– - –	90.4	124	Yes
Inorganic-cations/anions								
Calcium	mg/kg	12 - 12	100%	1040 - 5540	– - –	3438	NA	No ESV
Iron	mg/kg	12 - 12	100%	14000 - 37000	– - –	26567	NA	No ESV
Magnesium	mg/kg	12 - 12	100%	1830 - 4010	– - –	2649	NA	No ESV
Potassium	mg/kg	12 - 12	100%	2250 - 7120	– - –	3822	NA	No ESV
Sodium	mg/kg	9 - 12	75%	137 - 491	132 - 244	248	NA	No ESV
Benzo(a)anthracene	mg/kg	3 - 3	100%	0.011 - 0.025	– - –	0.018	0.33	no
Benzo(a)pyrene	mg/kg	3 - 3	100%	0.011 - 0.029	– - –	0.02	0.33	no
Benzo(b)fluoranthene	mg/kg	3 - 3	100%	0.015 - 0.04	– - –	0.028	NA	No ESV
Benzo(e)pyrene	mg/kg	3 - 3	100%	0.01 - 0.025	– - –	0.018	NA	No ESV

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Table 2-24. Submerged Sediment Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min Max	Detection Limits Min Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)								
Benzo(g,h,i)perylene	mg/kg	3 - 3	100%	0.0082 - 0.023	– - –	0.016	NA	No ESV
Benzo(k)fluoranthene	mg/kg	3 - 3	100%	0.013 - 0.032	– - –	0.022	NA	No ESV
C1-Chrysenes	mg/kg	3 - 3	100%	0.014 - 0.025	– - –	0.019	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	3 - 3	100%	0.016 - 0.036	– - –	0.03	NA	No ESV
C2-Chrysenes	mg/kg	3 - 3	100%	0.0062 - 0.012	– - –	0.0094	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	3 - 3	100%	0.017 - 0.031	– - –	0.024	NA	No ESV
C3-Chrysenes	mg/kg	2 - 3	67%	0.0022 - 0.0043	0.0043 - 0.0043	0.0033	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	3 - 3	100%	0.0076 - 0.014	– - –	0.011	NA	No ESV
C4-Chrysenes	mg/kg	1 - 3	33%	0.0014 - 0.0014	0.0028 - 0.0043	0.0014	NA	No ESV
Chrysene	mg/kg	3 - 3	100%	0.015 - 0.033	– - –	0.024	0.33	no
Dibenz(a,h)anthracene	mg/kg	3 - 3	100%	0.0027 - 0.0071	– - –	0.005	0.33	no
Fluoranthene	mg/kg	3 - 3	100%	0.026 - 0.058	– - –	0.042	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	3 - 3	100%	0.007 - 0.02	– - –	0.014	NA	No ESV
Perylene	mg/kg	3 - 3	100%	0.018 - 0.14	– - –	0.08	NA	No ESV
Pyrene	mg/kg	3 - 3	100%	0.02 - 0.046	– - –	0.033	0.33	no
Total HPAH	mg/kg	3 - 3	100%	0.2213 - 0.6047	– - –	0.42	0.655	no
Acenaphthene	mg/kg	0 - 3	0%	– - –	0.001 - 0.0043	–	0.33	–
Acenaphthylene	mg/kg	0 - 3	0%	– - –	0.001 - 0.0043	–	0.33	–
Anthracene	mg/kg	1 - 3	33%	0.0015 - 0.0015	0.0028 - 0.0043	0.0015	0.33	no
C1-Fluorenes	mg/kg	2 - 3	67%	0.0016 - 0.0048	0.0028 - 0.0028	0.0032	NA	No ESV
C1-Naphthalenes	mg/kg	3 - 3	100%	0.013 - 0.024	– - –	0.018	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.013 - 0.026	– - –	0.02	NA	No ESV
C2-Fluorenes	mg/kg	3 - 3	100%	0.0036 - 0.0075	– - –	0.0055	NA	No ESV
C2-Naphthalenes	mg/kg	3 - 3	100%	0.029 - 0.055	– - –	0.042	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.0084 - 0.018	– - –	0.013	NA	No ESV
C3-Fluorenes	mg/kg	3 - 3	100%	0.0029 - 0.0058	– - –	0.0042	NA	No ESV
C3-Naphthalenes	mg/kg	3 - 3	100%	0.022 - 0.042	– - –	0.032	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.0048 - 0.018	– - –	0.011	NA	No ESV
C4-Naphthalenes	mg/kg	3 - 3	100%	0.015 - 0.026	– - –	0.0203	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	2 - 3	67%	0.0018 - 0.003	0.0043 - 0.0043	0.0024	NA	No ESV
Fluorene	mg/kg	1 - 3	33%	0.0011 - 0.0011	0.0028 - 0.0043	0.0011	0.33	no

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Table 2-24. Submerged Sediment Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)								
Naphthalene	mg/kg	3 - 3	100%	0.0053 - 0.0093	– - –	0.0073	0.33	no
Phenanthrene	mg/kg	3 - 3	100%	0.012 - 0.023	– - –	0.017	0.33	no
Total LPAH	mg/kg	3 - 3	100%	0.137 - 0.2809	– - –	0.21	0.33	no
Total Alkylated PAHs	mg/kg	3 - 3	100%	0.1795 - 0.358	– - –	0.27	NA	No ESV
Total Unsubstituted PAHs	mg/kg	3 - 3	100%	0.1788 - 0.5276	– - –	0.36	NA	No ESV
PCB-1016	mg/kg	0 - 3	0%	– - –	0.0026 - 0.0035	–	0.033	–
PCB-1221	mg/kg	0 - 3	0%	– - –	0.0026 - 0.0035	–	0.067	–
PCB-1232	mg/kg	0 - 3	0%	– - –	0.0026 - 0.0035	–	0.033	–
PCB-1242	mg/kg	0 - 3	0%	– - –	0.0026 - 0.0035	–	0.033	–
PCB-1248	mg/kg	0 - 3	0%	– - –	0.0026 - 0.0035	–	0.033	–
PCB-1254	mg/kg	3 - 3	100%	0.0037 - 0.011	– - –	0.0069	0.033	no
PCB-1260	mg/kg	3 - 3	100%	0.0055 - 0.011	– - –	0.008	0.033	no
PCB-1262	mg/kg	0 - 3	0%	– - –	0.0026 - 0.0035	–	0.033	–
PCB-1268	mg/kg	0 - 3	0%	– - –	0.0026 - 0.0035	–	0.033	–
Total PCBs	mg/kg	3 - 3	100%	0.0274 - 0.0451	– - –	0.037	0.033	Yes
Pesticides								
4,4'-DDD	mg/kg	0 - 3	0%	– - –	0.00099 - 0.0014	–	0.0033	–
4,4'-DDE	mg/kg	0 - 3	0%	– - –	0.00099 - 0.0014	–	0.0033	–
4,4'-DDT	mg/kg	0 - 3	0%	– - –	0.00099 - 0.0014	–	0.0033	–
Aldrin	mg/kg	0 - 3	0%	– - –	0.00051 - 0.0007	–	NA	No ESV
alpha-BHC	mg/kg	2 - 3	67%	0.002 - 0.0021	0.00051 - 0.00051	0.00205	NA	No ESV
alpha-Chlordane	mg/kg	0 - 3	0%	– - –	0.00051 - 0.0007	–	0.0017	–
beta-BHC	mg/kg	3 - 3	100%	0.00075 - 0.0031	– - –	0.0022	NA	No ESV
delta-BHC	mg/kg	2 - 3	67%	0.0014 - 0.0015	0.00051 - 0.00051	0.00145	NA	No ESV
Dieldrin	mg/kg	0 - 3	0%	– - –	0.00099 - 0.0014	–	0.0033	–
Endosulfan I	mg/kg	0 - 3	0%	– - –	0.00051 - 0.0007	–	NA	No ESV
Endosulfan II	mg/kg	0 - 3	0%	– - –	0.00099 - 0.0014	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 3	0%	– - –	0.00099 - 0.0014	–	NA	No ESV
Endrin	mg/kg	0 - 3	0%	– - –	0.00099 - 0.0014	–	0.0033	–
Endrin aldehyde	mg/kg	0 - 3	0%	– - –	0.00099 - 0.0014	–	NA	No ESV
Endrin Ketone	mg/kg	0 - 3	0%	– - –	0.00099 - 0.0014	–	NA	No ESV

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Table 2-24. Submerged Sediment Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Pesticides (continued)								
gamma-BHC (Lindane)	mg/kg	0 - 3	0%	– - –	0.00051 - 0.0007	–	0.0033	–
gamma-Chlordane	mg/kg	0 - 3	0%	– - –	0.00051 - 0.0007	–	0.0017	–
Heptachlor	mg/kg	3 - 3	100%	0.00064 - 0.0034	– - –	0.0021	NA	No ESV
Heptachlor Epoxide	mg/kg	0 - 3	0%	– - –	0.00051 - 0.0007	–	NA	No ESV
Methoxychlor	mg/kg	0 - 3	0%	– - –	0.0051 - 0.007	–	NA	No ESV
Total Chlordane	mg/kg	0 - 3	0%	– - –	0.00102 - 0.0014	–	0.0017	–
Total DDx	mg/kg	0 - 3	0%	– - –	0.00297 - 0.0042	–	NA	No ESV
Total Pesticides	mg/kg	3 - 3	100%	0.07048 - 0.1034	– - –	0.09	NA	No ESV
Toxaphene	mg/kg	0 - 3	0%	– - –	0.051 - 0.07	–	NA	No ESV
Radionuclides								
Actinium-228	pCi/g	3 - 3	100%	1.81 - 2.19	– - –	2.06	NA	No ESV
Americium-241	pCi/g	0 - 3	0%	– - –	255 - 558	–	NA	No ESV
Bismuth-214	pCi/g	3 - 3	100%	1.74 - 2.6	– - –	2.18	NA	No ESV
Cesium-137	pCi/g	3 - 3	100%	0.792 - 2.79	– - –	2.01	NA	No ESV
Cobalt-60	pCi/g	0 - 3	0%	– - –	0.0861 - 0.0967	–	NA	No ESV
Lead-212	pCi/g	3 - 3	100%	1.89 - 2.28	– - –	2.06	NA	No ESV
Lead-214	pCi/g	3 - 3	100%	2.43 - 3.02	– - –	2.65	NA	No ESV
Potassium-40	pCi/g	3 - 3	100%	16.3 - 21.6	– - –	19.2	NA	No ESV
Radium-226	pCi/g	3 - 3	100%	1.74 - 2.6	– - –	2.18	NA	No ESV
Radium-228	pCi/g	3 - 3	100%	1.81 - 2.19	– - –	2.06	NA	No ESV
Thallium-208	pCi/g	3 - 3	100%	0.562 - 0.702	– - –	0.619	NA	No ESV
Thorium-228	pCi/g	3 - 3	100%	2.01 - 2.18	– - –	2.12	NA	No ESV
Thorium-230	pCi/g	3 - 3	100%	2.3 - 3.11	– - –	2.62	NA	No ESV
Thorium-232	pCi/g	3 - 3	100%	1.63 - 2	– - –	1.87	NA	No ESV
Thorium-234	pCi/g	3 - 3	100%	3.22 - 5.65	– - –	4.76	NA	No ESV
Uranium-234	pCi/g	3 - 3	100%	2.17 - 2.6	– - –	2.32	NA	No ESV
Uranium-235	pCi/g	1 - 3	33%	0.167 - 0.167	0.139 - 0.148	0.17	NA	No ESV
Uranium-238	pCi/g	3 - 3	100%	1.73 - 2.28	– - –	2.01	NA	No ESV
Speciation								
Arsenate-speciation	mg/kg	3 - 3	100%	3.68 - 15.2	– - –	8.35	NA	No ESV
Arsenic-speciation	mg/kg	3 - 3	100%	17.3 - 22.9	– - –	19.8	7.24	Yes
Arsenite-speciation	mg/kg	3 - 3	100%	5.32 - 9.41	– - –	7.47	NA	No ESV

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Table 2-24. Submerged Sediment Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Speciation (continued)								
Inorganic Arsenic-speciation	mg/kg	3 - 3	100%	9 - 22.8	– - –	15.8	NA	No ESV
Inorganic Mercury-speciation	mg/kg	3 - 3	100%	0.437 - 1.05	– - –	0.78	NA	No ESV
Inorganic Selenium-speciation	mg/kg	2 - 3	67%	0.803 - 0.807	0.612 - 0.612	0.81	NA	No ESV
Mercury-speciation	mg/kg	3 - 3	100%	0.439 - 1.05	– - –	0.79	0.13	Yes
Methyl mercury-speciation	mg/kg	3 - 3	100%	0.0012 - 0.00194	– - –	0.0015	NA	No ESV
Organic Arsenic-speciation	mg/kg	2 - 3	67%	7.28 - 8.32	12.5 - 12.5	7.8	NA	No ESV
Organic Selenium-speciation	mg/kg	3 - 3	100%	1.92 - 3	– - –	2.61	NA	No ESV
Selenate-speciation	mg/kg	0 - 3	0%	– - –	0.468 - 0.484	–	NA	No ESV
Selenite-speciation	mg/kg	2 - 3	67%	0.803 - 0.807	0.612 - 0.612	0.81	NA	No ESV
Selenium-speciation	mg/kg	3 - 3	100%	2.73 - 3.72	– - –	3.15	NA	No ESV
Physical Properties								
% Ash	%	3 - 3	100%	29 - 43	– - –	38	NA	No ESV
% Ash (> or < 50%)	%	1 - 12	8%	50 - 50	50 - 50	50	NA	No ESV
Fraction of Organic Carbon	%	3 - 3	100%	1.7 - 2.1	– - –	1.97	NA	No ESV
Total Organic Carbon	mg/kg	3 - 3	100%	5900 - 14000	– - –	8600	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-25. Submerged Sediment Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics										
Aluminum	mg/kg	12 - 12	100%	11600	38300	–	–	24983	NA	No ESV
Antimony	mg/kg	1 - 12	8%	1.46	1.46	1.31	2.29	1.46	12	no
Arsenic	mg/kg	12 - 12	100%	8.33	37.8	–	–	20.05	7.24	Yes
Barium	mg/kg	12 - 12	100%	72.8	417	–	–	225	NA	No ESV
Beryllium	mg/kg	12 - 12	100%	0.686	3.43	–	–	1.83	NA	No ESV
Boron	mg/kg	12 - 12	100%	9.14	56.3	–	–	32.07	NA	No ESV
Cadmium	mg/kg	0 - 12	0%	–	–	0.131	0.229	–	1	–
Chromium	mg/kg	12 - 12	100%	16.6	56.5	–	–	31.88	52.3	Yes
Cobalt	mg/kg	12 - 12	100%	8.43	23.7	–	–	16.47	NA	No ESV
Copper	mg/kg	12 - 12	100%	13.5	46.4	–	–	28.57	18.7	Yes
Hex. Chromium	mg/kg	0 - 1	0%	–	–	0.39	0.39	–	NA	No ESV
Lead	mg/kg	12 - 12	100%	11.4	25.7	–	–	19.57	30.2	no
Manganese	mg/kg	12 - 12	100%	312	1570	–	–	871	NA	No ESV
Mercury	mg/kg	12 - 12	100%	0.053	1.3	–	–	0.431	0.13	Yes
Molybdenum	mg/kg	0 - 12	0%	–	–	5.26	9.17	–	NA	No ESV
Nickel	mg/kg	12 - 12	100%	9.91	43.1	–	–	26.58	15.9	Yes
Selenium	mg/kg	4 - 12	33%	2.42	3.5	1.31	1.97	3	NA	No ESV
Silver	mg/kg	0 - 12	0%	–	–	0.657	1.15	–	2	–
Strontium	mg/kg	10 - 10	100%	28.4	231	–	–	100	NA	No ESV
Thallium	mg/kg	0 - 12	0%	–	–	1.31	2.29	–	NA	No ESV
Vanadium	mg/kg	12 - 12	100%	23.8	89.9	–	–	51.4	NA	No ESV
Zinc	mg/kg	12 - 12	100%	38.7	103	–	–	74.9	124	no
Inorganic-cation/anion										
Calcium	mg/kg	12 - 12	100%	995	14200	–	–	4278.75	NA	No ESV
Iron	mg/kg	12 - 12	100%	15700	35300	–	–	25417	NA	No ESV
Magnesium	mg/kg	12 - 12	100%	873	4280	–	–	2469	NA	No ESV
Potassium	mg/kg	12 - 12	100%	1620	7890	–	–	3943	NA	No ESV
Sodium	mg/kg	9 - 12	75%	212	480	131	158	294	NA	No ESV
Benzo(a)anthracene	mg/kg	3 - 3	100%	0.0063	0.018	–	–	0.0131	0.33	no
Benzo(a)pyrene	mg/kg	3 - 3	100%	0.0063	0.021	–	–	0.014	0.33	no
Benzo(b)fluoranthene	mg/kg	3 - 3	100%	0.01	0.027	–	–	0.021	NA	No ESV
Benzo(e)pyrene	mg/kg	3 - 3	100%	0.0061	0.019	–	–	0.014	NA	No ESV

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Table 2-25. Submerged Sediment Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Inorganic-cations/anions (continued)										
Benzo(g,h,i)perylene	mg/kg	3 - 3	100%	0.0051	0.013	–	–	0.01	NA	No ESV
Benzo(k)fluoranthene	mg/kg	3 - 3	100%	0.0066	0.025	–	–	0.016	NA	No ESV
C1-Chrysenes	mg/kg	3 - 3	100%	0.011	0.017	–	–	0.014	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	3 - 3	100%	0.012	0.027	–	–	0.022	NA	No ESV
C2-Chrysenes	mg/kg	3 - 3	100%	0.0033	0.011	–	–	0.0071	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	3 - 3	100%	0.012	0.024	–	–	0.019	NA	No ESV
C3-Chrysenes	mg/kg	2 - 3	67%	0.0031	0.0054	0.001	0.001	0.00425	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	3 - 3	100%	0.0034	0.011	–	–	0.0081	NA	No ESV
C4-Chrysenes	mg/kg	1 - 3	33%	0.0023	0.0023	0.001	0.0011	0.0023	NA	No ESV
Chrysene	mg/kg	3 - 3	100%	0.0089	0.025	–	–	0.018	0.33	no
Dibenz(a,h)anthracene	mg/kg	3 - 3	100%	0.0016	0.0042	–	–	0.0033	0.33	no
Fluoranthene	mg/kg	3 - 3	100%	0.015	0.047	–	–	0.033	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	3 - 3	100%	0.0048	0.012	–	–	0.0096	NA	No ESV
Perylene	mg/kg	3 - 3	100%	0.012	0.11	–	–	0.061	NA	No ESV
Pyrene	mg/kg	3 - 3	100%	0.011	0.032	–	–	0.023	0.33	no
Total HPAH	mg/kg	3 - 3	100%	0.1374	0.4509	–	–	0.311	0.655	no
Acenaphthene	mg/kg	1 - 3	33%	0.001	0.001	0.001	0.0011	0.001	0.33	no
Acenaphthylene	mg/kg	1 - 3	33%	0.0012	0.0012	0.001	0.0011	0.0012	0.33	no
Anthracene	mg/kg	2 - 3	67%	0.0024	0.0027	0.001	0.001	0.00255	0.33	no
C1-Fluorenes	mg/kg	2 - 3	67%	0.0017	0.0024	0.001	0.001	0.00205	NA	No ESV
C1-Naphthalenes	mg/kg	3 - 3	100%	0.0072	0.021	–	–	0.0144	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.0073	0.02	–	–	0.014	NA	No ESV
C2-Fluorenes	mg/kg	3 - 3	100%	0.0017	0.0052	–	–	0.0035	NA	No ESV
C2-Naphthalenes	mg/kg	3 - 3	100%	0.017	0.048	–	–	0.033	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.0047	0.014	–	–	0.0099	NA	No ESV
C3-Fluorenes	mg/kg	3 - 3	100%	0.0014	0.004	–	–	0.0027	NA	No ESV
C3-Naphthalenes	mg/kg	3 - 3	100%	0.013	0.036	–	–	0.024	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.0022	0.01	–	–	0.0064	NA	No ESV
C4-Naphthalenes	mg/kg	3 - 3	100%	0.0069	0.019	–	–	0.0133	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	2 - 3	67%	0.002	0.0031	0.001	0.001	0.00255	NA	No ESV
Fluorene	mg/kg	2 - 3	67%	0.0017	0.0023	0.001	0.001	0.002	0.33	no

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Table 2-25. Submerged Sediment Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Inorganic-cations/anions (continued)										
Naphthalene	mg/kg	3 - 3	100%	0.0031	0.0087	–	–	0.0059	0.33	no
Phenanthrene	mg/kg	3 - 3	100%	0.007	0.02	–	–	0.014	0.33	no
Total LPAH	mg/kg	3 - 3	100%	0.0775	0.2186	–	–	0.152	0.33	no
Total Alkylated PAHs	mg/kg	3 - 3	100%	0.1071	0.2804	–	–	0.2009	NA	No ESV
Total Unsubstituted PAHs	mg/kg	3 - 3	100%	0.1078	0.3891	–	–	0.26	NA	No ESV
PCB-1016	mg/kg	0 - 3	0%	–	–	0.0025	0.0027	–	0.033	–
PCB-1221	mg/kg	0 - 3	0%	–	–	0.0025	0.0027	–	0.067	–
PCB-1232	mg/kg	0 - 3	0%	–	–	0.0025	0.0027	–	0.033	–
PCB-1242	mg/kg	0 - 3	0%	–	–	0.0025	0.0027	–	0.033	–
PCB-1248	mg/kg	0 - 3	0%	–	–	0.0025	0.0027	–	0.033	–
PCB-1254	mg/kg	3 - 3	100%	0.009	0.016	–	–	0.012	0.033	no
PCB-1260	mg/kg	3 - 3	100%	0.0053	0.0083	–	–	0.0071	0.033	no
PCB-1262	mg/kg	0 - 3	0%	–	–	0.0025	0.0027	–	0.033	–
PCB-1268	mg/kg	0 - 3	0%	–	–	0.0025	0.0027	–	0.033	–
Total PCBs	mg/kg	3 - 3	100%	0.0318	0.0432	–	–	0.0369	0.033	Yes
Pesticides										
4,4'-DDD	mg/kg	0 - 3	0%	–	–	0.00097	0.0011	–	0.0033	–
4,4'-DDE	mg/kg	0 - 3	0%	–	–	0.00097	0.0011	–	0.0033	–
4,4'-DDT	mg/kg	0 - 3	0%	–	–	0.00097	0.0011	–	0.0033	–
Aldrin	mg/kg	0 - 3	0%	–	–	0.0005	0.00055	–	NA	No ESV
alpha-BHC	mg/kg	0 - 3	0%	–	–	0.0005	0.00055	–	NA	No ESV
alpha-Chlordane	mg/kg	0 - 3	0%	–	–	0.0005	0.00055	–	0.0017	–
beta-BHC	mg/kg	1 - 3	33%	0.0012	0.0012	0.0005	0.00052	0.0012	NA	No ESV
delta-BHC	mg/kg	0 - 3	0%	–	–	0.0005	0.00055	–	NA	No ESV
Dieldrin	mg/kg	0 - 3	0%	–	–	0.00097	0.0011	–	0.0033	–
Endosulfan I	mg/kg	0 - 3	0%	–	–	0.0005	0.00055	–	NA	No ESV
Endosulfan II	mg/kg	0 - 3	0%	–	–	0.00097	0.0011	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 3	0%	–	–	0.00097	0.0011	–	NA	No ESV
Endrin	mg/kg	0 - 3	0%	–	–	0.00097	0.0011	–	0.0033	–
Endrin aldehyde	mg/kg	0 - 3	0%	–	–	0.00097	0.0011	–	NA	No ESV
Endrin Ketone	mg/kg	0 - 3	0%	–	–	0.00097	0.0011	–	NA	No ESV

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Table 2-25. Submerged Sediment Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Pesticides										
gamma-BHC (Lindane)	mg/kg	0 - 3	0%	–	–	0.0005	0.00055	–	0.0033	–
gamma-Chlordane	mg/kg	0 - 3	0%	–	–	0.0005	0.00055	–	0.0017	–
Heptachlor	mg/kg	0 - 3	0%	–	–	0.0005	0.00055	–	NA	No ESV
Heptachlor Epoxide	mg/kg	0 - 3	0%	–	–	0.0005	0.00055	–	NA	No ESV
Methoxychlor	mg/kg	0 - 3	0%	–	–	0.005	0.0055	–	NA	No ESV
Total Chlordane	mg/kg	0 - 3	0%	–	–	0.001	0.0011	–	0.0017	–
Total DDx	mg/kg	0 - 3	0%	–	–	0.00291	0.0033	–	NA	No ESV
Total Pesticides	mg/kg	1 - 3	33%	0.07655	0.07655	0.06873	0.0714	0.077	NA	No ESV
Toxaphene	mg/kg	0 - 3	0%	–	–	0.05	0.055	–	NA	No ESV
Radionuclides										
Actinium-228	pCi/g	3 - 3	100%	1.5	1.9	–	–	1.68	NA	No ESV
Americium-241	pCi/g	0 - 3	0%	–	–	85.2	421	–	NA	No ESV
Bismuth-214	pCi/g	3 - 3	100%	1.23	2.25	–	–	1.73	NA	No ESV
Cesium-137	pCi/g	3 - 3	100%	0.646	3.3	–	–	2.2	NA	No ESV
Cobalt-60	pCi/g	0 - 3	0%	–	–	0.0639	0.0871	–	NA	No ESV
Lead-212	pCi/g	3 - 3	100%	1.48	1.83	–	–	1.7	NA	No ESV
Lead-214	pCi/g	3 - 3	100%	1.51	2.43	–	–	2.02	NA	No ESV
Potassium-40	pCi/g	3 - 3	100%	14.1	19.4	–	–	17	NA	No ESV
Radium-226	pCi/g	3 - 3	100%	1.23	2.25	–	–	1.73	NA	No ESV
Radium-228	pCi/g	3 - 3	100%	1.5	1.9	–	–	1.68	NA	No ESV
Thallium-208	pCi/g	3 - 3	100%	0.42	0.504	–	–	0.48	NA	No ESV
Thorium-228	pCi/g	3 - 3	100%	1.65	1.85	–	–	1.72	NA	No ESV
Thorium-230	pCi/g	3 - 3	100%	1.67	2.47	–	–	2.12	NA	No ESV
Thorium-232	pCi/g	3 - 3	100%	1.45	1.82	–	–	1.58	NA	No ESV
Thorium-234	pCi/g	2 - 3	67%	1.96	2.73	3.57	3.57	2.35	NA	No ESV
Uranium-234	pCi/g	3 - 3	100%	0.969	1.78	–	–	1.40	NA	No ESV
Uranium-235	pCi/g	1 - 3	33%	0.0999	0.0999	0.113	0.122	0.1	NA	No ESV
Uranium-238	pCi/g	3 - 3	100%	1.35	1.89	–	–	1.54	NA	No ESV
Speciation										
Arsenate-speciation	mg/kg	1 - 3	33%	6.51	6.51	2.34	6.82	6.51	NA	No ESV
Arsenic-speciation	mg/kg	3 - 3	100%	11.3	12.7	–	–	11.8	7.24	Yes
Arsenite-speciation	mg/kg	3 - 3	100%	2.6	16.7	–	–	8.03	NA	No ESV

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Table 2-25. Submerged Sediment Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Speciation (continued)										
Inorganic Arsenic-speciation	mg/kg	3 - 3	100%	9.11	17.5	–	–	11.91	NA	No ESV
Inorganic Mercury-speciation	mg/kg	3 - 3	100%	0.35	1.54	–	–	1.07	NA	No ESV
Inorganic Selenium-speciation	mg/kg	1 - 3	33%	0.809	0.809	0.396	0.437	0.81	NA	No ESV
Mercury-speciation	mg/kg	3 - 3	100%	0.353	1.54	–	–	1.068	0.13	Yes
Methyl mercury-speciation	mg/kg	3 - 3	100%	0.00113	0.00248	–	–	0.00168	NA	No ESV
Organic Arsenic-speciation	mg/kg	1 - 3	33%	2.2	2.2	1.95	6.82	2.2	NA	No ESV
Organic Selenium-speciation	mg/kg	2 - 3	67%	1.16	1.55	0.754	0.754	1.36	NA	No ESV
Selenate-speciation	mg/kg	0 - 3	0%	–	–	0.314	0.429	–	NA	No ESV
Selenite-speciation	mg/kg	1 - 3	33%	0.809	0.809	0.396	0.437	0.809	NA	No ESV
Selenium-speciation	mg/kg	3 - 3	100%	1.16	1.55	–	–	1.41	NA	No ESV
Physical Properties										
% Ash	%	6 - 6	100%	1	53	–	–	27.7	NA	No ESV
% Ash (> or < 50%)	%	5 - 12	42%	50	50	50	50	50	NA	No ESV
Fraction of Organic Carbon	%	3 - 3	100%	1.8	2.1	–	–	1.97	NA	No ESV
Total Organic Carbon	mg/kg	3 - 3	100%	4100	9200	–	–	6400	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-26. Submerged Sediment Dataset: Tennessee River - Reference (Above TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics								
Aluminum	mg/kg	3 - 3	100%	20400 - 56100	– - –	32433	NA	No ESV
Antimony	mg/kg	0 - 3	0%	– - –	1.37 - 1.55	–	12	–
Arsenic	mg/kg	3 - 3	100%	4.21 - 10.9	– - –	6.46	7.24	Yes
Barium	mg/kg	3 - 3	100%	132 - 466	– - –	247	NA	No ESV
Beryllium	mg/kg	2 - 3	67%	0.65 - 1.59	0.605 - 0.605	1.12	NA	No ESV
Boron	mg/kg	3 - 3	100%	9.17 - 27.3	– - –	15.42	NA	No ESV
Cadmium	mg/kg	0 - 3	0%	– - –	0.137 - 0.155	–	1	–
Chromium	mg/kg	3 - 3	100%	18 - 51.1	– - –	29.9	52.3	no
Cobalt	mg/kg	3 - 3	100%	9.26 - 19.7	– - –	13.39	NA	No ESV
Copper	mg/kg	3 - 3	100%	7.84 - 13.5	– - –	10.55	18.7	no
Hex. Chromium	mg/kg	0 - 1	0%	– - –	0.32 - 0.32	–	NA	No ESV
Lead	mg/kg	3 - 3	100%	11.3 - 28.4	– - –	19.47	30.2	no
Manganese	mg/kg	3 - 3	100%	889 - 3660	– - –	1876	NA	No ESV
Mercury	mg/kg	1 - 3	33%	0.066 - 0.066	0.055 - 0.063	0.066	0.13	no
Molybdenum	mg/kg	0 - 3	0%	– - –	5.47 - 6.19	–	NA	No ESV
Nickel	mg/kg	3 - 3	100%	9.89 - 18.1	– - –	13.03	15.9	Yes
Selenium	mg/kg	0 - 3	0%	– - –	1.37 - 1.55	–	NA	No ESV
Silver	mg/kg	0 - 3	0%	– - –	0.683 - 0.774	–	2	–
Thallium	mg/kg	0 - 3	0%	– - –	1.37 - 1.55	–	NA	No ESV
Vanadium	mg/kg	3 - 3	100%	27.7 - 75.9	– - –	44	NA	No ESV
Zinc	mg/kg	3 - 3	100%	66.3 - 110	– - –	88.7	124	no
Inorganic-cations/anions								
Calcium	mg/kg	3 - 3	100%	2020 - 2200	– - –	2100	NA	No ESV
Iron	mg/kg	3 - 3	100%	20000 - 45800	– - –	28933	NA	No ESV
Magnesium	mg/kg	3 - 3	100%	2690 - 3690	– - –	3043	NA	No ESV
Potassium	mg/kg	3 - 3	100%	2770 - 7420	– - –	4400	NA	No ESV
Sodium	mg/kg	1 - 3	33%	518 - 518	151 - 155	518	NA	No ESV
Benzo(a)anthracene	mg/kg	1 - 1	100%	0.011 - 0.011	– - –	0.011	0.33	no
Benzo(a)pyrene	mg/kg	1 - 1	100%	0.01 - 0.01	– - –	0.01	0.33	no
Benzo(b)fluoranthene	mg/kg	1 - 1	100%	0.011 - 0.011	– - –	0.011	NA	No ESV
Benzo(e)pyrene	mg/kg	1 - 1	100%	0.0079 - 0.0079	– - –	0.0079	NA	No ESV
Benzo(g,h,i)perylene	mg/kg	1 - 1	100%	0.0081 - 0.0081	– - –	0.0081	NA	No ESV

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Table 2-26. Submerged Sediment Dataset: Tennessee River - Reference (Above TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)										
Benzo(k)fluoranthene	mg/kg	1 - 1	100%	0.0099	0.0099	–	–	0.0099	NA	No ESV
C1-Chrysenes	mg/kg	1 - 1	100%	0.006	0.006	–	–	0.006	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	1 - 1	100%	0.012	0.012	–	–	0.012	NA	No ESV
C2-Chrysenes	mg/kg	1 - 1	100%	0.0027	0.0027	–	–	0.0027	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	1 - 1	100%	0.0051	0.0051	–	–	0.0051	NA	No ESV
C3-Chrysenes	mg/kg	1 - 1	100%	0.0015	0.0015	–	–	0.0015	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	1 - 1	100%	0.0023	0.0023	–	–	0.0023	NA	No ESV
C4-Chrysenes	mg/kg	0 - 1	0%	–	–	0.00086	0.00086	–	NA	No ESV
Chrysene	mg/kg	1 - 1	100%	0.011	0.011	–	–	0.011	0.33	no
Dibenz(a,h)anthracene	mg/kg	1 - 1	100%	0.002	0.002	–	–	0.002	0.33	no
Fluoranthene	mg/kg	1 - 1	100%	0.018	0.018	–	–	0.018	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	1 - 1	100%	0.0072	0.0072	–	–	0.0072	NA	No ESV
Perylene	mg/kg	1 - 1	100%	0.04	0.04	–	–	0.04	NA	No ESV
Pyrene	mg/kg	1 - 1	100%	0.022	0.022	–	–	0.022	0.33	no
Total HPAH	mg/kg	1 - 1	100%	0.18856	0.18856	–	–	0.19	0.655	no
Acenaphthene	mg/kg	0 - 1	0%	–	–	0.00086	0.00086	–	0.33	–
Acenaphthylene	mg/kg	0 - 1	0%	–	–	0.00086	0.00086	–	0.33	–
Anthracene	mg/kg	1 - 1	100%	0.0019	0.0019	–	–	0.0019	0.33	no
C1-Fluorenes	mg/kg	0 - 1	0%	–	–	0.00086	0.00086	–	NA	No ESV
C1-Naphthalenes	mg/kg	0 - 1	0%	–	–	0.00086	0.00086	–	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.005	0.005	–	–	0.005	NA	No ESV
C2-Fluorenes	mg/kg	0 - 1	0%	–	–	0.00086	0.00086	–	NA	No ESV
C2-Naphthalenes	mg/kg	1 - 1	100%	0.0019	0.0019	–	–	0.0019	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.0034	0.0034	–	–	0.0034	NA	No ESV
C3-Fluorenes	mg/kg	0 - 1	0%	–	–	0.00086	0.00086	–	NA	No ESV
C3-Naphthalenes	mg/kg	1 - 1	100%	0.0014	0.0014	–	–	0.0014	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.0013	0.0013	–	–	0.0013	NA	No ESV
C4-Naphthalenes	mg/kg	1 - 1	100%	0.0012	0.0012	–	–	0.0012	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	0 - 1	0%	–	–	0.00086	0.00086	–	NA	No ESV
Fluorene	mg/kg	0 - 1	0%	–	–	0.00086	0.00086	–	0.33	–

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Table 2-26. Submerged Sediment Dataset: Tennessee River - Reference (Above TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)										
Naphthalene	mg/kg	0 - 1	0%	–	–	0.00086	0.00086	–	0.33	–
Phenanthrene	mg/kg	1 - 1	100%	0.0086	0.0086	–	–	0.0086	0.33	no
Total LPAH	mg/kg	1 - 1	100%	0.03244	0.03244	–	–	0.032	0.33	no
Total Alkylated PAHs	mg/kg	1 - 1	100%	0.04896	0.04896	–	–	0.049	NA	No ESV
Total Unsubstituted PAHs	mg/kg	1 - 1	100%	0.17204	0.17204	–	–	0.17	NA	No ESV
PCB-1016	mg/kg	0 - 1	0%	–	–	0.0022	0.0022	–	0.033	–
PCB-1221	mg/kg	0 - 1	0%	–	–	0.0022	0.0022	–	0.067	–
PCB-1232	mg/kg	0 - 1	0%	–	–	0.0022	0.0022	–	0.033	–
PCB-1242	mg/kg	0 - 1	0%	–	–	0.0022	0.0022	–	0.033	–
PCB-1248	mg/kg	0 - 1	0%	–	–	0.0022	0.0022	–	0.033	–
PCB-1254	mg/kg	0 - 1	0%	–	–	0.0022	0.0022	–	0.033	–
PCB-1260	mg/kg	0 - 1	0%	–	–	0.0022	0.0022	–	0.033	–
PCB-1262	mg/kg	0 - 1	0%	–	–	0.0022	0.0022	–	0.033	–
PCB-1268	mg/kg	0 - 1	0%	–	–	0.0022	0.0022	–	0.033	–
Total PCBs	mg/kg	0 - 1	0%	–	–	0.0198	0.0198	–	0.033	–
Pesticides										
4,4'-DDD	mg/kg	0 - 1	0%	–	–	0.00084	0.00084	–	0.0033	–
4,4'-DDE	mg/kg	0 - 1	0%	–	–	0.00084	0.00084	–	0.0033	–
4,4'-DDT	mg/kg	0 - 1	0%	–	–	0.00084	0.00084	–	0.0033	–
Aldrin	mg/kg	0 - 1	0%	–	–	0.00044	0.00044	–	NA	No ESV
alpha-BHC	mg/kg	0 - 1	0%	–	–	0.00044	0.00044	–	NA	No ESV
alpha-Chlordane	mg/kg	0 - 1	0%	–	–	0.00044	0.00044	–	0.0017	–
beta-BHC	mg/kg	0 - 1	0%	–	–	0.00044	0.00044	–	NA	No ESV
delta-BHC	mg/kg	0 - 1	0%	–	–	0.00044	0.00044	–	NA	No ESV
Dieldrin	mg/kg	0 - 1	0%	–	–	0.00084	0.00084	–	0.0033	–
Endosulfan I	mg/kg	0 - 1	0%	–	–	0.00044	0.00044	–	NA	No ESV
Endosulfan II	mg/kg	0 - 1	0%	–	–	0.00084	0.00084	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 1	0%	–	–	0.00084	0.00084	–	NA	No ESV
Endrin	mg/kg	0 - 1	0%	–	–	0.00084	0.00084	–	0.0033	–
Endrin aldehyde	mg/kg	0 - 1	0%	–	–	0.00084	0.00084	–	NA	No ESV
Endrin Ketone	mg/kg	0 - 1	0%	–	–	0.00084	0.00084	–	NA	No ESV

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Table 2-26. Submerged Sediment Dataset: Tennessee River - Reference (Above TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Pesticides (continued)										
gamma-BHC (Lindane)	mg/kg	0 - 1	0%	–	–	0.00044	0.00044	–	0.0033	–
gamma-Chlordane	mg/kg	0 - 1	0%	–	–	0.00044	0.00044	–	0.0017	–
Heptachlor	mg/kg	0 - 1	0%	–	–	0.00044	0.00044	–	NA	No ESV
Heptachlor Epoxide	mg/kg	0 - 1	0%	–	–	0.00044	0.00044	–	NA	No ESV
Methoxychlor	mg/kg	0 - 1	0%	–	–	0.0044	0.0044	–	NA	No ESV
Total Chlordane	mg/kg	0 - 1	0%	–	–	0.00088	0.00088	–	0.0017	–
Total DDx	mg/kg	0 - 1	0%	–	–	0.00252	0.00252	–	NA	No ESV
Total Pesticides	mg/kg	0 - 1	0%	–	–	0.06036	0.06036	–	NA	No ESV
Toxaphene	mg/kg	0 - 1	0%	–	–	0.044	0.044	–	NA	No ESV
Radionuclides										
Actinium-228	pCi/g	1 - 1	100%	1.45	1.45	–	–	1.45	NA	No ESV
Americium-241	pCi/g	0 - 1	0%	–	–	250	250	–	NA	No ESV
Bismuth-214	pCi/g	1 - 1	100%	0.974	0.974	–	–	0.974	NA	No ESV
Cesium-137	pCi/g	0 - 1	0%	–	–	0.0433	0.0433	–	NA	No ESV
Cobalt-60	pCi/g	0 - 1	0%	–	–	0.0458	0.0458	–	NA	No ESV
Lead-212	pCi/g	1 - 1	100%	1.52	1.52	–	–	1.52	NA	No ESV
Lead-214	pCi/g	1 - 1	100%	1.16	1.16	–	–	1.16	NA	No ESV
Potassium-40	pCi/g	1 - 1	100%	16.1	16.1	–	–	16.1	NA	No ESV
Radium-226	pCi/g	1 - 1	100%	0.974	0.974	–	–	0.974	NA	No ESV
Radium-228	pCi/g	1 - 1	100%	1.45	1.45	–	–	1.45	NA	No ESV
Thallium-208	pCi/g	1 - 1	100%	0.423	0.423	–	–	0.423	NA	No ESV
Thorium-228	pCi/g	1 - 1	100%	1.38	1.38	–	–	1.38	NA	No ESV
Thorium-230	pCi/g	1 - 1	100%	0.678	0.678	–	–	0.678	NA	No ESV
Thorium-232	pCi/g	1 - 1	100%	1.36	1.36	–	–	1.36	NA	No ESV
Thorium-234	pCi/g	0 - 1	0%	–	–	2.15	2.15	–	NA	No ESV
Uranium-234	pCi/g	1 - 1	100%	0.63	0.63	–	–	0.63	NA	No ESV
Uranium-235	pCi/g	0 - 1	0%	–	–	0.0619	0.0619	–	NA	No ESV
Uranium-238	pCi/g	1 - 1	100%	0.685	0.685	–	–	0.685	NA	No ESV
Speciation										
Arsenate-speciation	mg/kg	1 - 1	100%	0.811	0.811	–	–	0.811	NA	No ESV
Arsenic-speciation	mg/kg	1 - 1	100%	3.12	3.12	–	–	3.12	7.24	no
Arsenite-speciation	mg/kg	1 - 1	100%	0.183	0.183	–	–	0.183	NA	No ESV

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Table 2-26. Submerged Sediment Dataset: Tennessee River - Reference (Above TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Speciation (continued)								
Inorganic Arsenic-speciation	mg/kg	1 - 1	100%	0.993 - 0.993	– - –	0.993	NA	No ESV
Inorganic Mercury-speciation	mg/kg	1 - 1	100%	0.0367 - 0.0367	– - –	0.0367	NA	No ESV
Inorganic Selenium-speciation	mg/kg	0 - 1	0%	– - –	0.312 - 0.312	–	NA	No ESV
Mercury-speciation	mg/kg	1 - 1	100%	0.0367 - 0.0367	– - –	0.0367	0.13	no
Methyl mercury-speciation	mg/kg	0 - 1	0%	– - –	1.4E-05 - 1.4E-05	–	NA	No ESV
Organic Arsenic-speciation	mg/kg	1 - 1	100%	2.12 - 2.12	– - –	2.12	NA	No ESV
Organic Selenium-speciation	mg/kg	1 - 1	100%	1.05 - 1.05	– - –	1.05	NA	No ESV
Selenate-speciation	mg/kg	0 - 1	0%	– - –	0.247 - 0.247	–	NA	No ESV
Selenite-speciation	mg/kg	0 - 1	0%	– - –	0.312 - 0.312	–	NA	No ESV
Selenium-speciation	mg/kg	1 - 1	100%	1.05 - 1.05	– - –	1.05	NA	No ESV
Physical Properties								
% Ash	%	0 - 1	0%	– - –	1 - 1	–	NA	No ESV
% Ash (> or < 50%)	%	0 - 3	0%	– - –	50 - 50	–	NA	No ESV
Fraction of Organic Carbon	%	1 - 1	100%	0.76 - 0.76	– - –	0.76	NA	No ESV
Total Organic Carbon	mg/kg	0 - 1	0%	– - –	1400 - 1400	–	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-27. Submerged Sediment Dataset: Tennessee River - Reach A (TRM 550.0 to TRM 566.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics								
Aluminum	mg/kg	4 - 4	100%	9660 - 59500	– - –	42740	NA	No ESV
Antimony	mg/kg	0 - 4	0%	– - –	1.38 - 2.79	–	12	–
Arsenic	mg/kg	4 - 4	100%	4.66 - 16.2	– - –	12.14	7.24	Yes
Barium	mg/kg	4 - 4	100%	98.2 - 328	– - –	252	NA	No ESV
Beryllium	mg/kg	3 - 4	75%	1.71 - 2.19	0.551 - 0.551	1.97	NA	No ESV
Boron	mg/kg	3 - 4	75%	32.4 - 42.2	5.51 - 5.51	36.4	NA	No ESV
Cadmium	mg/kg	0 - 4	0%	– - –	0.138 - 0.279	–	1	–
Chromium	mg/kg	4 - 4	100%	14.6 - 51	– - –	39.38	52.3	no
Cobalt	mg/kg	4 - 4	100%	5.96 - 25.2	– - –	19.04	NA	No ESV
Copper	mg/kg	4 - 4	100%	6.31 - 43.6	– - –	32.5	18.7	Yes
Hex. Chromium	mg/kg	0 - 1	0%	– - –	0.58 - 0.58	–	NA	No ESV
Lead	mg/kg	4 - 4	100%	10.3 - 43.9	– - –	32.9	30.2	Yes
Manganese	mg/kg	4 - 4	100%	1340 - 2430	– - –	2013	NA	No ESV
Mercury	mg/kg	3 - 4	75%	0.37 - 0.55	0.12 - 0.12	0.48	0.13	Yes
Molybdenum	mg/kg	0 - 4	0%	– - –	5.51 - 11.2	–	NA	No ESV
Nickel	mg/kg	4 - 4	100%	6.7 - 34.8	– - –	26.8	15.9	Yes
Selenium	mg/kg	0 - 4	0%	– - –	1.38 - 2.79	–	NA	No ESV
Silver	mg/kg	0 - 4	0%	– - –	0.689 - 1.4	–	2	–
Thallium	mg/kg	0 - 4	0%	– - –	1.38 - 2.79	–	NA	No ESV
Vanadium	mg/kg	4 - 4	100%	17.3 - 81.6	– - –	61.25	NA	No ESV
Zinc	mg/kg	4 - 4	100%	64.6 - 207	– - –	160.15	124	Yes
Inorganic-cations/anions								
Calcium	mg/kg	4 - 4	100%	1370 - 3830	– - –	2807.5	NA	No ESV
Iron	mg/kg	4 - 4	100%	12500 - 46700	– - –	34950	NA	No ESV
Magnesium	mg/kg	4 - 4	100%	1290 - 4960	– - –	3770	NA	No ESV
Potassium	mg/kg	4 - 4	100%	1360 - 8610	– - –	6060	NA	No ESV
Sodium	mg/kg	3 - 4	75%	347 - 425	138 - 138	391	NA	No ESV
Benzo(a)anthracene	mg/kg	1 - 1	100%	0.02 - 0.02	– - –	0.02	0.33	no
Benzo(a)pyrene	mg/kg	1 - 1	100%	0.026 - 0.026	– - –	0.026	0.33	no
Benzo(b)fluoranthene	mg/kg	1 - 1	100%	0.034 - 0.034	– - –	0.034	NA	No ESV
Benzo(e)pyrene	mg/kg	1 - 1	100%	0.025 - 0.025	– - –	0.025	NA	No ESV
Benzo(g,h,i)perylene	mg/kg	1 - 1	100%	0.033 - 0.033	– - –	0.033	NA	No ESV

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Table 2-27. Submerged Sediment Dataset: Tennessee River - Reach A (TRM 550.0 to TRM 566.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)								
Benzo(k)fluoranthene	mg/kg	1 - 1	100%	0.03 - 0.03	– - –	0.03	NA	No ESV
C1-Chrysenes	mg/kg	1 - 1	100%	0.014 - 0.014	– - –	0.014	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	1 - 1	100%	0.037 - 0.037	– - –	0.037	NA	No ESV
C2-Chrysenes	mg/kg	0 - 1	0%	– - –	0.012 - 0.012	–	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	1 - 1	100%	0.032 - 0.032	– - –	0.032	NA	No ESV
C3-Chrysenes	mg/kg	0 - 1	0%	– - –	0.012 - 0.012	–	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	0 - 1	0%	– - –	0.012 - 0.012	–	NA	No ESV
C4-Chrysenes	mg/kg	0 - 1	0%	– - –	0.012 - 0.012	–	NA	No ESV
Chrysene	mg/kg	1 - 1	100%	0.026 - 0.026	– - –	0.026	0.33	no
Dibenz(a,h)anthracene	mg/kg	0 - 1	0%	– - –	0.012 - 0.012	–	0.33	–
Fluoranthene	mg/kg	1 - 1	100%	0.044 - 0.044	– - –	0.044	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	1 - 1	100%	0.026 - 0.026	– - –	0.026	NA	No ESV
Perylene	mg/kg	1 - 1	100%	0.43 - 0.43	– - –	0.43	NA	No ESV
Pyrene	mg/kg	1 - 1	100%	0.052 - 0.052	– - –	0.052	0.33	no
Total HPAH	mg/kg	1 - 1	100%	0.889 - 0.889	– - –	0.889	0.655	Yes
Acenaphthene	mg/kg	0 - 1	0%	– - –	0.012 - 0.012	–	0.33	–
Acenaphthylene	mg/kg	0 - 1	0%	– - –	0.012 - 0.012	–	0.33	–
Anthracene	mg/kg	0 - 1	0%	– - –	0.012 - 0.012	–	0.33	–
C1-Fluorenes	mg/kg	0 - 1	0%	– - –	0.012 - 0.012	–	NA	No ESV
C1-Naphthalenes	mg/kg	1 - 1	100%	0.013 - 0.013	– - –	0.013	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.02 - 0.02	– - –	0.02	NA	No ESV
C2-Fluorenes	mg/kg	0 - 1	0%	– - –	0.012 - 0.012	–	NA	No ESV
C2-Naphthalenes	mg/kg	1 - 1	100%	0.031 - 0.031	– - –	0.031	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.015 - 0.015	– - –	0.015	NA	No ESV
C3-Fluorenes	mg/kg	0 - 1	0%	– - –	0.012 - 0.012	–	NA	No ESV
C3-Naphthalenes	mg/kg	1 - 1	100%	0.027 - 0.027	– - –	0.027	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	0 - 1	0%	– - –	0.012 - 0.012	–	NA	No ESV
C4-Naphthalenes	mg/kg	1 - 1	100%	0.015 - 0.015	– - –	0.015	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	0 - 1	0%	– - –	0.012 - 0.012	–	NA	No ESV
Fluorene	mg/kg	0 - 1	0%	– - –	0.012 - 0.012	–	0.33	–

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Table 2-27. Submerged Sediment Dataset: Tennessee River - Reach A (TRM 550.0 to TRM 566.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Inorganic-cations/anions (continued)										
Naphthalene	mg/kg	0 - 1	0%	–	–	0.012	0.012	–	0.33	–
Phenanthrene	mg/kg	1 - 1	100%	0.016	0.016	–	–	0.016	0.33	no
Total LPAH	mg/kg	1 - 1	100%	0.257	0.257	–	–	0.257	0.33	no
Total Alkylated PAHs	mg/kg	1 - 1	100%	0.312	0.312	–	–	0.312	NA	No ESV
Total Unsubstituted PAHs	mg/kg	1 - 1	100%	0.834	0.834	–	–	0.834	NA	No ESV
PCB-1016	mg/kg	0 - 1	0%	–	–	0.0045	0.0045	–	0.033	–
PCB-1221	mg/kg	0 - 1	0%	–	–	0.0045	0.0045	–	0.067	–
PCB-1232	mg/kg	0 - 1	0%	–	–	0.0045	0.0045	–	0.033	–
PCB-1242	mg/kg	0 - 1	0%	–	–	0.0045	0.0045	–	0.033	–
PCB-1248	mg/kg	0 - 1	0%	–	–	0.0045	0.0045	–	0.033	–
PCB-1254	mg/kg	1 - 1	100%	0.014	0.014	–	–	0.014	0.033	no
PCB-1260	mg/kg	1 - 1	100%	0.0067	0.0067	–	–	0.0067	0.033	no
PCB-1262	mg/kg	0 - 1	0%	–	–	0.0045	0.0045	–	0.033	–
PCB-1268	mg/kg	0 - 1	0%	–	–	0.0045	0.0045	–	0.033	–
Total PCBs	mg/kg	1 - 1	100%	0.0522	0.0522	–	–	0.0522	0.033	Yes
Pesticides										
4,4'-DDD	mg/kg	0 - 1	0%	–	–	0.0017	0.0017	–	0.0033	–
4,4'-DDE	mg/kg	0 - 1	0%	–	–	0.0017	0.0017	–	0.0033	–
4,4'-DDT	mg/kg	0 - 1	0%	–	–	0.0017	0.0017	–	0.0033	–
Aldrin	mg/kg	0 - 1	0%	–	–	0.00089	0.00089	–	NA	No ESV
alpha-BHC	mg/kg	1 - 1	100%	0.0019	0.0019	–	–	0.0019	NA	No ESV
alpha-Chlordane	mg/kg	0 - 1	0%	–	–	0.00089	0.00089	–	0.0017	–
beta-BHC	mg/kg	1 - 1	100%	0.0043	0.0043	–	–	0.0043	NA	No ESV
delta-BHC	mg/kg	1 - 1	100%	0.0026	0.0026	–	–	0.0026	NA	No ESV
Dieldrin	mg/kg	0 - 1	0%	–	–	0.0017	0.0017	–	0.0033	–
Endosulfan I	mg/kg	0 - 1	0%	–	–	0.00089	0.00089	–	NA	No ESV
Endosulfan II	mg/kg	0 - 1	0%	–	–	0.0017	0.0017	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 1	0%	–	–	0.0017	0.0017	–	NA	No ESV
Endrin	mg/kg	0 - 1	0%	–	–	0.0017	0.0017	–	0.0033	–
Endrin aldehyde	mg/kg	0 - 1	0%	–	–	0.0017	0.0017	–	NA	No ESV
Endrin Ketone	mg/kg	0 - 1	0%	–	–	0.0017	0.0017	–	NA	No ESV

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Table 2-27. Submerged Sediment Dataset: Tennessee River - Reach A (TRM 550.0 to TRM 566.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Pesticides (continued)								
gamma-BHC (Lindane)	mg/kg	1 - 1	100%	0.0015 - 0.0015	– - –	0.0015	0.0033	no
gamma-Chlordane	mg/kg	0 - 1	0%	– - –	0.00089 - 0.00089	–	0.0017	–
Heptachlor	mg/kg	1 - 1	100%	0.0046 - 0.0046	– - –	0.0046	NA	No ESV
Heptachlor Epoxide	mg/kg	0 - 1	0%	– - –	0.00089 - 0.00089	–	NA	No ESV
Methoxychlor	mg/kg	0 - 1	0%	– - –	0.0089 - 0.0089	–	NA	No ESV
Total Chlordane	mg/kg	0 - 1	0%	– - –	0.00178 - 0.00178	–	0.0017	–
Total DDx	mg/kg	0 - 1	0%	– - –	0.0051 - 0.0051	–	NA	No ESV
Total Pesticides	mg/kg	1 - 1	100%	0.13255 - 0.13255	– - –	0.13	NA	No ESV
Toxaphene	mg/kg	0 - 1	0%	– - –	0.089 - 0.089	–	NA	No ESV
Radionuclides								
Actinium-228	pCi/g	1 - 1	100%	2.16 - 2.16	– - –	2.16	NA	No ESV
Americium-241	pCi/g	0 - 1	0%	– - –	326 - 326	–	NA	No ESV
Bismuth-214	pCi/g	1 - 1	100%	2.1 - 2.1	– - –	2.1	NA	No ESV
Cesium-137	pCi/g	1 - 1	100%	1.53 - 1.53	– - –	1.53	NA	No ESV
Cobalt-60	pCi/g	0 - 1	0%	– - –	0.124 - 0.124	–	NA	No ESV
Lead-212	pCi/g	1 - 1	100%	1.67 - 1.67	– - –	1.67	NA	No ESV
Lead-214	pCi/g	1 - 1	100%	2.28 - 2.28	– - –	2.28	NA	No ESV
Potassium-40	pCi/g	1 - 1	100%	22.5 - 22.5	– - –	22.5	NA	No ESV
Radium-226	pCi/g	1 - 1	100%	2.1 - 2.1	– - –	2.1	NA	No ESV
Radium-228	pCi/g	1 - 1	100%	2.16 - 2.16	– - –	2.16	NA	No ESV
Thallium-208	pCi/g	1 - 1	100%	0.621 - 0.621	– - –	0.621	NA	No ESV
Thorium-228	pCi/g	1 - 1	100%	2.09 - 2.09	– - –	2.09	NA	No ESV
Thorium-230	pCi/g	1 - 1	100%	1.82 - 1.82	– - –	1.82	NA	No ESV
Thorium-232	pCi/g	1 - 1	100%	1.7 - 1.7	– - –	1.7	NA	No ESV
Thorium-234	pCi/g	0 - 1	0%	– - –	3.02 - 3.02	–	NA	No ESV
Uranium-234	pCi/g	1 - 1	100%	1.35 - 1.35	– - –	1.35	NA	No ESV
Uranium-235	pCi/g	1 - 1	100%	0.0351 - 0.0351	– - –	0.0351	NA	No ESV
Uranium-238	pCi/g	1 - 1	100%	1.54 - 1.54	– - –	1.54	NA	No ESV
Speciation								
Arsenate-speciation	mg/kg	1 - 1	100%	1.48 - 1.48	– - –	1.48	NA	No ESV
Arsenic-speciation	mg/kg	1 - 1	100%	7.4 - 7.4	– - –	7.4	7.24	Yes
Arsenite-speciation	mg/kg	1 - 1	100%	2.09 - 2.09	– - –	2.09	NA	No ESV

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Table 2-27. Submerged Sediment Dataset: Tennessee River - Reach A (TRM 550.0 to TRM 566.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Speciation (continued)								
Inorganic Arsenic-speciation	mg/kg	1 - 1	100%	3.58 - 3.58	– - –	3.58	NA	No ESV
Inorganic Mercury-speciation	mg/kg	1 - 1	100%	0.584 - 0.584	– - –	0.584	NA	No ESV
Inorganic Selenium-speciation	mg/kg	0 - 1	0%	– - –	0.797 - 0.797	–	NA	No ESV
Mercury-speciation	mg/kg	1 - 1	100%	0.585 - 0.585	– - –	0.585	0.13	Yes
Methyl mercury-speciation	mg/kg	1 - 1	100%	0.00041 - 0.00041	– - –	0.000411	NA	No ESV
Organic Arsenic-speciation	mg/kg	1 - 1	100%	3.83 - 3.83	– - –	3.83	NA	No ESV
Organic Selenium-speciation	mg/kg	0 - 1	0%	– - –	0.885 - 0.885	–	NA	No ESV
Selenate-speciation	mg/kg	0 - 1	0%	– - –	0.411 - 0.411	–	NA	No ESV
Selenite-speciation	mg/kg	0 - 1	0%	– - –	0.797 - 0.797	–	NA	No ESV
Selenium-speciation	mg/kg	1 - 1	100%	1.4 - 1.4	– - –	1.4	NA	No ESV
Physical Properties								
% Ash (> or < 50%)	%	0 - 4	0%	– - –	50 - 50	–	NA	No ESV
Fraction of Organic Carbon	%	1 - 1	100%	2.8 - 2.8	– - –	2.8	NA	No ESV
Total Organic Carbon	mg/kg	1 - 1	100%	6800 - 6800	– - –	6800	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-28. Submerged Sediment Dataset: Tennessee River - Reach B (TRM 566.0 to TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics								
Aluminum	mg/kg	4 - 4	100%	21200 - 44000	– - –	32625	NA	No ESV
Antimony	mg/kg	1 - 4	25%	1.5 - 1.5	1.83 - 2.26	1.5	12	no
Arsenic	mg/kg	4 - 4	100%	6.61 - 20.2	– - –	15.2	7.24	Yes
Barium	mg/kg	4 - 4	100%	214 - 373	– - –	272	NA	No ESV
Beryllium	mg/kg	4 - 4	100%	1.76 - 2.16	– - –	1.9	NA	No ESV
Boron	mg/kg	4 - 4	100%	17.2 - 25.5	– - –	21.05	NA	No ESV
Cadmium	mg/kg	0 - 4	0%	– - –	0.131 - 0.226	–	1	–
Chromium	mg/kg	4 - 4	100%	25.2 - 37.7	– - –	33.4	52.3	no
Cobalt	mg/kg	4 - 4	100%	13.4 - 19.5	– - –	17.1	NA	No ESV
Copper	mg/kg	4 - 4	100%	18.3 - 38	– - –	28.6	18.7	Yes
Hex. Chromium	mg/kg	0 - 1	0%	– - –	0.38 - 0.38	–	NA	No ESV
Lead	mg/kg	4 - 4	100%	19.5 - 30.6	– - –	24.3	30.2	Yes
Manganese	mg/kg	4 - 4	100%	855 - 1990	– - –	1187	NA	No ESV
Mercury	mg/kg	3 - 4	75%	0.27 - 0.54	0.054 - 0.054	0.4	0.13	Yes
Molybdenum	mg/kg	0 - 4	0%	– - –	5.26 - 9.03	–	NA	No ESV
Nickel	mg/kg	4 - 4	100%	22.9 - 28.8	– - –	25.73	15.9	Yes
Selenium	mg/kg	2 - 4	50%	2.05 - 2.16	2.04 - 2.26	2.11	NA	No ESV
Silver	mg/kg	0 - 4	0%	– - –	0.657 - 1.13	–	2	–
Thallium	mg/kg	0 - 4	0%	– - –	1.31 - 2.26	–	NA	No ESV
Vanadium	mg/kg	4 - 4	100%	48.6 - 61.9	– - –	56.7	NA	No ESV
Zinc	mg/kg	4 - 4	100%	64.9 - 144	– - –	101	124	Yes
Inorganic-cations/anions								
Calcium	mg/kg	4 - 4	100%	2630 - 3320	– - –	3080	NA	No ESV
Iron	mg/kg	4 - 4	100%	19800 - 35600	– - –	28600	NA	No ESV
Magnesium	mg/kg	4 - 4	100%	1900 - 5490	– - –	3388	NA	No ESV
Potassium	mg/kg	4 - 4	100%	2920 - 6290	– - –	4620	NA	No ESV
Sodium	mg/kg	4 - 4	100%	238 - 320	– - –	288	NA	No ESV
Benzo(a)anthracene	mg/kg	1 - 1	100%	0.024 - 0.024	– - –	0.024	0.33	no
Benzo(a)pyrene	mg/kg	1 - 1	100%	0.026 - 0.026	– - –	0.026	0.33	no
Benzo(b)fluoranthene	mg/kg	1 - 1	100%	0.037 - 0.037	– - –	0.037	NA	No ESV
Benzo(e)pyrene	mg/kg	1 - 1	100%	0.024 - 0.024	– - –	0.024	NA	No ESV
Benzo(g,h,i)perylene	mg/kg	1 - 1	100%	0.026 - 0.026	– - –	0.026	NA	No ESV

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Table 2-28. Submerged Sediment Dataset: Tennessee River - Reach B (TRM 566.0 to TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)										
Benzo(k)fluoranthene	mg/kg	1 - 1	100%	0.024	0.024	–	–	0.024	NA	No ESV
C1-Chrysenes	mg/kg	1 - 1	100%	0.017	0.017	–	–	0.017	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	1 - 1	100%	0.035	0.035	–	–	0.035	NA	No ESV
C2-Chrysenes	mg/kg	1 - 1	100%	0.0083	0.0083	–	–	0.0083	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	1 - 1	100%	0.038	0.038	–	–	0.038	NA	No ESV
C3-Chrysenes	mg/kg	1 - 1	100%	0.0033	0.0033	–	–	0.0033	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	1 - 1	100%	0.011	0.011	–	–	0.011	NA	No ESV
C4-Chrysenes	mg/kg	0 - 1	0%	–	–	0.001	0.001	–	NA	No ESV
Chrysene	mg/kg	1 - 1	100%	0.033	0.033	–	–	0.033	0.33	no
Dibenz(a,h)anthracene	mg/kg	1 - 1	100%	0.0078	0.0078	–	–	0.0078	0.33	no
Fluoranthene	mg/kg	1 - 1	100%	0.046	0.046	–	–	0.046	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	1 - 1	100%	0.022	0.022	–	–	0.022	NA	No ESV
Perylene	mg/kg	1 - 1	100%	0.062	0.062	–	–	0.062	NA	No ESV
Pyrene	mg/kg	1 - 1	100%	0.056	0.056	–	–	0.056	0.33	no
Total HPAH	mg/kg	1 - 1	100%	0.5021	0.5021	–	–	0.5021	0.655	no
Acenaphthene	mg/kg	0 - 1	0%	–	–	0.001	0.001	–	0.33	–
Acenaphthylene	mg/kg	0 - 1	0%	–	–	0.001	0.001	–	0.33	–
Anthracene	mg/kg	1 - 1	100%	0.0027	0.0027	–	–	0.0027	0.33	no
C1-Fluorenes	mg/kg	1 - 1	100%	0.0027	0.0027	–	–	0.0027	NA	No ESV
C1-Naphthalenes	mg/kg	1 - 1	100%	0.027	0.027	–	–	0.027	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.023	0.023	–	–	0.023	NA	No ESV
C2-Fluorenes	mg/kg	1 - 1	100%	0.005	0.005	–	–	0.005	NA	No ESV
C2-Naphthalenes	mg/kg	1 - 1	100%	0.057	0.057	–	–	0.057	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.016	0.016	–	–	0.016	NA	No ESV
C3-Fluorenes	mg/kg	0 - 1	0%	–	–	0.001	0.001	–	NA	No ESV
C3-Naphthalenes	mg/kg	1 - 1	100%	0.039	0.039	–	–	0.039	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.0062	0.0062	–	–	0.0062	NA	No ESV
C4-Naphthalenes	mg/kg	1 - 1	100%	0.023	0.023	–	–	0.023	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.008	0.008	–	–	0.008	NA	No ESV
Fluorene	mg/kg	1 - 1	100%	0.0024	0.0024	–	–	0.0024	0.33	no

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Table 2-28. Submerged Sediment Dataset: Tennessee River - Reach B (TRM 566.0 to TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)								
Naphthalene	mg/kg	1 - 1	100%	0.011 - 0.011	– - –	0.011	0.33	no
Phenanthrene	mg/kg	1 - 1	100%	0.023 - 0.023	– - –	0.023	0.33	no
Total LPAH	mg/kg	1 - 1	100%	0.2511 - 0.2511	– - –	0.2511	0.33	no
Total Alkylated PAHs	mg/kg	1 - 1	100%	0.3229 - 0.3229	– - –	0.3229	NA	No ESV
Total Unsubstituted PAHs	mg/kg	1 - 1	100%	0.4303 - 0.4303	– - –	0.4303	NA	No ESV
PCB-1016	mg/kg	0 - 1	0%	– - –	0.0026 - 0.0026	–	0.033	–
PCB-1221	mg/kg	0 - 1	0%	– - –	0.0026 - 0.0026	–	0.067	–
PCB-1232	mg/kg	0 - 1	0%	– - –	0.0026 - 0.0026	–	0.033	–
PCB-1242	mg/kg	0 - 1	0%	– - –	0.0026 - 0.0026	–	0.033	–
PCB-1248	mg/kg	0 - 1	0%	– - –	0.0026 - 0.0026	–	0.033	–
PCB-1254	mg/kg	1 - 1	100%	0.009 - 0.009	– - –	0.009	0.033	no
PCB-1260	mg/kg	1 - 1	100%	0.0052 - 0.0052	– - –	0.0052	0.033	no
PCB-1262	mg/kg	0 - 1	0%	– - –	0.0026 - 0.0026	–	0.033	–
PCB-1268	mg/kg	0 - 1	0%	– - –	0.0026 - 0.0026	–	0.033	–
Total PCBs	mg/kg	1 - 1	100%	0.0324 - 0.0324	– - –	0.0324	0.033	no
Pesticides								
4,4'-DDD	mg/kg	0 - 1	0%	– - –	0.001 - 0.001	–	0.0033	–
4,4'-DDE	mg/kg	0 - 1	0%	– - –	0.001 - 0.001	–	0.0033	–
4,4'-DDT	mg/kg	0 - 1	0%	– - –	0.001 - 0.001	–	0.0033	–
Aldrin	mg/kg	0 - 1	0%	– - –	0.00053 - 0.00053	–	NA	No ESV
alpha-BHC	mg/kg	0 - 1	0%	– - –	0.00053 - 0.00053	–	NA	No ESV
alpha-Chlordane	mg/kg	0 - 1	0%	– - –	0.00053 - 0.00053	–	0.0017	–
beta-BHC	mg/kg	0 - 1	0%	– - –	0.00053 - 0.00053	–	NA	No ESV
delta-BHC	mg/kg	0 - 1	0%	– - –	0.00053 - 0.00053	–	NA	No ESV
Dieldrin	mg/kg	0 - 1	0%	– - –	0.001 - 0.001	–	0.0033	–
Endosulfan I	mg/kg	0 - 1	0%	– - –	0.00053 - 0.00053	–	NA	No ESV
Endosulfan II	mg/kg	0 - 1	0%	– - –	0.001 - 0.001	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 1	0%	– - –	0.001 - 0.001	–	NA	No ESV
Endrin	mg/kg	0 - 1	0%	– - –	0.001 - 0.001	–	0.0033	–
Endrin aldehyde	mg/kg	0 - 1	0%	– - –	0.001 - 0.001	–	NA	No ESV
Endrin Ketone	mg/kg	0 - 1	0%	– - –	0.001 - 0.001	–	NA	No ESV

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Table 2-28. Submerged Sediment Dataset: Tennessee River - Reach B (TRM 566.0 to TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Pesticides (continued)										
gamma-BHC (Lindane)	mg/kg	0 - 1	0%	– - –		0.00053 - 0.00053		–	0.0033	–
gamma-Chlordane	mg/kg	0 - 1	0%	– - –		0.00053 - 0.00053		–	0.0017	–
Heptachlor	mg/kg	0 - 1	0%	– - –		0.00053 - 0.00053		–	NA	No ESV
Heptachlor Epoxide	mg/kg	0 - 1	0%	– - –		0.00053 - 0.00053		–	NA	No ESV
Methoxychlor	mg/kg	0 - 1	0%	– - –		0.0053 - 0.0053		–	NA	No ESV
Total Chlordane	mg/kg	0 - 1	0%	– - –		0.00106 - 0.00106		–	0.0017	–
Total DDx	mg/kg	0 - 1	0%	– - –		0.003 - 0.003		–	NA	No ESV
Total Pesticides	mg/kg	0 - 1	0%	– - –		0.0726 - 0.0726		–	NA	No ESV
Toxaphene	mg/kg	0 - 1	0%	– - –		0.053 - 0.053		–	NA	No ESV
Radionuclides										
Actinium-228	pCi/g	1 - 1	100%	2.22 - 2.22		– - –		2.22	NA	No ESV
Americium-241	pCi/g	0 - 1	0%	– - –		384 - 384		–	NA	No ESV
Bismuth-214	pCi/g	1 - 1	100%	2.35 - 2.35		– - –		2.35	NA	No ESV
Cesium-137	pCi/g	1 - 1	100%	0.921 - 0.921		– - –		0.921	NA	No ESV
Cobalt-60	pCi/g	0 - 1	0%	– - –		0.0823 - 0.0823		–	NA	No ESV
Lead-212	pCi/g	1 - 1	100%	2.28 - 2.28		– - –		2.28	NA	No ESV
Lead-214	pCi/g	1 - 1	100%	2.88 - 2.88		– - –		2.88	NA	No ESV
Potassium-40	pCi/g	1 - 1	100%	17.2 - 17.2		– - –		17.2	NA	No ESV
Radium-226	pCi/g	1 - 1	100%	2.35 - 2.35		– - –		2.35	NA	No ESV
Radium-228	pCi/g	1 - 1	100%	2.22 - 2.22		– - –		2.22	NA	No ESV
Thallium-208	pCi/g	1 - 1	100%	0.636 - 0.636		– - –		0.636	NA	No ESV
Thorium-228	pCi/g	1 - 1	100%	2.35 - 2.35		– - –		2.35	NA	No ESV
Thorium-230	pCi/g	1 - 1	100%	3.93 - 3.93		– - –		3.93	NA	No ESV
Thorium-232	pCi/g	1 - 1	100%	2.35 - 2.35		– - –		2.35	NA	No ESV
Thorium-234	pCi/g	1 - 1	100%	5.18 - 5.18		– - –		5.18	NA	No ESV
Uranium-234	pCi/g	1 - 1	100%	2.52 - 2.52		– - –		2.52	NA	No ESV
Uranium-235	pCi/g	1 - 1	100%	0.21 - 0.21		– - –		0.21	NA	No ESV
Uranium-238	pCi/g	1 - 1	100%	2.45 - 2.45		– - –		2.45	NA	No ESV
Speciation										
Arsenate-speciation	mg/kg	1 - 1	100%	11.6 - 11.6		– - –		11.6	NA	No ESV
Arsenic-speciation	mg/kg	1 - 1	100%	19.8 - 19.8		– - –		19.8	7.24	Yes
Arsenite-speciation	mg/kg	1 - 1	100%	8.84 - 8.84		– - –		8.84	NA	No ESV

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Table 2-28. Submerged Sediment Dataset: Tennessee River - Reach B (TRM 566.0 to TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Speciation (continued)								
Inorganic Arsenic-speciation	mg/kg	1 - 1	100%	18.5 - 18.5	– - –	18.5	NA	No ESV
Inorganic Mercury-speciation	mg/kg	1 - 1	100%	0.543 - 0.543	– - –	0.543	NA	No ESV
Inorganic Selenium-speciation	mg/kg	0 - 1	0%	– - –	0.94 - 0.94	–	NA	No ESV
Mercury-speciation	mg/kg	1 - 1	100%	0.546 - 0.546	– - –	0.546	0.13	Yes
Methyl mercury-speciation	mg/kg	1 - 1	100%	0.00296 - 0.00296	– - –	0.00296	NA	No ESV
Organic Arsenic-speciation	mg/kg	0 - 1	0%	– - –	7.89 - 7.89	–	NA	No ESV
Organic Selenium-speciation	mg/kg	1 - 1	100%	1.86 - 1.86	– - –	1.86	NA	No ESV
Selenate-speciation	mg/kg	0 - 1	0%	– - –	0.464 - 0.464	–	NA	No ESV
Selenite-speciation	mg/kg	0 - 1	0%	– - –	0.94 - 0.94	–	NA	No ESV
Selenium-speciation	mg/kg	1 - 1	100%	2.8 - 2.8	– - –	2.8	NA	No ESV
Physical Properties								
% Ash	%	0 - 1	0%	– - –	1 - 1	–	NA	No ESV
% Ash (> or < 50%)	%	0 - 4	0%	– - –	50 - 50	–	NA	No ESV
Fraction of Organic Carbon	%	1 - 1	100%	2 - 2	– - –	2	NA	No ESV
Total Organic Carbon	mg/kg	1 - 1	100%	17000 - 17000	– - –	17000	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-29. Bulk Sediment Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics										
Aluminum	mg/kg	1 - 1	100%	4530	4530	–	–	4530	NA	No ESV
Antimony	mg/kg	0 - 1	0%	–	–	1.84	1.84	–	12	–
Arsenic	mg/kg	1 - 1	100%	2.32	2.32	–	–	2.32	7.24	no
Barium	mg/kg	1 - 1	100%	61	61	–	–	61	NA	No ESV
Beryllium	mg/kg	0 - 1	0%	–	–	0.735	0.735	–	NA	No ESV
Boron	mg/kg	0 - 1	0%	–	–	7.35	7.35	–	NA	No ESV
Cadmium	mg/kg	0 - 1	0%	–	–	0.184	0.184	–	1	–
Chromium	mg/kg	1 - 1	100%	7.2	7.2	–	–	7.2	52.3	no
Cobalt	mg/kg	1 - 1	100%	10.1	10.1	–	–	10.1	NA	No ESV
Copper	mg/kg	1 - 1	100%	8.79	8.79	–	–	8.79	18.7	no
Hex. Chromium	mg/kg	0 - 1	0%	–	–	0.41	0.41	–	NA	No ESV
Lead	mg/kg	1 - 1	100%	10.1	10.1	–	–	10.1	30.2	no
Manganese	mg/kg	1 - 1	100%	360	360	–	–	360	NA	No ESV
Mercury	mg/kg	0 - 1	0%	–	–	0.061	0.061	–	0.13	–
Molybdenum	mg/kg	0 - 1	0%	–	–	7.35	7.35	–	NA	No ESV
Nickel	mg/kg	1 - 1	100%	13.4	13.4	–	–	13.4	15.9	no
Selenium	mg/kg	0 - 1	0%	–	–	1.84	1.84	–	NA	No ESV
Silver	mg/kg	0 - 1	0%	–	–	0.919	0.919	–	2	–
Strontium	mg/kg	0 - 1	0%	–	–	7.35	7.35	–	NA	No ESV
Thallium	mg/kg	0 - 1	0%	–	–	1.84	1.84	–	NA	No ESV
Vanadium	mg/kg	1 - 1	100%	8.53	8.53	–	–	8.53	NA	No ESV
Zinc	mg/kg	1 - 1	100%	56.2	56.2	–	–	56.2	124	no
Inorganic-cations/anions										
Calcium	mg/kg	1 - 1	100%	1560	1560	–	–	1560	NA	No ESV
Iron	mg/kg	1 - 1	100%	11200	11200	–	–	11200	NA	No ESV
Magnesium	mg/kg	1 - 1	100%	520	520	–	–	520	NA	No ESV
Potassium	mg/kg	1 - 1	100%	330	330	–	–	330	NA	No ESV
Sodium	mg/kg	0 - 1	0%	–	–	184	184	–	NA	No ESV
Benzo(a)anthracene	mg/kg	1 - 1	100%	0.038	0.038	–	–	0.038	0.33	no
Benzo(a)pyrene	mg/kg	1 - 1	100%	0.05	0.05	–	–	0.05	0.33	no
Benzo(b)fluoranthene	mg/kg	1 - 1	100%	0.07	0.07	–	–	0.07	NA	No ESV
Benzo(e)pyrene	mg/kg	1 - 1	100%	0.057	0.057	–	–	0.057	NA	No ESV
Benzo(g,h,i)perylene	mg/kg	1 - 1	100%	0.029	0.029	–	–	0.029	NA	No ESV
Benzo(k)fluoranthene	mg/kg	1 - 1	100%	0.047	0.047	–	–	0.047	NA	No ESV

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Table 2-29. Bulk Sediment Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)										
C1-Chrysenes	mg/kg	1 - 1	100%	0.019	0.019	–	–	0.019	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	1 - 1	100%	0.048	0.048	–	–	0.048	NA	No ESV
C2-Chrysenes	mg/kg	1 - 1	100%	0.017	0.017	–	–	0.017	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	1 - 1	100%	0.042	0.042	–	–	0.042	NA	No ESV
C3-Chrysenes	mg/kg	0 - 1	0%	–	–	0.0014	0.0014	–	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	1 - 1	100%	0.013	0.013	–	–	0.013	NA	No ESV
C4-Chrysenes	mg/kg	0 - 1	0%	–	–	0.0014	0.0014	–	NA	No ESV
Chrysene	mg/kg	1 - 1	100%	0.056	0.056	–	–	0.056	0.33	no
Dibenz(a,h)anthracene	mg/kg	1 - 1	100%	0.0072	0.0072	–	–	0.0072	0.33	no
Fluoranthene	mg/kg	1 - 1	100%	0.1	0.1	–	–	0.1	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	1 - 1	100%	0.025	0.025	–	–	0.025	NA	No ESV
Perylene	mg/kg	1 - 1	100%	0.075	0.075	–	–	0.075	NA	No ESV
Pyrene	mg/kg	1 - 1	100%	0.066	0.066	–	–	0.066	0.33	no
Total HPAH	mg/kg	1 - 1	100%	0.762	0.762	–	–	0.762	0.655	Yes
Acenaphthene	mg/kg	1 - 1	100%	0.002	0.002	–	–	0.002	0.33	no
Acenaphthylene	mg/kg	1 - 1	100%	0.0025	0.0025	–	–	0.0025	0.33	no
Anthracene	mg/kg	1 - 1	100%	0.0066	0.0066	–	–	0.0066	0.33	no
C1-Fluorenes	mg/kg	1 - 1	100%	0.0044	0.0044	–	–	0.0044	NA	No ESV
C1-Naphthalenes	mg/kg	1 - 1	100%	0.035	0.035	–	–	0.035	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.047	0.047	–	–	0.047	NA	No ESV
C2-Fluorenes	mg/kg	1 - 1	100%	0.0067	0.0067	–	–	0.0067	NA	No ESV
C2-Naphthalenes	mg/kg	1 - 1	100%	0.077	0.077	–	–	0.077	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.028	0.028	–	–	0.028	NA	No ESV
C3-Fluorenes	mg/kg	1 - 1	100%	0.0087	0.0087	–	–	0.0087	NA	No ESV
C3-Naphthalenes	mg/kg	1 - 1	100%	0.051	0.051	–	–	0.051	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.016	0.016	–	–	0.016	NA	No ESV
C4-Naphthalenes	mg/kg	1 - 1	100%	0.029	0.029	–	–	0.029	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.23	0.23	–	–	0.23	NA	No ESV
Fluorene	mg/kg	1 - 1	100%	0.0055	0.0055	–	–	0.0055	0.33	no
Naphthalene	mg/kg	1 - 1	100%	0.013	0.013	–	–	0.013	0.33	no
Phenanthrene	mg/kg	1 - 1	100%	0.05	0.05	–	–	0.05	0.33	no
Total LPAH	mg/kg	1 - 1	100%	0.6124	0.6124	–	–	0.6124	0.33	Yes
Total Alkylated PAHs	mg/kg	1 - 1	100%	0.6746	0.6746	–	–	0.6746	NA	No ESV
Total Unsubstituted PAHs	mg/kg	1 - 1	100%	0.6998	0.6998	–	–	0.6998	NA	No ESV

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Table 2-29. Bulk Sediment Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)										
PCB-1016	mg/kg	0 - 1	0%	–	–	0.0035	0.0035	–	0.033	–
PCB-1221	mg/kg	0 - 1	0%	–	–	0.0035	0.0035	–	0.067	–
PCB-1232	mg/kg	0 - 1	0%	–	–	0.0035	0.0035	–	0.033	–
PCB-1242	mg/kg	0 - 1	0%	–	–	0.0035	0.0035	–	0.033	–
PCB-1248	mg/kg	0 - 1	0%	–	–	0.0035	0.0035	–	0.033	–
PCB-1254	mg/kg	0 - 1	0%	–	–	0.0035	0.0035	–	0.033	–
PCB-1260	mg/kg	1 - 1	100%	0.0071	0.0071	–	–	0.0071	0.033	no
Total PCBs	mg/kg	1 - 1	100%	0.0281	0.0281	–	–	0.0281	0.033	no
Pesticides										
4,4'-DDD	mg/kg	0 - 1	0%	–	–	0.0014	0.0014	–	0.0033	–
4,4'-DDE	mg/kg	0 - 1	0%	–	–	0.0014	0.0014	–	0.0033	–
4,4'-DDT	mg/kg	1 - 1	100%	0.002	0.002	–	–	0.002	0.0033	no
Aldrin	mg/kg	0 - 1	0%	–	–	0.0007	0.0007	–	NA	No ESV
alpha-BHC	mg/kg	1 - 1	100%	0.0009	0.0009	–	–	0.0009	NA	No ESV
alpha-Chlordane	mg/kg	0 - 1	0%	–	–	0.0007	0.0007	–	0.0017	–
beta-BHC	mg/kg	1 - 1	100%	0.0075	0.0075	–	–	0.0075	NA	No ESV
delta-BHC	mg/kg	1 - 1	100%	0.0026	0.0026	–	–	0.0026	NA	No ESV
Dieldrin	mg/kg	0 - 1	0%	–	–	0.0014	0.0014	–	0.0033	–
Endosulfan I	mg/kg	0 - 1	0%	–	–	0.0007	0.0007	–	NA	No ESV
Endosulfan II	mg/kg	0 - 1	0%	–	–	0.0014	0.0014	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 1	0%	–	–	0.0014	0.0014	–	NA	No ESV
Endrin	mg/kg	0 - 1	0%	–	–	0.0014	0.0014	–	0.0033	–
Endrin aldehyde	mg/kg	0 - 1	0%	–	–	0.0014	0.0014	–	NA	No ESV
Endrin Ketone	mg/kg	0 - 1	0%	–	–	0.0014	0.0014	–	NA	No ESV
gamma-BHC (Lindane)	mg/kg	1 - 1	100%	0.0031	0.0031	–	–	0.0031	0.0033	no
gamma-Chlordane	mg/kg	1 - 1	100%	0.00075	0.00075	–	–	0.00075	0.0017	no
Heptachlor	mg/kg	1 - 1	100%	0.0021	0.0021	–	–	0.0021	NA	No ESV
Heptachlor Epoxide	mg/kg	0 - 1	0%	–	–	0.0007	0.0007	–	NA	No ESV
Methoxychlor	mg/kg	0 - 1	0%	–	–	0.007	0.007	–	NA	No ESV
Total Chlordane	mg/kg	1 - 1	100%	0.00145	0.00145	–	–	0.00145	0.0017	no
Total DDx	mg/kg	1 - 1	100%	0.0048	0.0048	–	–	0.0048	NA	No ESV
Total Pesticides	mg/kg	1 - 1	100%	0.10995	0.10995	–	–	0.10995	NA	No ESV
Toxaphene	mg/kg	0 - 1	0%	–	–	0.07	0.07	–	NA	No ESV

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Table 2-29. Bulk Sediment Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Radionuclides										
Actinium-228	pCi/g	1 - 1	100%	0.846	0.846	–	–	0.846	NA	No ESV
Americium-241	pCi/g	0 - 1	0%	–	–	422	422		NA	No ESV
Bismuth-214	pCi/g	1 - 1	100%	0.869	0.869	–	–	0.869	NA	No ESV
Cesium-137	pCi/g	0 - 1	0%	–	–	0.0769	0.0769	–	NA	No ESV
Cobalt-60	pCi/g	0 - 1	0%	–	–	0.0779	0.0779	–	NA	No ESV
Lead-212	pCi/g	1 - 1	100%	0.781	0.781	–	–	0.781	NA	No ESV
Lead-214	pCi/g	1 - 1	100%	0.945	0.945	–	–	0.945	NA	No ESV
Potassium-40	pCi/g	1 - 1	100%	4.85	4.85	–	–	4.85	NA	No ESV
Radium-226	pCi/g	1 - 1	100%	0.869	0.869	–	–	0.869	NA	No ESV
Radium-228	pCi/g	1 - 1	100%	0.846	0.846	–	–	0.846	NA	No ESV
Thallium-208	pCi/g	1 - 1	100%	0.203	0.203	–	–	0.203	NA	No ESV
Thorium-228	pCi/g	1 - 1	100%	0.688	0.688	–	–	0.688	NA	No ESV
Thorium-230	pCi/g	1 - 1	100%	0.769	0.769	–	–	0.769	NA	No ESV
Thorium-232	pCi/g	1 - 1	100%	0.639	0.639	–	–	0.639	NA	No ESV
Thorium-234	pCi/g	0 - 1	0%	–	–	3.51	3.51	–	NA	No ESV
Uranium-234	pCi/g	1 - 1	100%	0.607	0.607	–	–	0.607	NA	No ESV
Uranium-235	pCi/g	0 - 1	0%	–	–	0.118	0.118	–	NA	No ESV
Uranium-238	pCi/g	1 - 1	100%	0.691	0.691	–	–	0.691	NA	No ESV
Speciation										
Arsenate-speciation	mg/kg	1 - 1	100%	1.7	1.7	–	–	1.7	NA	No ESV
Arsenic-speciation	mg/kg	1 - 1	100%	4.4	4.4	–	–	4.4	7.24	no
Arsenite-speciation	mg/kg	1 - 1	100%	0.933	0.933	–	–	0.933	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	1 - 1	100%	2.64	2.64	–	–	2.64	NA	No ESV
Inorganic Mercury-speciation	mg/kg	1 - 1	100%	0.0506	0.0506	–	–	0.0506	NA	No ESV
Inorganic Selenium-speciation	mg/kg	0 - 1	0%	–	–	0.574	0.574	–	NA	No ESV
Mercury-speciation	mg/kg	1 - 1	100%	0.0536	0.0536	–	–	0.0536	0.13	no
Methyl mercury-speciation	mg/kg	1 - 1	100%	0.00297	0.00297	–	–	0.00297	NA	No ESV
Organic Arsenic-speciation	mg/kg	1 - 1	100%	1.76	1.76	–	–	1.76	NA	No ESV
Organic Selenium-speciation	mg/kg	1 - 1	100%	1.24	1.24	–	–	1.24	NA	No ESV
Selenate-speciation	mg/kg	0 - 1	0%	–	–	0.454	0.454	–	NA	No ESV
Selenite-speciation	mg/kg	0 - 1	0%	–	–	0.574	0.574	–	NA	No ESV
Selenium-speciation	mg/kg	1 - 1	100%	1.24	1.24	–	–	1.24	NA	No ESV

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Table 2-29. Bulk Sediment Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals										
Aluminum, Carbonate Bound Fraction	mg/kg	1 - 1	100%	11.1	11.1	–	–	11.1	NA	No ESV
Aluminum, Hydroxide Fraction	mg/kg	1 - 1	100%	88.4	88.4	–	–	88.4	NA	No ESV
Aluminum, Ion Exchange Fraction	mg/kg	1 - 1	100%	0.2	0.2	–	–	0.2	NA	No ESV
Aluminum, Total Metals	mg/kg	1 - 1	100%	6030	6030	–	–	6030	NA	No ESV
Aluminum, Water Extractable Fraction	mg/kg	1 - 1	100%	6.6	6.6	–	–	6.6	NA	No ESV
Arsenic, Carbonate Bound Fraction	mg/kg	0 - 1	0%	–	–	0.0054	0.0054	–	NA	No ESV
Arsenic, Hydroxide Fraction	mg/kg	1 - 1	100%	0.12	0.12	–	–	0.12	NA	No ESV
Arsenic, Total Metals	mg/kg	1 - 1	100%	2.8	2.8	–	–	2.8	7.24	no
Arsenic, Water Extractable Fraction	mg/kg	0 - 1	0%	–	–	0.0054	0.0054	–	NA	No ESV
Barium, Carbonate Bound Fraction	mg/kg	1 - 1	100%	9.3	9.3	–	–	9.3	NA	No ESV
Barium, Hydroxide Fraction	mg/kg	1 - 1	100%	12.6	12.6	–	–	12.6	NA	No ESV
Barium, Ion Exchange Fraction	mg/kg	1 - 1	100%	14.2	14.2	–	–	14.2	NA	No ESV
Barium, Total Metals	mg/kg	1 - 1	100%	67.7	67.7	–	–	67.7	NA	No ESV
Barium, Water Extractable Fraction	mg/kg	1 - 1	100%	0.32	0.32	–	–	0.32	NA	No ESV
Cadmium, Carbonate Bound Fraction	mg/kg	1 - 1	100%	0.11	0.11	–	–	0.11	NA	No ESV
Cadmium, Hydroxide Fraction	mg/kg	1 - 1	100%	0.099	0.099	–	–	0.099	NA	No ESV
Cadmium, Ion Exchange Fraction	mg/kg	1 - 1	100%	0.013	0.013	–	–	0.013	NA	No ESV
Cadmium, Total Metals	mg/kg	1 - 1	100%	0.27	0.27	–	–	0.27	1	no
Cadmium, Water Extractable Fraction	mg/kg	0 - 1	0%	–	–	0.0011	0.0011	–	NA	No ESV
Calcium, Carbonate Bound Fraction	mg/kg	1 - 1	100%	290	290	–	–	290	NA	No ESV
Calcium, Hydroxide Fraction	mg/kg	1 - 1	100%	212	212	–	–	212	NA	No ESV
Calcium, Ion Exchange Fraction	mg/kg	1 - 1	100%	697	697	–	–	697	NA	No ESV
Calcium, Total Metals	mg/kg	1 - 1	100%	1530	1530	–	–	1530	NA	No ESV
Calcium, Water Extractable Fraction	mg/kg	1 - 1	100%	36.4	36.4	–	–	36.4	NA	No ESV
Chromium, Carbonate Bound Fraction	mg/kg	0 - 1	0%	–	–	0.011	0.011	–	NA	No ESV
Chromium, Hydroxide Fraction	mg/kg	1 - 1	100%	0.097	0.097	–	–	0.097	NA	No ESV
Chromium, Total Metals	mg/kg	1 - 1	100%	9.2	9.2	–	–	9.2	52.3	no
Chromium, Water Extractable Fraction	mg/kg	0 - 1	0%	–	–	0.011	0.011	–	NA	No ESV
Cobalt, Carbonate Bound Fraction	mg/kg	1 - 1	100%	0.24	0.24	–	–	0.24	NA	No ESV
Cobalt, Hydroxide Fraction	mg/kg	1 - 1	100%	3.2	3.2	–	–	3.2	NA	No ESV
Cobalt, Ion Exchange Fraction	mg/kg	1 - 1	100%	0.03	0.03	–	–	0.03	NA	No ESV
Cobalt, Total Metals	mg/kg	1 - 1	100%	11.5	11.5	–	–	11.5	NA	No ESV
Cobalt, Water Extractable Fraction	mg/kg	1 - 1	100%	0.024	0.024	–	–	0.024	NA	No ESV
Copper, Carbonate Bound Fraction	mg/kg	1 - 1	100%	0.04	0.04	–	–	0.04	NA	No ESV
Copper, Hydroxide Fraction	mg/kg	0 - 1	0%	–	–	0.064	0.064	–	NA	No ESV

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Table 2-29. Bulk Sediment Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals (continued)										
Copper, Ion Exchange Fraction	mg/kg	1 - 1	100%	0.039	0.039	–	–	0.039	NA	No ESV
Copper, Total Metals	mg/kg	1 - 1	100%	8.7	8.7	–	–	8.7	18.7	no
Copper, Water Extractable Fraction	mg/kg	0 - 1	0%	–	–	0.0047	0.0047	–	NA	No ESV
Iron, Carbonate Bound Fraction	mg/kg	1 - 1	100%	6.6	6.6	–	–	6.6	NA	No ESV
Iron, Hydroxide Fraction	mg/kg	1 - 1	100%	959	959	–	–	959	NA	No ESV
Iron, Total Metals	mg/kg	1 - 1	100%	12600	12600	–	–	12600	NA	No ESV
Iron, Water Extractable Fraction	mg/kg	1 - 1	100%	11.2	11.2	–	–	11.2	NA	No ESV
Lead, Carbonate Bound Fraction	mg/kg	1 - 1	100%	0.26	0.26	–	–	0.26	NA	No ESV
Lead, Hydroxide Fraction	mg/kg	1 - 1	100%	0.91	0.91	–	–	0.91	NA	No ESV
Lead, Ion Exchange Fraction	mg/kg	1 - 1	100%	0.022	0.022	–	–	0.022	NA	No ESV
Lead, Total Metals	mg/kg	1 - 1	100%	11.1	11.1	–	–	11.1	30.2	no
Lead, Water Extractable Fraction	mg/kg	1 - 1	100%	0.018	0.018	–	–	0.018	NA	No ESV
Magnesium, Carbonate Bound Fraction	mg/kg	1 - 1	100%	56.1	56.1	–	–	56.1	NA	No ESV
Magnesium, Hydroxide Fraction	mg/kg	1 - 1	100%	48.1	48.1	–	–	48.1	NA	No ESV
Magnesium, Ion Exchange Fraction	mg/kg	1 - 1	100%	88.3	88.3	–	–	88.3	NA	No ESV
Magnesium, Total Metals	mg/kg	1 - 1	100%	730	730	–	–	730	NA	No ESV
Magnesium, Water Extractable Fraction	mg/kg	1 - 1	100%	7.2	7.2	–	–	7.2	NA	No ESV
Manganese, Carbonate Bound Fraction	mg/kg	1 - 1	100%	55.8	55.8	–	–	55.8	NA	No ESV
Manganese, Hydroxide Fraction	mg/kg	1 - 1	100%	175	175	–	–	175	NA	No ESV
Manganese, Ion Exchange Fraction	mg/kg	1 - 1	100%	11.1	11.1	–	–	11.1	NA	No ESV
Manganese, Total Metals	mg/kg	1 - 1	100%	357	357	–	–	357	NA	No ESV
Manganese, Water Extractable Fraction	mg/kg	1 - 1	100%	3.1	3.1	–	–	3.1	NA	No ESV
Molybdenum, Carbonate Bound Fraction	mg/kg	1 - 1	100%	0.023	0.023	–	–	0.023	NA	No ESV
Molybdenum, Hydroxide Fraction	mg/kg	0 - 1	0%	–	–	0.0053	0.0053	–	NA	No ESV
Molybdenum, Ion Exchange Fraction	mg/kg	1 - 1	100%	0.044	0.044	–	–	0.044	NA	No ESV
Molybdenum, Total Metals	mg/kg	1 - 1	100%	1	1	–	–	1	NA	No ESV
Molybdenum, Water Extractable Fraction	mg/kg	0 - 1	0%	–	–	0.02	0.02	–	NA	No ESV
Nickel, Carbonate Bound Fraction	mg/kg	1 - 1	100%	0.58	0.58	–	–	0.58	NA	No ESV
Nickel, Hydroxide Fraction	mg/kg	1 - 1	100%	2.6	2.6	–	–	2.6	NA	No ESV
Nickel, Ion Exchange Fraction	mg/kg	1 - 1	100%	0.12	0.12	–	–	0.12	NA	No ESV
Nickel, Total Metals	mg/kg	1 - 1	100%	17	17	–	–	17	15.9	Yes
Nickel, Water Extractable Fraction	mg/kg	1 - 1	100%	0.026	0.026	–	–	0.026	NA	No ESV

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Table 2-29. Bulk Sediment Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals (continued)										
Selenium, Carbonate Bound Fraction	mg/kg	0 - 1	0%	–	–	0.014	0.014	–	NA	No ESV
Selenium, Hydroxide Fraction	mg/kg	1 - 1	100%	0.066	0.066	–	–	0.066	NA	No ESV
Selenium, Ion Exchange Fraction	mg/kg	0 - 1	0%	–	–	0.014	0.014	–	NA	No ESV
Selenium, Total Metals	mg/kg	1 - 1	100%	0.75	0.75	–	–	0.75	NA	No ESV
Selenium, Water Extractable Fraction	mg/kg	0 - 1	0%	–	–	0.014	0.014	–	NA	No ESV
Silver, Carbonate Bound Fraction	mg/kg	0 - 1	0%	–	–	0.0013	0.0013	–	NA	No ESV
Silver, Hydroxide Fraction	mg/kg	0 - 1	0%	–	–	0.0013	0.0013	–	NA	No ESV
Silver, Ion Exchange Fraction	mg/kg	0 - 1	0%	–	–	0.0013	0.0013	–	NA	No ESV
Silver, Total Metals	mg/kg	1 - 1	100%	0.057	0.057	–	–	0.057	2	no
Silver, Water Extractable Fraction	mg/kg	0 - 1	0%	–	–	0.0013	0.0013	–	NA	No ESV
Sodium, Carbonate Bound Fraction	mg/kg	0 - 1	0%	–	–	0.61	0.61	–	NA	No ESV
Sodium, Hydroxide Fraction	mg/kg	1 - 1	100%	1.8	1.8	–	–	1.8	NA	No ESV
Sodium, Ion Exchange Fraction	mg/kg	1 - 1	100%	2	2	–	–	2	NA	No ESV
Sodium, Total Metals	mg/kg	1 - 1	100%	34.7	34.7	–	–	34.7	NA	No ESV
Sodium, Water Extractable Fraction	mg/kg	1 - 1	100%	4.1	4.1	–	–	4.1	NA	No ESV
Strontium, Carbonate Bound Fraction	mg/kg	1 - 1	100%	0.98	0.98	–	–	0.98	NA	No ESV
Strontium, Hydroxide Fraction	mg/kg	1 - 1	100%	0.83	0.83	–	–	0.83	NA	No ESV
Strontium, Ion Exchange Fraction	mg/kg	1 - 1	100%	2.5	2.5	–	–	2.5	NA	No ESV
Strontium, Total Metals	mg/kg	1 - 1	100%	8	8	–	–	8	NA	No ESV
Strontium, Water Extractable Fraction	mg/kg	1 - 1	100%	0.13	0.13	–	–	0.13	NA	No ESV
Thallium, Carbonate Bound Fraction	mg/kg	1 - 1	100%	0.0074	0.0074	–	–	0.0074	NA	No ESV
Thallium, Hydroxide Fraction	mg/kg	1 - 1	100%	0.014	0.014	–	–	0.014	NA	No ESV
Thallium, Ion Exchange Fraction	mg/kg	1 - 1	100%	0.0087	0.0087	–	–	0.0087	NA	No ESV
Thallium, Total Metals	mg/kg	1 - 1	100%	0.12	0.12	–	–	0.12	NA	No ESV
Thallium, Water Extractable Fraction	mg/kg	0 - 1	0%	–	–	0.0003	0.0003	–	NA	No ESV
Vanadium, Carbonate Bound Fraction	mg/kg	0 - 1	0%	–	–	0.015	0.015	–	NA	No ESV
Vanadium, Hydroxide Fraction	mg/kg	1 - 1	100%	0.16	0.16	–	–	0.16	NA	No ESV
Vanadium, Total Metals	mg/kg	1 - 1	100%	12.5	12.5	–	–	12.5	NA	No ESV
Vanadium, Water Extractable Fraction	mg/kg	0 - 1	0%	–	–	0.015	0.015	–	NA	No ESV
Zinc, Carbonate Bound Fraction	mg/kg	1 - 1	100%	1.8	1.8	–	–	1.8	NA	No ESV
Zinc, Hydroxide Fraction	mg/kg	1 - 1	100%	15.2	15.2	–	–	15.2	NA	No ESV
Zinc, Ion Exchange Fraction	mg/kg	1 - 1	100%	0.22	0.22	–	–	0.22	NA	No ESV
Zinc, Total Metals	mg/kg	1 - 1	100%	51.7	51.7	–	–	51.7	124	no
Zinc, Water Extractable Fraction	mg/kg	1 - 1	100%	0.11	0.11	–	–	0.11	NA	No ESV

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Table 2-29. Bulk Sediment Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Physical Properties-Grain Size										
% Ash	%	0 - 1	0%	–	–	1	1	–	NA	No ESV
Fraction of Organic Carbon	%	1 - 1	100%	3.8	3.8	–	–	3.8	NA	No ESV
Total Organic Carbon	mg/kg	1 - 1	100%	23000	23000	–	–	23000	NA	No ESV
Physical Properties-Grain Size										
Clay	%	1 - 1	100%	7.8	7.8	–	–	7.8	NA	No ESV
Gravel	%	0 - 1	0%	–	–	0	0	–	NA	No ESV
Sand	%	1 - 1	100%	58.7	58.7	–	–	58.7	NA	No ESV
Sand, Coarse	%	1 - 1	100%	1.1	1.1	–	–	1.1	NA	No ESV
Sand, Fine	%	1 - 1	100%	55.7	55.7	–	–	55.7	NA	No ESV
Sand, Medium	%	1 - 1	100%	1.9	1.9	–	–	1.9	NA	No ESV
Silt	%	1 - 1	100%	33.5	33.5	–	–	33.5	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-30. Bulk Sediment Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics										
Aluminum	mg/kg	3 - 3	100%	11200	16400	–	–	14133	NA	No ESV
Antimony	mg/kg	0 - 3	0%	–	–	1.72	1.96	–	12	–
Arsenic	mg/kg	3 - 3	100%	21.8	31.7	–	–	27.6	7.24	Yes
Barium	mg/kg	3 - 3	100%	226	251	–	–	237	NA	No ESV
Beryllium	mg/kg	3 - 3	100%	1.69	2.12	–	–	1.9	NA	No ESV
Boron	mg/kg	3 - 3	100%	18.4	20.7	–	–	19.4	NA	No ESV
Cadmium	mg/kg	0 - 3	0%	–	–	0.172	0.196	–	1	–
Chromium	mg/kg	3 - 3	100%	20	24.9	–	–	22.9	52.3	no
Cobalt	mg/kg	3 - 3	100%	12.6	16.7	–	–	15.1	NA	No ESV
Copper	mg/kg	3 - 3	100%	24.6	31	–	–	28.3	18.7	Yes
Hex. Chromium	mg/kg	0 - 3	0%	–	–	0.36	0.39	–	NA	No ESV
Lead	mg/kg	3 - 3	100%	9.26	12.9	–	–	11.52	30.2	no
Manganese	mg/kg	3 - 3	100%	299	489	–	–	407	NA	No ESV
Mercury	mg/kg	3 - 3	100%	0.11	0.13	–	–	0.12	0.13	no
Molybdenum	mg/kg	0 - 3	0%	–	–	6.89	7.84	–	NA	No ESV
Nickel	mg/kg	3 - 3	100%	20.7	27.2	–	–	24.7	15.9	Yes
Selenium	mg/kg	3 - 3	100%	3.1	4.27	–	–	3.71	NA	No ESV
Silver	mg/kg	0 - 3	0%	–	–	0.861	0.98	–	2	–
Strontium	mg/kg	3 - 3	100%	127	145	–	–	135	NA	No ESV
Thallium	mg/kg	0 - 3	0%	–	–	1.72	1.96	–	NA	No ESV
Vanadium	mg/kg	3 - 3	100%	38.6	51.9	–	–	45.9	NA	No ESV
Zinc	mg/kg	3 - 3	100%	54.9	75.8	–	–	65.5	124	no
Inorganic-cations/anions										
Calcium	mg/kg	3 - 3	100%	3410	3710	–	–	3540	NA	No ESV
Iron	mg/kg	3 - 3	100%	19400	25900	–	–	23500	NA	No ESV
Magnesium	mg/kg	3 - 3	100%	1080	1490	–	–	1310	NA	No ESV
Potassium	mg/kg	3 - 3	100%	1030	1570	–	–	1313	NA	No ESV
Sodium	mg/kg	3 - 3	100%	188	204	–	–	195	NA	No ESV
Benzo(a)anthracene	mg/kg	3 - 3	100%	0.012	0.014	–	–	0.01	0.33	no
Benzo(a)pyrene	mg/kg	3 - 3	100%	0.0089	0.014	–	–	0.01	0.33	no
Benzo(b)fluoranthene	mg/kg	3 - 3	100%	0.017	0.026	–	–	0.02	NA	No ESV
Benzo(e)pyrene	mg/kg	3 - 3	100%	0.015	0.022	–	–	0.02	NA	No ESV

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Table 2-30. Bulk Sediment Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)										
Benzo(g,h,i)perylene	mg/kg	3 - 3	100%	0.0064	0.013	–	–	0.01	NA	No ESV
Benzo(k)fluoranthene	mg/kg	3 - 3	100%	0.0099	0.015	–	–	0.01	NA	No ESV
C1-Chrysenes	mg/kg	3 - 3	100%	0.0093	0.012	–	–	0.01	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	3 - 3	100%	0.017	0.026	–	–	0.02	NA	No ESV
C2-Chrysenes	mg/kg	3 - 3	100%	0.0071	0.0078	–	–	0.01	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	3 - 3	100%	0.02	0.035	–	–	0.03	NA	No ESV
C3-Chrysenes	mg/kg	0 - 3	0%	–	–	0.00096	0.001	–	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	3 - 3	100%	0.0077	0.0083	–	–	0.008	NA	No ESV
C4-Chrysenes	mg/kg	0 - 3	0%	–	–	0.00096	0.001	–	NA	No ESV
Chrysene	mg/kg	3 - 3	100%	0.017	0.023	–	–	0.019	0.33	no
Dibenz(a,h)anthracene	mg/kg	3 - 3	100%	0.0012	0.0024	–	–	0.002	0.33	no
Fluoranthene	mg/kg	3 - 3	100%	0.029	0.04	–	–	0.034	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	3 - 3	100%	0.0043	0.0087	–	–	0.0069	NA	No ESV
Perylene	mg/kg	3 - 3	100%	0.015	0.021	–	–	0.019	NA	No ESV
Pyrene	mg/kg	3 - 3	100%	0.025	0.036	–	–	0.030	0.33	no
Total HPAH	mg/kg	3 - 3	100%	0.2482	0.32178	–	–	0.275	0.655	no
Acenaphthene	mg/kg	2 - 3	67%	0.0012	0.002	0.001	0.001	0.0016	0.33	no
Acenaphthylene	mg/kg	2 - 3	67%	0.0012	0.0013	0.001	0.001	0.0013	0.33	no
Anthracene	mg/kg	3 - 3	100%	0.0016	0.0026	–	–	0.002	0.33	no
C1-Fluorenes	mg/kg	3 - 3	100%	0.0024	0.004	–	–	0.003	NA	No ESV
C1-Naphthalenes	mg/kg	3 - 3	100%	0.016	0.027	–	–	0.023	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.023	0.043	–	–	0.034	NA	No ESV
C2-Fluorenes	mg/kg	3 - 3	100%	0.0034	0.0069	–	–	0.0057	NA	No ESV
C2-Naphthalenes	mg/kg	3 - 3	100%	0.036	0.066	–	–	0.054	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.011	0.02	–	–	0.017	NA	No ESV
C3-Fluorenes	mg/kg	2 - 3	67%	0.0071	0.011	0.001	0.001	0.0091	NA	No ESV
C3-Naphthalenes	mg/kg	3 - 3	100%	0.03	0.053	–	–	0.044	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.0061	0.01	–	–	0.009	NA	No ESV
C4-Naphthalenes	mg/kg	3 - 3	100%	0.019	0.031	–	–	0.026	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.0085	0.024	–	–	0.018	NA	No ESV
Fluorene	mg/kg	3 - 3	100%	0.0017	0.003	–	–	0.002	0.33	no
Naphthalene	mg/kg	3 - 3	100%	0.0066	0.011	–	–	0.009	0.33	no
Phenanthrene	mg/kg	3 - 3	100%	0.015	0.027	–	–	0.021	0.33	no
Total LPAH	mg/kg	3 - 3	100%	0.1833	0.3427	–	–	0.28	0.33	Yes

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Table 2-30. Bulk Sediment Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)										
Total Alkylated PAHs	mg/kg	3 - 3	100%	0.2228	0.38412	–	–	0.32	NA	No ESV
Total Unsubstituted PAHs	mg/kg	3 - 3	100%	0.2087	0.28036	–	–	0.23	NA	No ESV
PCB-1016	mg/kg	0 - 3	0%	–	–	0.0024	0.0025	–	0.033	–
PCB-1221	mg/kg	0 - 3	0%	–	–	0.0024	0.0025	–	0.067	–
PCB-1232	mg/kg	0 - 3	0%	–	–	0.0024	0.0025	–	0.033	–
PCB-1242	mg/kg	0 - 3	0%	–	–	0.0024	0.0025	–	0.033	–
PCB-1248	mg/kg	0 - 3	0%	–	–	0.0024	0.0025	–	0.033	–
PCB-1254	mg/kg	0 - 3	0%	–	–	0.0024	0.0025	–	0.033	–
PCB-1260	mg/kg	3 - 3	100%	0.0033	0.0056	–	–	0.004	0.033	no
Total PCBs	mg/kg	3 - 3	100%	0.0183	0.0218	–	–	0.020	0.033	no
Pesticides										
4,4'-DDD	mg/kg	0 - 3	0%	–	–	0.00097	0.00098	–	0.0033	–
4,4'-DDE	mg/kg	0 - 3	0%	–	–	0.00097	0.00098	–	0.0033	–
4,4'-DDT	mg/kg	0 - 3	0%	–	–	0.00097	0.00098	–	0.0033	–
Aldrin	mg/kg	2 - 3	67%	0.0005	0.00066	0.0005	0.0005	0.00058	NA	No ESV
alpha-BHC	mg/kg	3 - 3	100%	0.00088	0.0013	–	–	0.001	NA	No ESV
alpha-Chlordane	mg/kg	0 - 3	0%	–	–	0.0005	0.0005	–	0.0017	–
beta-BHC	mg/kg	3 - 3	100%	0.0074	0.011	–	–	0.009	NA	No ESV
delta-BHC	mg/kg	3 - 3	100%	0.0022	0.0035	–	–	0.0027	NA	No ESV
Dieldrin	mg/kg	0 - 3	0%	–	–	0.00097	0.00098	–	0.0033	–
Endosulfan I	mg/kg	0 - 3	0%	–	–	0.0005	0.0005	–	NA	No ESV
Endosulfan II	mg/kg	0 - 3	0%	–	–	0.00097	0.00098	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 3	0%	–	–	0.00097	0.00098	–	NA	No ESV
Endrin	mg/kg	0 - 3	0%	–	–	0.00097	0.00098	–	0.0033	–
Endrin aldehyde	mg/kg	0 - 3	0%	–	–	0.00097	0.00098	–	NA	No ESV
Endrin Ketone	mg/kg	0 - 3	0%	–	–	0.00097	0.00098	–	NA	No ESV
gamma-BHC (Lindane)	mg/kg	3 - 3	100%	0.0019	0.0028	–	–	0.002	0.0033	no
gamma-Chlordane	mg/kg	0 - 3	0%	–	–	0.0005	0.0005	–	0.0017	–
Heptachlor Epoxide	mg/kg	0 - 3	0%	–	–	0.0005	0.0005	–	NA	No ESV
Methoxychlor	mg/kg	0 - 3	0%	–	–	0.005	0.005	–	NA	No ESV
Total Chlordane	mg/kg	0 - 3	0%	–	–	0.001	0.001	–	0.0017	–
Total DDx	mg/kg	0 - 3	0%	–	–	0.00291	0.00294	–	NA	No ESV
Total Pesticides	mg/kg	3 - 3	100%	0.07931	0.08741	–	–	0.084	NA	No ESV
Toxaphene	mg/kg	0 - 3	0%	–	–	0.05	0.05	–	NA	No ESV

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Table 2-30. Bulk Sediment Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Radionuclides										
Actinium-228	pCi/g	3 - 3	100%	1.85	2.55	–	–	2.31	NA	No ESV
Americium-241	pCi/g	0 - 3	0%	–	–	158	261	–	NA	No ESV
Bismuth-214	pCi/g	3 - 3	100%	2.46	3.25	–	–	2.81	NA	No ESV
Cesium-137	pCi/g	2 - 3	67%	0.158	0.161	0.13	0.13	0.16	NA	No ESV
Cobalt-60	pCi/g	0 - 3	0%	–	–	0.0951	0.132	–	NA	No ESV
Lead-212	pCi/g	3 - 3	100%	2.23	2.37	–	–	2.32	NA	No ESV
Lead-214	pCi/g	3 - 3	100%	2.98	3.51	–	–	3.3	NA	No ESV
Potassium-40	pCi/g	3 - 3	100%	15.8	17.5	–	–	16.9	NA	No ESV
Radium-226	pCi/g	3 - 3	100%	2.46	3.25	–	–	2.81	NA	No ESV
Radium-228	pCi/g	3 - 3	100%	1.85	2.55	–	–	2.31	NA	No ESV
Thallium-208	pCi/g	3 - 3	100%	0.592	0.829	–	–	0.7	NA	No ESV
Thorium-228	pCi/g	3 - 3	100%	2.1	2.33	–	–	2.2	NA	No ESV
Thorium-230	pCi/g	3 - 3	100%	2.49	3.23	–	–	2.9	NA	No ESV
Thorium-232	pCi/g	3 - 3	100%	2.19	2.28	–	–	2.2	NA	No ESV
Thorium-234	pCi/g	3 - 3	100%	3.45	4.47	–	–	4.0	NA	No ESV
Uranium-234	pCi/g	3 - 3	100%	2.43	2.85	–	–	2.61	NA	No ESV
Uranium-235	pCi/g	2 - 3	67%	0.149	0.22	0.0951	0.0951	0.18	NA	No ESV
Uranium-238	pCi/g	3 - 3	100%	2.42	2.73	–	–	2.6	NA	No ESV
Speciation										
Arsenate-speciation	mg/kg	3 - 3	100%	7.06	12.3	–	–	9.9	NA	No ESV
Arsenic-speciation	mg/kg	3 - 3	100%	22.3	24.6	–	–	23.2	7.24	Yes
Arsenite-speciation	mg/kg	3 - 3	100%	14.2	16.6	–	–	15.4	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	3 - 3	100%	23.7	27.6	–	–	25.3	NA	No ESV
Inorganic Mercury-speciation	mg/kg	3 - 3	100%	0.118	0.144	–	–	0.14	NA	No ESV
Inorganic Selenium-speciation	mg/kg	1 - 3	33%	0.651	0.651	0.437	0.526	0.651	NA	No ESV
Mercury-speciation	mg/kg	3 - 3	100%	0.12	0.148	–	–	0.1	0.13	Yes
Methyl mercury-speciation	mg/kg	3 - 3	100%	0.00205	0.00403	–	–	0.003	NA	No ESV
Organic Arsenic-speciation	mg/kg	0 - 3	0%	–	–	2.74	7.54	–	NA	No ESV
Organic Selenium-speciation	mg/kg	3 - 3	100%	2.77	3.33	–	–	3.0	NA	No ESV
Selenate-speciation	mg/kg	0 - 3	0%	–	–	0.346	0.465	–	NA	No ESV
Selenite-speciation	mg/kg	1 - 3	33%	0.651	0.651	0.437	0.526	0.7	NA	No ESV
Selenium-speciation	mg/kg	3 - 3	100%	2.91	3.43	–	–	3.2	NA	No ESV

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Table 2-30. Bulk Sediment Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals										
Aluminum, Carbonate Bound Fraction	mg/kg	3 - 3	100%	21.7	23.9	–	–	22.7	NA	No ESV
Aluminum, Hydroxide Fraction	mg/kg	3 - 3	100%	96	111	–	–	105	NA	No ESV
Aluminum, Ion Exchange Fraction	mg/kg	3 - 3	100%	0.11	0.2	–	–	0.1	NA	No ESV
Aluminum, Total Metals	mg/kg	3 - 3	100%	9590	13100	–	–	11530	NA	No ESV
Aluminum, Water Extractable Fraction	mg/kg	3 - 3	100%	2.5	5.4	–	–	4.3	NA	No ESV
Arsenic, Carbonate Bound Fraction	mg/kg	3 - 3	100%	0.082	0.11	–	–	0.1	NA	No ESV
Arsenic, Hydroxide Fraction	mg/kg	3 - 3	100%	0.44	1	–	–	0.8	NA	No ESV
Arsenic, Ion Exchange Fraction	mg/kg	3 - 3	100%	0.014	0.038	–	–	0.0	NA	No ESV
Arsenic, Total Metals	mg/kg	3 - 3	100%	20.3	28.3	–	–	25.1	7.24	Yes
Arsenic, Water Extractable Fraction	mg/kg	3 - 3	100%	0.028	0.045	–	–	0.04	NA	No ESV
Barium, Carbonate Bound Fraction	mg/kg	3 - 3	100%	19.7	22.8	–	–	21	NA	No ESV
Barium, Hydroxide Fraction	mg/kg	3 - 3	100%	38.7	41.3	–	–	39.9	NA	No ESV
Barium, Ion Exchange Fraction	mg/kg	3 - 3	100%	14.1	22.7	–	–	19.6	NA	No ESV
Barium, Total Metals	mg/kg	3 - 3	100%	218	226	–	–	222	NA	No ESV
Barium, Water Extractable Fraction	mg/kg	3 - 3	100%	0.53	0.61	–	–	0.6	NA	No ESV
Cadmium, Carbonate Bound Fraction	mg/kg	3 - 3	100%	0.087	0.19	–	–	0.1	NA	No ESV
Cadmium, Hydroxide Fraction	mg/kg	3 - 3	100%	0.11	0.13	–	–	0.12	NA	No ESV
Cadmium, Ion Exchange Fraction	mg/kg	3 - 3	100%	0.025	0.78	–	–	0.3	NA	No ESV
Cadmium, Total Metals	mg/kg	3 - 3	100%	0.43	0.56	–	–	0.5	1	no
Cadmium, Water Extractable Fraction	mg/kg	1 - 3	33%	0.053	0.053	0.0011	0.0011	0.053	NA	No ESV
Calcium, Carbonate Bound Fraction	mg/kg	3 - 3	100%	324	361	–	–	348	NA	No ESV
Calcium, Hydroxide Fraction	mg/kg	3 - 3	100%	635	753	–	–	677	NA	No ESV
Calcium, Ion Exchange Fraction	mg/kg	3 - 3	100%	556	762	–	–	689	NA	No ESV
Calcium, Total Metals	mg/kg	3 - 3	100%	3220	3380	–	–	3310	NA	No ESV
Calcium, Water Extractable Fraction	mg/kg	3 - 3	100%	66.2	79.2	–	–	74.2	NA	No ESV
Chromium, Carbonate Bound Fraction	mg/kg	3 - 3	100%	0.12	0.15	–	–	0.1	NA	No ESV
Chromium, Hydroxide Fraction	mg/kg	3 - 3	100%	0.51	0.59	–	–	0.6	NA	No ESV
Chromium, Total Metals	mg/kg	3 - 3	100%	17	21.2	–	–	19.5	52.3	no
Chromium, Water Extractable Fraction	mg/kg	0 - 3	0%	–	–	0.011	0.011	–	NA	No ESV
Cobalt, Carbonate Bound Fraction	mg/kg	3 - 3	100%	0.098	0.12	–	–	0.1	NA	No ESV
Cobalt, Hydroxide Fraction	mg/kg	3 - 3	100%	2.3	2.5	–	–	2.4	NA	No ESV
Cobalt, Ion Exchange Fraction	mg/kg	3 - 3	100%	0.0082	0.033	–	–	0.02	NA	No ESV

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Table 2-30. Bulk Sediment Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals(continued)										
Cobalt, Total Metals	mg/kg	3 - 3	100%	11.2	14.3	–	–	12.9	NA	No ESV
Cobalt, Water Extractable Fraction	mg/kg	3 - 3	100%	0.0046	0.011	–	–	0.01	NA	No ESV
Copper, Carbonate Bound Fraction	mg/kg	3 - 3	100%	0.19	0.21	–	–	0.2	NA	No ESV
Copper, Hydroxide Fraction	mg/kg	0 - 3	0%	–	–	0.2	0.25	–	NA	No ESV
Copper, Ion Exchange Fraction	mg/kg	3 - 3	100%	0.046	0.078	–	–	0.065	NA	No ESV
Copper, Total Metals	mg/kg	3 - 3	100%	26.2	31.6	–	–	29.5	18.7	Yes
Copper, Water Extractable Fraction	mg/kg	2 - 3	67%	0.018	0.026	0.0048	0.0048	0.022	NA	No ESV
Iron, Carbonate Bound Fraction	mg/kg	3 - 3	100%	10	14.6	–	–	13.0	NA	No ESV
Iron, Hydroxide Fraction	mg/kg	3 - 3	100%	641	809	–	–	750	NA	No ESV
Iron, Total Metals	mg/kg	3 - 3	100%	15600	19600	–	–	17767	NA	No ESV
Iron, Water Extractable Fraction	mg/kg	3 - 3	100%	2.6	6.1	–	–	4.8	NA	No ESV
Lead, Carbonate Bound Fraction	mg/kg	3 - 3	100%	0.21	0.25	–	–	0.23	NA	No ESV
Lead, Hydroxide Fraction	mg/kg	3 - 3	100%	0.51	0.91	–	–	0.8	NA	No ESV
Lead, Ion Exchange Fraction	mg/kg	3 - 3	100%	0.0093	0.015	–	–	0.0	NA	No ESV
Lead, Total Metals	mg/kg	3 - 3	100%	12.9	17.8	–	–	15.9	30.2	no
Lead, Water Extractable Fraction	mg/kg	3 - 3	100%	0.0035	0.011	–	–	0.0	NA	No ESV
Magnesium, Carbonate Bound Fraction	mg/kg	3 - 3	100%	61.4	65.6	–	–	62.8	NA	No ESV
Magnesium, Hydroxide Fraction	mg/kg	3 - 3	100%	142	164	–	–	149	NA	No ESV
Magnesium, Ion Exchange Fraction	mg/kg	3 - 3	100%	64.9	105	–	–	91.6	NA	No ESV
Magnesium, Total Metals	mg/kg	3 - 3	100%	1060	1340	–	–	1217	NA	No ESV
Magnesium, Water Extractable Fraction	mg/kg	3 - 3	100%	11.4	17	–	–	15.0	NA	No ESV
Manganese, Carbonate Bound Fraction	mg/kg	3 - 3	100%	52.2	65.3	–	–	60.7	NA	No ESV
Manganese, Hydroxide Fraction	mg/kg	3 - 3	100%	172	253	–	–	221	NA	No ESV
Manganese, Ion Exchange Fraction	mg/kg	3 - 3	100%	3.5	45.1	–	–	17.5	NA	No ESV
Manganese, Total Metals	mg/kg	3 - 3	100%	279	419	–	–	367	NA	No ESV
Manganese, Water Extractable Fraction	mg/kg	3 - 3	100%	0.25	3.4	–	–	2.2	NA	No ESV
Molybdenum, Carbonate Bound Fraction	mg/kg	1 - 3	33%	0.032	0.032	0.0053	0.0054	0.032	NA	No ESV
Molybdenum, Hydroxide Fraction	mg/kg	2 - 3	67%	0.016	0.018	0.0053	0.0053	0.017	NA	No ESV
Molybdenum, Ion Exchange Fraction	mg/kg	2 - 3	67%	0.012	0.012	0.0053	0.0053	0.012	NA	No ESV
Molybdenum, Total Metals	mg/kg	3 - 3	100%	1.4	1.6	–	–	1.5	NA	No ESV
Molybdenum, Water Extractable Fraction	mg/kg	0 - 3	0%	–	–	0.0053	0.012	–	NA	No ESV
Nickel, Carbonate Bound Fraction	mg/kg	3 - 3	100%	0.52	0.61	–	–	0.6	NA	No ESV
Nickel, Hydroxide Fraction	mg/kg	3 - 3	100%	1.8	2.3	–	–	2.0	NA	No ESV

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Table 2-30. Bulk Sediment Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals(continued)										
Nickel, Ion Exchange Fraction	mg/kg	3 - 3	100%	0.072	0.12	–	–	0.088	NA	No ESV
Nickel, Total Metals	mg/kg	3 - 3	100%	20	25.4	–	–	23	15.9	Yes
Nickel, Water Extractable Fraction	mg/kg	3 - 3	100%	0.0088	0.017	–	–	0.014	NA	No ESV
Selenium, Carbonate Bound Fraction	mg/kg	3 - 3	100%	0.036	0.041	–	–	0.04	NA	No ESV
Selenium, Hydroxide Fraction	mg/kg	3 - 3	100%	0.19	0.22	–	–	0.21	NA	No ESV
Selenium, Ion Exchange Fraction	mg/kg	0 - 3	0%	–	–	0.014	0.014	–	NA	No ESV
Selenium, Total Metals	mg/kg	3 - 3	100%	2.9	3.4	–	–	3.2	NA	No ESV
Selenium, Water Extractable Fraction	mg/kg	0 - 3	0%	–	–	0.014	0.014	–	NA	No ESV
Silver, Carbonate Bound Fraction	mg/kg	0 - 3	0%	–	–	0.0013	0.0013	–	NA	No ESV
Silver, Hydroxide Fraction	mg/kg	1 - 3	33%	0.0041	0.0041	0.0013	0.0013	0.0041	NA	No ESV
Silver, Ion Exchange Fraction	mg/kg	0 - 3	0%	–	–	0.0013	0.0013	–	NA	No ESV
Silver, Total Metals	mg/kg	3 - 3	100%	0.069	0.095	–	–	0.086	2	no
Silver, Water Extractable Fraction	mg/kg	0 - 3	0%	–	–	0.0013	0.0013	–	NA	No ESV
Sodium, Carbonate Bound Fraction	mg/kg	0 - 3	0%	–	–	0.6	0.61	–	NA	No ESV
Sodium, Hydroxide Fraction	mg/kg	3 - 3	100%	11	14.5	–	–	13.2	NA	No ESV
Sodium, Ion Exchange Fraction	mg/kg	3 - 3	100%	2	4.7	–	–	3.8	NA	No ESV
Sodium, Total Metals	mg/kg	3 - 3	100%	137	159	–	–	148	NA	No ESV
Sodium, Water Extractable Fraction	mg/kg	3 - 3	100%	7	7.6	–	–	7.3	NA	No ESV
Strontium, Carbonate Bound Fraction	mg/kg	3 - 3	100%	2.6	3.4	–	–	2.9	NA	No ESV
Strontium, Hydroxide Fraction	mg/kg	3 - 3	100%	17.5	19.1	–	–	18.2	NA	No ESV
Strontium, Ion Exchange Fraction	mg/kg	3 - 3	100%	4.1	5.5	–	–	5	NA	No ESV
Strontium, Total Metals	mg/kg	3 - 3	100%	149	159	–	–	153	NA	No ESV
Strontium, Water Extractable Fraction	mg/kg	3 - 3	100%	0.53	0.54	–	–	0.5	NA	No ESV
Thallium, Carbonate Bound Fraction	mg/kg	3 - 3	100%	0.091	0.13	–	–	0.1	NA	No ESV
Thallium, Hydroxide Fraction	mg/kg	3 - 3	100%	0.15	0.17	–	–	0.16	NA	No ESV
Thallium, Ion Exchange Fraction	mg/kg	3 - 3	100%	0.036	0.11	–	–	0.1	NA	No ESV
Thallium, Total Metals	mg/kg	3 - 3	100%	0.73	0.87	–	–	0.8	NA	No ESV
Thallium, Water Extractable Fraction	mg/kg	3 - 3	100%	0.0028	0.0034	–	–	0.0031	NA	No ESV
Vanadium, Carbonate Bound Fraction	mg/kg	0 - 3	0%	–	–	0.014	0.015	–	NA	No ESV
Vanadium, Hydroxide Fraction	mg/kg	3 - 3	100%	0.16	0.47	–	–	0.4	NA	No ESV
Vanadium, Total Metals	mg/kg	3 - 3	100%	38.7	46.6	–	–	43.2	NA	No ESV
Vanadium, Water Extractable Fraction	mg/kg	1 - 3	33%	0.035	0.035	0.014	0.015	0.035	NA	No ESV

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Table 2-30. Bulk Sediment Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Sequentially Extracted Metals(continued)										
Zinc, Carbonate Bound Fraction	mg/kg	3 - 3	100%	0.61	0.65	–	–	0.6	NA	No ESV
Zinc, Hydroxide Fraction	mg/kg	3 - 3	100%	10.7	11.4	–	–	11.1	NA	No ESV
Zinc, Ion Exchange Fraction	mg/kg	3 - 3	100%	0.091	0.18	–	–	0.1	NA	No ESV
Zinc, Total Metals	mg/kg	3 - 3	100%	41.3	58	–	–	50.9	124	no
Zinc, Water Extractable Fraction	mg/kg	2 - 3	67%	0.086	0.099	0.014	0.014	0.093	NA	No ESV
Physical Properties										
% Ash	%	3 - 3	100%	42	49	–	–	44.7	NA	No ESV
Fraction of Organic Carbon	%	3 - 3	100%	1.7	2.2	–	–	2.0	NA	No ESV
Total Organic Carbon	mg/kg	3 - 3	100%	12000	18000	–	–	15667	NA	No ESV
Physical Properties-Grain Size										
Clay	%	3 - 3	100%	12.1	19	–	–	15.9	NA	No ESV
Gravel	%	0 - 3	0%	–	–	0	0	–	NA	No ESV
Sand	%	3 - 3	100%	9.3	24.1	–	–	14.4	NA	No ESV
Sand, Coarse	%	1 - 3	33%	0.3	0.3	0	0	0.3	NA	No ESV
Sand, Fine	%	3 - 3	100%	9	23	–	–	13.8	NA	No ESV
Sand, Medium	%	3 - 3	100%	0.3	0.8	–	–	0.5	NA	No ESV
Silt	%	3 - 3	100%	63.8	74.2	–	–	69.9	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-31. Bulk Sediment Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics										
Aluminum	mg/kg	3 - 3	100%	11700	17300	–	–	14400	NA	No ESV
Antimony	mg/kg	1 - 3	33%	1.9	1.9	1.25	1.48	1.9	12	no
Arsenic	mg/kg	3 - 3	100%	48.9	77.7	–	–	63.3	7.24	Yes
Barium	mg/kg	3 - 3	100%	212	401	–	–	289	NA	No ESV
Beryllium	mg/kg	3 - 3	100%	2.17	3.05	–	–	2.49	NA	No ESV
Boron	mg/kg	3 - 3	100%	19	49	–	–	32.5	NA	No ESV
Cadmium	mg/kg	0 - 3	0%	–	–	0.125	0.148	–	1	–
Chromium	mg/kg	3 - 3	100%	19.9	43.9	–	–	33.8	52.3	no
Cobalt	mg/kg	3 - 3	100%	10.4	14.3	–	–	12.7	NA	No ESV
Copper	mg/kg	3 - 3	100%	29.1	45.8	–	–	37.2	18.7	Yes
Hex. Chromium	mg/kg	1 - 3	33%	0.34	0.34	0.31	0.32	0.34	NA	No ESV
Lead	mg/kg	3 - 3	100%	13.1	15.7	–	–	14.5	30.2	no
Manganese	mg/kg	3 - 3	100%	172	443	–	–	292	NA	No ESV
Mercury	mg/kg	3 - 3	100%	0.06	0.095	–	–	0.08	0.13	no
Molybdenum	mg/kg	0 - 3	0%	–	–	4.98	5.93	–	NA	No ESV
Nickel	mg/kg	3 - 3	100%	18.3	31.2	–	–	26.6	15.9	Yes
Selenium	mg/kg	3 - 3	100%	3.86	4.56	–	–	4.13	NA	No ESV
Silver	mg/kg	0 - 3	0%	–	–	0.623	0.741	–	2	–
Strontium	mg/kg	3 - 3	100%	149	277	–	–	201	NA	No ESV
Thallium	mg/kg	1 - 3	33%	1.69	1.69	1.25	1.3	1.69	NA	No ESV
Vanadium	mg/kg	3 - 3	100%	40.2	79.3	–	–	59.2	NA	No ESV
Zinc	mg/kg	3 - 3	100%	41.5	48.9	–	–	45.3	124	no
Inorganic-cations/anions										
Calcium	mg/kg	3 - 3	100%	2500	6140	–	–	4213	NA	No ESV
Iron	mg/kg	3 - 3	100%	15300	18300	–	–	17067	NA	No ESV
Magnesium	mg/kg	3 - 3	100%	919	1600	–	–	1240	NA	No ESV
Potassium	mg/kg	3 - 3	100%	1640	2040	–	–	1827	NA	No ESV
Sodium	mg/kg	3 - 3	100%	150	412	–	–	248	NA	No ESV
Benzo(a)anthracene	mg/kg	2 - 2	100%	0.0057	0.14	–	–	0.07	0.33	no
Benzo(a)pyrene	mg/kg	2 - 2	100%	0.0062	0.094	–	–	0.05	0.33	no
Benzo(b)fluoranthene	mg/kg	2 - 2	100%	0.011	0.055	–	–	0.033	NA	No ESV
Benzo(e)pyrene	mg/kg	3 - 3	100%	0.00084	0.062	–	–	0.02	NA	No ESV
Benzo(g,h,i)perylene	mg/kg	2 - 2	100%	0.0064	0.027	–	–	0.02	NA	No ESV

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Table 2-31. Bulk Sediment Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)										
Benzo(k)fluoranthene	mg/kg	2 - 2	100%	0.0058	0.065	–	–	0.04	NA	No ESV
C1-Chrysenes	mg/kg	2 - 2	100%	0.0049	0.068	–	–	0.04	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	3 - 3	100%	0.0028	0.26	–	–	0.1	NA	No ESV
C2-Chrysenes	mg/kg	2 - 2	100%	0.0048	0.016	–	–	0.01	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	3 - 3	100%	0.0029	0.086	–	–	0.03	NA	No ESV
C3-Chrysenes	mg/kg	1 - 2	50%	0.006	0.006	0.00067	0.00067	0.006	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	3 - 3	100%	0.0018	0.027	–	–	0.01	NA	No ESV
C4-Chrysenes	mg/kg	1 - 2	50%	0.0018	0.0018	0.00067	0.00067	0.002	NA	No ESV
Chrysene	mg/kg	3 - 3	100%	0.00088	0.12	–	–	0.04	0.33	no
Dibenz(a,h)anthracene	mg/kg	2 - 2	100%	0.0015	0.0081	–	–	0.005	0.33	no
Fluoranthene	mg/kg	3 - 3	100%	0.0026	0.27	–	–	0.1	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	2 - 2	100%	0.0043	0.022	–	–	0.013	NA	No ESV
Perylene	mg/kg	2 - 2	100%	0.015	0.032	–	–	0.024	NA	No ESV
Pyrene	mg/kg	3 - 3	100%	0.0026	0.31	–	–	0.1	0.33	no
Total HPAH	mg/kg	3 - 3	100%	0.01442	1.6699	–	–	0.6	0.655	Yes
Acenaphthene	mg/kg	2 - 2	100%	0.00088	0.0022	–	–	0.002	0.33	no
Acenaphthylene	mg/kg	1 - 2	50%	0.0055	0.0055	0.00067	0.00067	0.006	0.33	no
Anthracene	mg/kg	2 - 2	100%	0.0012	0.0064	–	–	0.004	0.33	no
C1-Fluorenes	mg/kg	3 - 3	100%	0.0014	0.0069	–	–	0.004	NA	No ESV
C1-Naphthalenes	mg/kg	3 - 3	100%	0.0098	0.023	–	–	0.02	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.0069	0.15	–	–	0.06	NA	No ESV
C2-Fluorenes	mg/kg	3 - 3	100%	0.0027	0.02	–	–	0.01	NA	No ESV
C2-Naphthalenes	mg/kg	3 - 3	100%	0.026	0.056	–	–	0.043	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.0051	0.1	–	–	0.04	NA	No ESV
C3-Fluorenes	mg/kg	3 - 3	100%	0.003	0.028	–	–	0.01	NA	No ESV
C3-Naphthalenes	mg/kg	3 - 3	100%	0.024	0.048	–	–	0.04	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.0032	0.042	–	–	0.02	NA	No ESV
C4-Naphthalenes	mg/kg	3 - 3	100%	0.015	0.04	–	–	0.03	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	3 - 3	100%	0.0027	0.014	–	–	0.008	NA	No ESV
Fluorene	mg/kg	3 - 3	100%	0.00085	0.0042	–	–	0.002	0.33	no
Naphthalene	mg/kg	3 - 3	100%	0.0047	0.0091	–	–	0.01	0.33	no
Phenanthrene	mg/kg	3 - 3	100%	0.0037	0.046	–	–	0.02	0.33	no
Total LPAH	mg/kg	3 - 3	100%	0.10905	0.6013	–	–	0.31	0.33	Yes

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Table 2-31. Bulk Sediment Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)										
Total Alkylated PAHs	mg/kg	3 - 3	100%	0.1073	0.9927	–	–	0.44	NA	No ESV
Total Unsubstituted PAHs	mg/kg	3 - 3	100%	0.01617	1.2785	–	–	0.48	NA	No ESV
PCB-1016	mg/kg	0 - 3	0%	–	–	0.0017	0.0019	–	0.033	–
PCB-1221	mg/kg	0 - 3	0%	–	–	0.0017	0.0019	–	0.067	–
PCB-1232	mg/kg	0 - 3	0%	–	–	0.0017	0.0019	–	0.033	–
PCB-1242	mg/kg	0 - 3	0%	–	–	0.0017	0.0019	–	0.033	–
PCB-1248	mg/kg	0 - 3	0%	–	–	0.0017	0.0019	–	0.033	–
PCB-1254	mg/kg	0 - 3	0%	–	–	0.0017	0.0019	–	0.033	–
PCB-1260	mg/kg	1 - 3	33%	0.0019	0.0019	0.0018	0.0019	0.002	0.033	no
Total PCBs	mg/kg	1 - 3	33%	0.0121	0.0121	0.0126	0.0133	0.01	0.033	no
Pesticides										
4,4'-DDD	mg/kg	0 - 3	0%	–	–	0.00066	0.00074	–	0.0033	–
4,4'-DDE	mg/kg	0 - 3	0%	–	–	0.00066	0.00074	–	0.0033	–
4,4'-DDT	mg/kg	0 - 3	0%	–	–	0.00066	0.00074	–	0.0033	–
Aldrin	mg/kg	0 - 3	0%	–	–	0.00034	0.00038	–	NA	No ESV
alpha-BHC	mg/kg	1 - 3	33%	0.0014	0.0014	0.00037	0.00038	0.001	NA	No ESV
alpha-Chlordane	mg/kg	0 - 3	0%	–	–	0.00034	0.00038	–	0.0017	–
beta-BHC	mg/kg	2 - 3	67%	0.00054	0.005	0.00038	0.00038	0.003	NA	No ESV
delta-BHC	mg/kg	1 - 3	33%	0.002	0.002	0.00037	0.00038	0.002	NA	No ESV
Dieldrin	mg/kg	0 - 3	0%	–	–	0.00066	0.00074	–	0.0033	–
Endosulfan I	mg/kg	0 - 3	0%	–	–	0.00034	0.00038	–	NA	No ESV
Endosulfan II	mg/kg	0 - 3	0%	–	–	0.00066	0.00074	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 3	0%	–	–	0.00066	0.00074	–	NA	No ESV
Endrin	mg/kg	0 - 3	0%	–	–	0.00066	0.00074	–	0.0033	–
Endrin aldehyde	mg/kg	0 - 3	0%	–	–	0.00066	0.00074	–	NA	No ESV
Endrin Ketone	mg/kg	0 - 3	0%	–	–	0.00066	0.00074	–	NA	No ESV
gamma-BHC (Lindane)	mg/kg	1 - 3	33%	0.002	0.002	0.00037	0.00038	0.002	0.0033	no
gamma-Chlordane	mg/kg	0 - 3	0%	–	–	0.00034	0.00038	–	0.0017	–
Heptachlor	mg/kg	1 - 3	33%	0.0016	0.0016	0.00037	0.00038	0.002	NA	No ESV
Heptachlor Epoxide	mg/kg	0 - 3	0%	–	–	0.00034	0.00038	–	NA	No ESV
Methoxychlor	mg/kg	0 - 3	0%	–	–	0.0034	0.0038	–	NA	No ESV
Total Chlordane	mg/kg	0 - 3	0%	–	–	0.00068	0.00076	–	0.0017	–

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Table 2-31. Bulk Sediment Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Pesticides (continued)										
Total DDx	mg/kg	0 - 3	0%	–	–	0.00198	0.00222	–	NA	No ESV
Total Pesticides	mg/kg	2 - 3	67%	0.05105	0.05704	0.05226	0.05226	0.05	NA	No ESV
Toxaphene	mg/kg	0 - 3	0%	–	–	0.034	0.038	–	NA	No ESV
Radionuclides										
Actinium-228	pCi/g	3 - 3	100%	2.36	3.34	–	–	2.7	NA	No ESV
Americium-241	pCi/g	0 - 3	0%	–	–	152	597	–	NA	No ESV
Bismuth-214	pCi/g	3 - 3	100%	2.83	5.1	–	–	3.6	NA	No ESV
Cesium-137	pCi/g	0 - 3	0%	–	–	0.122	0.134	–	NA	No ESV
Cobalt-60	pCi/g	0 - 3	0%	–	–	0.108	0.115	–	NA	No ESV
Lead-212	pCi/g	3 - 3	100%	2.1	3.43	–	–	2.6	NA	No ESV
Lead-214	pCi/g	3 - 3	100%	3.15	5.57	–	–	4.17	NA	No ESV
Potassium-40	pCi/g	3 - 3	100%	13.4	20.2	–	–	16.4	NA	No ESV
Radium-226	pCi/g	3 - 3	100%	2.83	5.1	–	–	3.6	NA	No ESV
Radium-228	pCi/g	3 - 3	100%	2.36	3.34	–	–	2.7	NA	No ESV
Thallium-208	pCi/g	3 - 3	100%	0.514	0.961	–	–	0.68	NA	No ESV
Thorium-228	pCi/g	3 - 3	100%	1.51	3.33	–	–	2.3	NA	No ESV
Thorium-230	pCi/g	3 - 3	100%	2.45	5.34	–	–	3.5	NA	No ESV
Thorium-232	pCi/g	3 - 3	100%	1.84	3.56	–	–	2.4	NA	No ESV
Thorium-234	pCi/g	2 - 3	67%	3.98	6.76	5.69	5.69	5.37	NA	No ESV
Uranium-234	pCi/g	3 - 3	100%	2.99	4.39	–	–	3.5	NA	No ESV
Uranium-235	pCi/g	3 - 3	100%	0.138	0.374	–	–	0.24	NA	No ESV
Uranium-238	pCi/g	3 - 3	100%	2.95	4.13	–	–	3.41	NA	No ESV
Speciation										
Arsenate-speciation	mg/kg	2 - 3	67%	36.2	71	26.1	26.1	53.6	NA	No ESV
Arsenic-speciation	mg/kg	3 - 3	100%	35.8	85.1	–	–	57.6	7.24	Yes
Arsenite-speciation	mg/kg	3 - 3	100%	23.1	35.6	–	–	31.4	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	3 - 3	100%	42.1	94.1	–	–	69.3	NA	No ESV
Inorganic Mercury-speciation	mg/kg	3 - 3	100%	0.107	0.125	–	–	0.12	NA	No ESV
Inorganic Selenium-speciation	mg/kg	3 - 3	100%	2.1	2.14	–	–	2.1	NA	No ESV
Mercury-speciation	mg/kg	3 - 3	100%	0.108	0.125	–	–	0.12	0.13	no
Methyl mercury-speciation	mg/kg	3 - 3	100%	0.00015	0.00116	–	–	0.001	NA	No ESV
Organic Arsenic-speciation	mg/kg	0 - 3	0%	–	–	20.2	26.1	–	NA	No ESV
Organic Selenium-speciation	mg/kg	2 - 3	67%	1.75	3.48	0.93	0.93	2.6	NA	No ESV

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Table 2-31. Bulk Sediment Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Speciation (continued)										
Selenate-speciation	mg/kg	0 - 3	0%	–	–	0.279	0.393	–	NA	No ESV
Selenite-speciation	mg/kg	3 - 3	100%	2.1	2.14	–	–	2.1	NA	No ESV
Selenium-speciation	mg/kg	3 - 3	100%	2.76	5.62	–	–	4.1	NA	No ESV
Sequentially Extracted Metals										
Aluminum, Carbonate Bound Fraction	mg/kg	3 - 3	100%	26.5	36.2	–	–	30	NA	No ESV
Aluminum, Hydroxide Fraction	mg/kg	3 - 3	100%	138	306	–	–	250	NA	No ESV
Aluminum, Ion Exchange Fraction	mg/kg	2 - 3	67%	0.049	0.077	0.03	0.03	0.06	NA	No ESV
Aluminum, Total Metals	mg/kg	3 - 3	100%	12600	13100	–	–	12900	NA	No ESV
Aluminum, Water Extractable Fraction	mg/kg	3 - 3	100%	1.8	6.5	–	–	3.7	NA	No ESV
Arsenic, Carbonate Bound Fraction	mg/kg	3 - 3	100%	0.29	1.7	–	–	1.1	NA	No ESV
Arsenic, Hydroxide Fraction	mg/kg	3 - 3	100%	1.6	2.1	–	–	1.8	NA	No ESV
Arsenic, Ion Exchange Fraction	mg/kg	3 - 3	100%	0.11	2	–	–	1.0	NA	No ESV
Arsenic, Total Metals	mg/kg	3 - 3	100%	45.4	56.1	–	–	52.1	7.24	Yes
Arsenic, Water Extractable Fraction	mg/kg	3 - 3	100%	0.11	0.41	–	–	0.26	NA	No ESV
Barium, Carbonate Bound Fraction	mg/kg	3 - 3	100%	20.2	31.9	–	–	24.7	NA	No ESV
Barium, Hydroxide Fraction	mg/kg	3 - 3	100%	34.9	49.3	–	–	41.5	NA	No ESV
Barium, Ion Exchange Fraction	mg/kg	3 - 3	100%	19.9	22.2	–	–	21.2	NA	No ESV
Barium, Total Metals	mg/kg	3 - 3	100%	220	313	–	–	263	NA	No ESV
Barium, Water Extractable Fraction	mg/kg	3 - 3	100%	0.4	0.59	–	–	0.47	NA	No ESV
Cadmium, Carbonate Bound Fraction	mg/kg	3 - 3	100%	0.059	0.84	–	–	0.32	NA	No ESV
Cadmium, Hydroxide Fraction	mg/kg	3 - 3	100%	0.091	0.095	–	–	0.09	NA	No ESV
Cadmium, Ion Exchange Fraction	mg/kg	3 - 3	100%	0.021	0.033	–	–	0.03	NA	No ESV
Cadmium, Total Metals	mg/kg	3 - 3	100%	0.55	0.65	–	–	0.59	1	no
Cadmium, Water Extractable Fraction	mg/kg	0 - 3	0%	–	–	0.001	0.0047	–	NA	No ESV
Calcium, Carbonate Bound Fraction	mg/kg	3 - 3	100%	230	363	–	–	279	NA	No ESV
Calcium, Hydroxide Fraction	mg/kg	3 - 3	100%	519	975	–	–	779	NA	No ESV
Calcium, Ion Exchange Fraction	mg/kg	3 - 3	100%	568	727	–	–	669	NA	No ESV
Calcium, Total Metals	mg/kg	3 - 3	100%	2800	4150	–	–	3497	NA	No ESV
Calcium, Water Extractable Fraction	mg/kg	3 - 3	100%	65.6	82.3	–	–	71.9	NA	No ESV
Chromium, Carbonate Bound Fraction	mg/kg	3 - 3	100%	0.27	0.36	–	–	0.31	NA	No ESV
Chromium, Hydroxide Fraction	mg/kg	3 - 3	100%	1.2	3.9	–	–	2.7	NA	No ESV
Chromium, Total Metals	mg/kg	3 - 3	100%	20.5	21.9	–	–	21.3	52.3	no
Chromium, Water Extractable Fraction	mg/kg	0 - 3	0%	–	–	0.01	0.011	–	NA	No ESV

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Table 2-31. Bulk Sediment Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals (continued)										
Cobalt, Carbonate Bound Fraction	mg/kg	3 - 3	100%	0.099	0.18	–	–	0.1	NA	No ESV
Cobalt, Hydroxide Fraction	mg/kg	3 - 3	100%	1.1	2.4	–	–	1.8	NA	No ESV
Cobalt, Ion Exchange Fraction	mg/kg	3 - 3	100%	0.0074	0.014	–	–	0.01	NA	No ESV
Cobalt, Total Metals	mg/kg	3 - 3	100%	9.9	12.1	–	–	10.9	NA	No ESV
Cobalt, Water Extractable Fraction	mg/kg	3 - 3	100%	0.0018	0.012	–	–	0.006	NA	No ESV
Copper, Carbonate Bound Fraction	mg/kg	3 - 3	100%	0.29	1.1	–	–	0.7	NA	No ESV
Copper, Hydroxide Fraction	mg/kg	0 - 3	0%	–	–	0.16	0.68	–	NA	No ESV
Copper, Ion Exchange Fraction	mg/kg	3 - 3	100%	0.11	0.33	–	–	0.19	NA	No ESV
Copper, Total Metals	mg/kg	3 - 3	100%	35	40.3	–	–	37.5	18.7	Yes
Copper, Water Extractable Fraction	mg/kg	2 - 3	67%	0.021	0.029	0.0048	0.0048	0.025	NA	No ESV
Iron, Carbonate Bound Fraction	mg/kg	3 - 3	100%	7.6	16.9	–	–	11.6	NA	No ESV
Iron, Hydroxide Fraction	mg/kg	3 - 3	100%	846	1380	–	–	1040	NA	No ESV
Iron, Total Metals	mg/kg	3 - 3	100%	10900	18300	–	–	14400	NA	No ESV
Iron, Water Extractable Fraction	mg/kg	3 - 3	100%	1	7.3	–	–	3.4	NA	No ESV
Lead, Carbonate Bound Fraction	mg/kg	3 - 3	100%	0.051	0.17	–	–	0.117	NA	No ESV
Lead, Hydroxide Fraction	mg/kg	3 - 3	100%	0.49	1.2	–	–	0.8	NA	No ESV
Lead, Ion Exchange Fraction	mg/kg	3 - 3	100%	0.0022	0.0097	–	–	0.006	NA	No ESV
Lead, Total Metals	mg/kg	3 - 3	100%	18.9	19.8	–	–	19.4	30.2	no
Lead, Water Extractable Fraction	mg/kg	3 - 3	100%	0.0018	0.012	–	–	0.006	NA	No ESV
Magnesium, Carbonate Bound Fraction	mg/kg	3 - 3	100%	26.5	60.6	–	–	39.8	NA	No ESV
Magnesium, Hydroxide Fraction	mg/kg	3 - 3	100%	114	192	–	–	161	NA	No ESV
Magnesium, Ion Exchange Fraction	mg/kg	3 - 3	100%	48	64.2	–	–	56.9	NA	No ESV
Magnesium, Total Metals	mg/kg	3 - 3	100%	1140	1280	–	–	1200	NA	No ESV
Magnesium, Water Extractable Fraction	mg/kg	3 - 3	100%	10.9	16.3	–	–	13.3	NA	No ESV
Manganese, Carbonate Bound Fraction	mg/kg	3 - 3	100%	29.5	119	–	–	60.9	NA	No ESV
Manganese, Hydroxide Fraction	mg/kg	3 - 3	100%	60.6	229	–	–	126	NA	No ESV
Manganese, Ion Exchange Fraction	mg/kg	3 - 3	100%	5.3	70.3	–	–	28.5	NA	No ESV
Manganese, Total Metals	mg/kg	3 - 3	100%	125	472	–	–	254	NA	No ESV
Manganese, Water Extractable Fraction	mg/kg	3 - 3	100%	0.24	10.1	–	–	3.6	NA	No ESV
Molybdenum, Carbonate Bound Fraction	mg/kg	3 - 3	100%	0.025	0.063	–	–	0.04	NA	No ESV
Molybdenum, Hydroxide Fraction	mg/kg	3 - 3	100%	0.03	0.33	–	–	0.19	NA	No ESV
Molybdenum, Ion Exchange Fraction	mg/kg	3 - 3	100%	0.068	0.14	–	–	0.11	NA	No ESV
Molybdenum, Total Metals	mg/kg	3 - 3	100%	2.4	3.6	–	–	3.1	NA	No ESV
Molybdenum, Water Extractable Fraction	mg/kg	3 - 3	100%	0.048	0.44	–	–	0.26	NA	No ESV

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Table 2-31. Bulk Sediment Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals (continued)								
Nickel, Carbonate Bound Fraction	mg/kg	3 - 3	100%	0.32 - 0.55	– - –	0.43	NA	No ESV
Nickel, Hydroxide Fraction	mg/kg	3 - 3	100%	1.4 - 2.3	– - –	2.0	NA	No ESV
Nickel, Ion Exchange Fraction	mg/kg	3 - 3	100%	0.049 - 0.08	– - –	0.06	NA	No ESV
Nickel, Total Metals	mg/kg	3 - 3	100%	21.1 - 23.3	– - –	22.3	15.9	Yes
Nickel, Water Extractable Fraction	mg/kg	3 - 3	100%	0.0038 - 0.015	– - –	0.0	NA	No ESV
Selenium, Carbonate Bound Fraction	mg/kg	3 - 3	100%	0.058 - 0.2	– - –	0.13	NA	No ESV
Selenium, Hydroxide Fraction	mg/kg	3 - 3	100%	0.26 - 0.79	– - –	0.46	NA	No ESV
Selenium, Ion Exchange Fraction	mg/kg	3 - 3	100%	0.046 - 0.36	– - –	0.2	NA	No ESV
Selenium, Total Metals	mg/kg	3 - 3	100%	3.1 - 4.2	– - –	3.7	NA	No ESV
Selenium, Water Extractable Fraction	mg/kg	2 - 3	67%	0.05 - 0.072	0.013 - 0.013	0.061	NA	No ESV
Silver, Carbonate Bound Fraction	mg/kg	0 - 3	0%	– - –	0.0012 - 0.0013	–	NA	No ESV
Silver, Hydroxide Fraction	mg/kg	3 - 3	100%	0.0043 - 0.007	– - –	0.01	NA	No ESV
Silver, Ion Exchange Fraction	mg/kg	0 - 3	0%	– - –	0.0012 - 0.0013	–	NA	No ESV
Silver, Total Metals	mg/kg	3 - 3	100%	0.095 - 0.11	– - –	0.1	2	no
Silver, Water Extractable Fraction	mg/kg	0 - 3	0%	– - –	0.0012 - 0.0013	–	NA	No ESV
Sodium, Carbonate Bound Fraction	mg/kg	0 - 3	0%	– - –	0.56 - 0.61	–	NA	No ESV
Sodium, Hydroxide Fraction	mg/kg	3 - 3	100%	13.2 - 17.8	– - –	15.1	NA	No ESV
Sodium, Ion Exchange Fraction	mg/kg	3 - 3	100%	1.7 - 2	– - –	1.8	NA	No ESV
Sodium, Total Metals	mg/kg	3 - 3	100%	189 - 264	– - –	224	NA	No ESV
Sodium, Water Extractable Fraction	mg/kg	3 - 3	100%	1.9 - 3.6	– - –	2.5	NA	No ESV
Strontium, Carbonate Bound Fraction	mg/kg	3 - 3	100%	3.6 - 7.3	– - –	5.2	NA	No ESV
Strontium, Hydroxide Fraction	mg/kg	3 - 3	100%	17.6 - 23.3	– - –	21.2	NA	No ESV
Strontium, Ion Exchange Fraction	mg/kg	3 - 3	100%	7.2 - 12.9	– - –	10.9	NA	No ESV
Strontium, Total Metals	mg/kg	3 - 3	100%	172 - 265	– - –	221	NA	No ESV
Strontium, Water Extractable Fraction	mg/kg	3 - 3	100%	0.81 - 1.4	– - –	1.1	NA	No ESV
Thallium, Carbonate Bound Fraction	mg/kg	3 - 3	100%	0.12 - 0.18	– - –	0.1	NA	No ESV
Thallium, Hydroxide Fraction	mg/kg	3 - 3	100%	0.19 - 0.24	– - –	0.21	NA	No ESV
Thallium, Ion Exchange Fraction	mg/kg	3 - 3	100%	0.17 - 0.3	– - –	0.2	NA	No ESV
Thallium, Total Metals	mg/kg	3 - 3	100%	1 - 1.3	– - –	1.2	NA	No ESV
Thallium, Water Extractable Fraction	mg/kg	3 - 3	100%	0.0032 - 0.0054	– - –	0.005	NA	No ESV
Vanadium, Carbonate Bound Fraction	mg/kg	2 - 3	67%	0.074 - 0.18	0.014 - 0.014	0.13	NA	No ESV
Vanadium, Hydroxide Fraction	mg/kg	3 - 3	100%	0.5 - 11.8	– - –	6.8	NA	No ESV
Vanadium, Ion Exchange Fraction	mg/kg	2 - 2	100%	0.056 - 0.23	– - –	0.14	NA	No ESV

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Table 2-31. Bulk Sediment Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals (continued)										
Vanadium, Total Metals	mg/kg	3 - 3	100%	51.2	60.8	–	–	56.3	NA	No ESV
Vanadium, Water Extractable Fraction	mg/kg	3 - 3	100%	0.054	0.3	–	–	0.17	NA	No ESV
Zinc, Carbonate Bound Fraction	mg/kg	3 - 3	100%	0.49	0.79	–	–	0.66	NA	No ESV
Zinc, Hydroxide Fraction	mg/kg	3 - 3	100%	5.3	8.9	–	–	7.1	NA	No ESV
Zinc, Ion Exchange Fraction	mg/kg	3 - 3	100%	0.076	0.091	–	–	0.084	NA	No ESV
Zinc, Total Metals	mg/kg	3 - 3	100%	33.9	45.1	–	–	39.6	124	no
Zinc, Water Extractable Fraction	mg/kg	3 - 3	100%	0.022	0.056	–	–	0.03	NA	No ESV
Physical Properties										
% Ash	%	3 - 3	100%	53	88	–	–	68.3	NA	No ESV
Fraction of Organic Carbon	%	3 - 3	100%	0.5	1.3	–	–	0.8	NA	No ESV
Total Organic Carbon	mg/kg	3 - 3	100%	3600	8700	–	–	5333	NA	No ESV
Physical Properties-Grain Size										
Clay	%	3 - 3	100%	17.2	21.8	–	–	20.3	NA	No ESV
Gravel	%	2 - 3	67%	1.1	1.5	–	–	1.3	NA	No ESV
Sand	%	3 - 3	100%	2.4	39.7	–	–	26.3	NA	No ESV
Sand, Coarse	%	2 - 3	67%	1.4	2	–	–	1.7	NA	No ESV
Sand, Fine	%	3 - 3	100%	2.3	34	–	–	22.8	NA	No ESV
Sand, Medium	%	3 - 3	100%	0.1	3.7	–	–	2.4	NA	No ESV
Silt	%	3 - 3	100%	40.2	75.8	–	–	52.5	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-32. Bulk Sediment Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics										
Aluminum	mg/kg	2 - 2	100%	14100	16600	–	–	15350	NA	No ESV
Antimony	mg/kg	0 - 2	0%	–	–	1.8	2.57	–	12	–
Arsenic	mg/kg	2 - 2	100%	9.25	19	–	–	14.1	7.24	Yes
Barium	mg/kg	2 - 2	100%	127	136	–	–	132	NA	No ESV
Beryllium	mg/kg	2 - 2	100%	1.28	1.3	–	–	1.3	NA	No ESV
Boron	mg/kg	1 - 2	50%	12.4	12.4	10.3	10.3	12.4	NA	No ESV
Cadmium	mg/kg	0 - 2	0%	–	–	0.18	0.257	–	1	–
Chromium	mg/kg	2 - 2	100%	18.5	19.2	–	–	18.9	52.3	no
Cobalt	mg/kg	2 - 2	100%	14.7	17.4	–	–	16.1	NA	No ESV
Copper	mg/kg	2 - 2	100%	19.1	19.4	–	–	19.3	18.7	Yes
Hex. Chromium	mg/kg	0 - 2	0%	–	–	0.36	0.48	–	NA	No ESV
Lead	mg/kg	2 - 2	100%	12.6	14.4	–	–	13.5	30.2	no
Manganese	mg/kg	2 - 2	100%	523	760	–	–	642	NA	No ESV
Mercury	mg/kg	1 - 2	50%	0.088	0.088	0.061	0.061	0.09	0.13	no
Molybdenum	mg/kg	0 - 2	0%	–	–	7.22	10.3	–	NA	No ESV
Nickel	mg/kg	2 - 2	100%	21.7	26	–	–	23.9	15.9	Yes
Selenium	mg/kg	1 - 2	50%	1.95	1.95	2.57	2.57	2	NA	No ESV
Silver	mg/kg	0 - 2	0%	–	–	0.902	1.28	–	2	–
Strontium	mg/kg	2 - 2	100%	23	45.8	–	–	34.4	NA	No ESV
Thallium	mg/kg	0 - 2	0%	–	–	1.8	2.57	–	NA	No ESV
Vanadium	mg/kg	2 - 2	100%	30.4	30.7	–	–	30.6	NA	No ESV
Zinc	mg/kg	2 - 2	100%	74.7	95.5	–	–	85.1	124	no
Inorganic-cations/anions										
Calcium	mg/kg	2 - 2	100%	1890	2020	–	–	1955	NA	No ESV
Iron	mg/kg	2 - 2	100%	20100	23700	–	–	21900	NA	No ESV
Magnesium	mg/kg	2 - 2	100%	1130	1550	–	–	1340	NA	No ESV
Potassium	mg/kg	2 - 2	100%	1280	1480	–	–	1380	NA	No ESV
Sodium	mg/kg	0 - 2	0%	–	–	180	257	–	NA	No ESV
Benzo(a)anthracene	mg/kg	2 - 2	100%	0.012	0.026	–	–	0.019	0.33	no
Benzo(a)pyrene	mg/kg	2 - 2	100%	0.014	0.031	–	–	0.023	0.33	no
Benzo(b)fluoranthene	mg/kg	2 - 2	100%	0.024	0.049	–	–	0.037	NA	No ESV
Benzo(e)pyrene	mg/kg	2 - 2	100%	0.02	0.039	–	–	0.030	NA	No ESV
Benzo(g,h,i)perylene	mg/kg	2 - 2	100%	0.014	0.029	–	–	0.022	NA	No ESV

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Table 2-32. Bulk Sediment Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)										
Benzo(k)fluoranthene	mg/kg	2 - 2	100%	0.014	0.033	–	–	0.024	NA	No ESV
C1-Chrysenes	mg/kg	2 - 2	100%	0.011	0.016	–	–	0.014	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	2 - 2	100%	0.027	0.038	–	–	0.033	NA	No ESV
C2-Chrysenes	mg/kg	2 - 2	100%	0.012	0.013	–	–	0.013	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	2 - 2	100%	0.027	0.046	–	–	0.037	NA	No ESV
C3-Chrysenes	mg/kg	1 - 2	50%	0.0081	0.0081	0.0013	0.0013	0.008	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	2 - 2	100%	0.014	0.017	–	–	0.016	NA	No ESV
C4-Chrysenes	mg/kg	1 - 2	50%	0.0036	0.0036	0.0013	0.0013	0.004	NA	No ESV
Chrysene	mg/kg	2 - 2	100%	0.021	0.037	–	–	0.029	0.33	no
Dibenz(a,h)anthracene	mg/kg	2 - 2	100%	0.0032	0.0069	–	–	0.005	0.33	no
Fluoranthene	mg/kg	2 - 2	100%	0.038	0.056	–	–	0.047	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	2 - 2	100%	0.01	0.023	–	–	0.017	NA	No ESV
Perylene	mg/kg	2 - 2	100%	0.26	0.54	–	–	0.4	NA	No ESV
Pyrene	mg/kg	2 - 2	100%	0.029	0.051	–	–	0.04	0.33	no
Total HPAH	mg/kg	2 - 2	100%	0.5629	1.0525	–	–	0.81	0.655	Yes
Acenaphthene	mg/kg	1 - 2	50%	0.0042	0.0042	0.0013	0.0013	0.004	0.33	no
Acenaphthylene	mg/kg	1 - 2	50%	0.0021	0.0021	0.00091	0.00091	0.002	0.33	no
Anthracene	mg/kg	2 - 2	100%	0.0034	0.0052	–	–	0.004	0.33	no
C1-Fluorenes	mg/kg	2 - 2	100%	0.0052	0.0065	–	–	0.006	NA	No ESV
C1-Naphthalenes	mg/kg	2 - 2	100%	0.029	0.06	–	–	0.045	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	2 - 2	100%	0.041	0.051	–	–	0.046	NA	No ESV
C2-Fluorenes	mg/kg	2 - 2	100%	0.0074	0.009	–	–	0.008	NA	No ESV
C2-Naphthalenes	mg/kg	2 - 2	100%	0.068	0.13	–	–	0.099	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	2 - 2	100%	0.023	0.029	–	–	0.026	NA	No ESV
C3-Fluorenes	mg/kg	2 - 2	100%	0.0096	0.01	–	–	0.0098	NA	No ESV
C3-Naphthalenes	mg/kg	2 - 2	100%	0.052	0.11	–	–	0.081	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	2 - 2	100%	0.011	0.013	–	–	0.012	NA	No ESV
C4-Naphthalenes	mg/kg	2 - 2	100%	0.03	0.052	–	–	0.041	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	2 - 2	100%	0.012	0.015	–	–	0.014	NA	No ESV
Fluorene	mg/kg	2 - 2	100%	0.0043	0.0088	–	–	0.007	0.33	no
Naphthalene	mg/kg	2 - 2	100%	0.01	0.026	–	–	0.018	0.33	no
Phenanthrene	mg/kg	2 - 2	100%	0.026	0.045	–	–	0.04	0.33	no
Total LPAH	mg/kg	2 - 2	100%	0.3357	0.57521	–	–	0.46	0.33	Yes

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Table 2-32. Bulk Sediment Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)										
Total Alkylated PAHs	mg/kg	2 - 2	100%	0.4202	0.5888	–	–	0.50	NA	No ESV
Total Unsubstituted PAHs	mg/kg	2 - 2	100%	0.54931	0.968	–	–	0.76	NA	No ESV
PCB-1016	mg/kg	0 - 2	0%	–	–	0.0023	0.0033	–	0.033	–
PCB-1221	mg/kg	0 - 2	0%	–	–	0.0023	0.0033	–	0.067	–
PCB-1232	mg/kg	0 - 2	0%	–	–	0.0023	0.0033	–	0.033	–
PCB-1242	mg/kg	0 - 2	0%	–	–	0.0023	0.0033	–	0.033	–
PCB-1248	mg/kg	0 - 2	0%	–	–	0.0023	0.0033	–	0.033	–
PCB-1254	mg/kg	0 - 2	0%	–	–	0.0023	0.0033	–	0.033	–
PCB-1260	mg/kg	2 - 2	100%	0.0025	0.018	–	–	0.01	0.033	no
Total PCBs	mg/kg	2 - 2	100%	0.0163	0.0378	–	–	0.03	0.033	Yes
Pesticides										
4,4'-DDD	mg/kg	0 - 2	0%	–	–	0.00089	0.0013	–	0.0033	–
4,4'-DDE	mg/kg	0 - 2	0%	–	–	0.00089	0.0013	–	0.0033	–
4,4'-DDT	mg/kg	0 - 2	0%	–	–	0.00089	0.0013	–	0.0033	–
Aldrin	mg/kg	0 - 2	0%	–	–	0.00046	0.00066	–	NA	No ESV
alpha-BHC	mg/kg	1 - 2	50%	0.00088	0.00088	0.00066	0.00066	0.00088	NA	No ESV
alpha-Chlordane	mg/kg	0 - 2	0%	–	–	0.00046	0.00066	–	0.0017	–
beta-BHC	mg/kg	2 - 2	100%	0.003	0.0045	–	–	0.004	NA	No ESV
delta-BHC	mg/kg	2 - 2	100%	0.00097	0.0014	–	–	0.001	NA	No ESV
Dieldrin	mg/kg	0 - 2	0%	–	–	0.00089	0.0013	–	0.0033	–
Endosulfan I	mg/kg	0 - 2	0%	–	–	0.00046	0.00066	–	NA	No ESV
Endosulfan II	mg/kg	1 - 2	50%	0.0015	0.0015	0.00089	0.00089	0.0015	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 2	0%	–	–	0.00089	0.0013	–	NA	No ESV
Endrin	mg/kg	0 - 2	0%	–	–	0.00089	0.0013	–	0.0033	–
Endrin aldehyde	mg/kg	0 - 2	0%	–	–	0.00089	0.0013	–	NA	No ESV
Endrin Ketone	mg/kg	0 - 2	0%	–	–	0.00089	0.0013	–	NA	No ESV
gamma-BHC (Lindane)	mg/kg	2 - 2	100%	0.0012	0.0019	–	–	0.002	0.0033	no
gamma-Chlordane	mg/kg	0 - 2	0.00%	–	–	0.00046	0.00066	–	0.0017	–
Heptachlor	mg/kg	2 - 2	100%	0.00089	0.0013	–	–	0.001	NA	No ESV
Heptachlor Epoxide	mg/kg	0 - 2	0%	–	–	0.00046	0.00066	–	NA	No ESV
Methoxychlor	mg/kg	0 - 2	0%	–	–	0.0046	0.0066	–	NA	No ESV

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Table 2-32. Bulk Sediment Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Pesticides (continued)										
Total Chlordane	mg/kg	0 - 2	0%	–	–	0.00092	0.00132	–	0.0017	–
Total DDx	mg/kg	0 - 2	0%	–	–	0.00267	0.0039	–	NA	No ESV
Total Pesticides	mg/kg	2 - 2	100%	0.06785	0.09756	–	–	0.08	NA	No ESV
Toxaphene	mg/kg	0 - 2	0%	–	–	0.046	0.066	–	NA	No ESV
Radionuclides										
Actinium-228	pCi/g	2 - 2	100%	1.33	1.71	–	–	1.5	NA	No ESV
Americium-241	pCi/g	0 - 2	0%	–	–	127	224	–	NA	No ESV
Bismuth-214	pCi/g	2 - 2	100%	1.19	1.4	–	–	1.3	NA	No ESV
Cesium-137	pCi/g	2 - 2	100%	0.152	0.209	–	–	0.18	NA	No ESV
Cobalt-60	pCi/g	0 - 2	0%	–	–	0.0505	0.101	–	NA	No ESV
Lead-212	pCi/g	2 - 2	100%	1.22	1.49	–	–	1.4	NA	No ESV
Lead-214	pCi/g	2 - 2	100%	1.54	1.55	–	–	1.5	NA	No ESV
Potassium-40	pCi/g	2 - 2	100%	10.2	13.9	–	–	12.1	NA	No ESV
Radium-226	pCi/g	2 - 2	100%	1.19	1.4	–	–	1.3	NA	No ESV
Radium-228	pCi/g	2 - 2	100%	1.33	1.71	–	–	1.5	NA	No ESV
Thallium-208	pCi/g	2 - 2	100%	0.405	0.533	–	–	0.5	NA	No ESV
Thorium-228	pCi/g	2 - 2	100%	1.18	1.23	–	–	1.2	NA	No ESV
Thorium-230	pCi/g	2 - 2	100%	1.14	1.26	–	–	1.2	NA	No ESV
Thorium-232	pCi/g	2 - 2	100%	0.974	1.13	–	–	1.05	NA	No ESV
Thorium-234	pCi/g	0 - 2	0%	–	–	1.26	1.89	–	NA	No ESV
Uranium-234	pCi/g	2 - 2	100%	1.32	1.65	–	–	1.5	NA	No ESV
Uranium-235	pCi/g	1 - 2	50%	0.0924	0.0924	0.0929	0.0929	0.1	NA	No ESV
Uranium-238	pCi/g	2 - 2	100%	1.26	1.33	–	–	1.30	NA	No ESV
Speciation										
Arsenate-speciation	mg/kg	0 - 2	0%	–	–	1.74	6.44	–	NA	No ESV
Arsenic-speciation	mg/kg	2 - 2	100%	6.98	17.7	–	–	12.34	7.24	Yes
Arsenite-speciation	mg/kg	2 - 2	100%	3.45	11.2	–	–	7.33	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	1 - 2	50%	9.25	9.25	6.44	6.44	9.25	NA	No ESV
Inorganic Mercury-speciation	mg/kg	2 - 2	100%	0.104	0.692	–	–	0.40	NA	No ESV
Inorganic Selenium-speciation	mg/kg	0 - 2	0%	–	–	0.525	0.675	–	NA	No ESV
Mercury-speciation	mg/kg	2 - 2	100%	0.105	0.693	–	–	0.399	0.13	Yes
Methyl mercury-speciation	mg/kg	2 - 2	100%	0.00072	0.00091	–	–	0.001	NA	No ESV
Organic Arsenic-speciation	mg/kg	2 - 2	100%	6.98	8.4	–	–	7.69	NA	No ESV
Organic Selenium-speciation	mg/kg	2 - 2	100%	1.78	1.91	–	–	1.85	NA	No ESV

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Table 2-32. Bulk Sediment Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals										
Selenate-speciation	mg/kg	0 - 2	0%	–	–	0.416	0.534	–	NA	No ESV
Selenite-speciation	mg/kg	0 - 2	0%	–	–	0.525	0.675	–	NA	No ESV
Selenium-speciation	mg/kg	2 - 2	100%	1.78	1.91	–	–	1.85	NA	No ESV
Aluminum, Carbonate Bound Fraction	mg/kg	2 - 2	100%	9.7	11.7	–	–	10.7	NA	No ESV
Aluminum, Hydroxide Fraction	mg/kg	2 - 2	100%	56.5	60.7	–	–	58.6	NA	No ESV
Aluminum, Ion Exchange Fraction	mg/kg	2 - 2	100%	0.11	0.13	–	–	0.12	NA	No ESV
Aluminum, Total Metals	mg/kg	2 - 2	100%	10100	12500	–	–	11300	NA	No ESV
Aluminum, Water Extractable Fraction	mg/kg	2 - 2	100%	0.33	0.34	–	–	0.34	NA	No ESV
Arsenic, Carbonate Bound Fraction	mg/kg	1 - 2	50%	0.033	0.033	0.0051	0.0051	0.033	NA	No ESV
Arsenic, Hydroxide Fraction	mg/kg	2 - 2	100%	0.14	0.23	–	–	0.19	NA	No ESV
Arsenic, Ion Exchange Fraction	mg/kg	1 - 1	100%	0.038	0.038	–	–	0.038	NA	No ESV
Arsenic, Total Metals	mg/kg	2 - 2	100%	7.5	18.2	–	–	12.85	7.24	Yes
Arsenic, Water Extractable Fraction	mg/kg	0 - 2	0%	–	–	0.0051	0.0055	–	NA	No ESV
Barium, Carbonate Bound Fraction	mg/kg	2 - 2	100%	14.3	18.1	–	–	16.2	NA	No ESV
Barium, Hydroxide Fraction	mg/kg	2 - 2	100%	18.5	22.9	–	–	20.7	NA	No ESV
Barium, Ion Exchange Fraction	mg/kg	2 - 2	100%	18.2	22.9	–	–	20.6	NA	No ESV
Barium, Total Metals	mg/kg	2 - 2	100%	110	112	–	–	111	NA	No ESV
Barium, Water Extractable Fraction	mg/kg	2 - 2	100%	0.63	0.68	–	–	0.66	NA	No ESV
Cadmium, Carbonate Bound Fraction	mg/kg	2 - 2	100%	0.065	0.12	–	–	0.09	NA	No ESV
Cadmium, Hydroxide Fraction	mg/kg	2 - 2	100%	0.079	0.17	–	–	0.12	NA	No ESV
Cadmium, Ion Exchange Fraction	mg/kg	2 - 2	100%	0.018	0.023	–	–	0.02	NA	No ESV
Cadmium, Total Metals	mg/kg	2 - 2	100%	0.35	0.52	–	–	0.44	1	no
Cadmium, Water Extractable Fraction	mg/kg	0 - 2	0%	–	–	0.001	0.0011	–	NA	No ESV
Calcium, Carbonate Bound Fraction	mg/kg	2 - 2	100%	213	382	–	–	297.5	NA	No ESV
Calcium, Hydroxide Fraction	mg/kg	2 - 2	100%	203	258	–	–	230.5	NA	No ESV
Calcium, Ion Exchange Fraction	mg/kg	2 - 2	100%	746	805	–	–	775.5	NA	No ESV
Calcium, Total Metals	mg/kg	2 - 2	100%	1580	1660	–	–	1620	NA	No ESV
Calcium, Water Extractable Fraction	mg/kg	2 - 2	100%	93.2	110	–	–	101.6	NA	No ESV
Chromium, Carbonate Bound Fraction	mg/kg	1 - 2	50%	0.044	0.044	0.01	0.01	0.044	NA	No ESV
Chromium, Hydroxide Fraction	mg/kg	2 - 2	100%	0.19	0.21	–	–	0.2	NA	No ESV
Chromium, Total Metals	mg/kg	2 - 2	100%	17	17.4	–	–	17.2	52.3	no
Chromium, Water Extractable Fraction	mg/kg	0 - 2	0%	–	–	0.01	0.011	–	NA	No ESV
Cobalt, Carbonate Bound Fraction	mg/kg	2 - 2	100%	0.25	0.27	–	–	0.26	NA	No ESV

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Table 2-32. Bulk Sediment Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals (continued)								
Cobalt, Hydroxide Fraction	mg/kg	2 - 2	100%	3.2 - 4.9	– - –	4.05	NA	No ESV
Cobalt, Ion Exchange Fraction	mg/kg	2 - 2	100%	0.0058 - 0.011	– - –	0.008	NA	No ESV
Cobalt, Total Metals	mg/kg	2 - 2	100%	12.3 - 16.1	– - –	14.2	NA	No ESV
Cobalt, Water Extractable Fraction	mg/kg	2 - 2	100%	0.011 - 0.012	– - –	0.01	NA	No ESV
Copper, Carbonate Bound Fraction	mg/kg	2 - 2	100%	0.099 - 0.13	– - –	0.11	NA	No ESV
Copper, Hydroxide Fraction	mg/kg	0 - 2	0%	– - –	0.051 - 0.068	–	NA	No ESV
Copper, Ion Exchange Fraction	mg/kg	2 - 2	100%	0.034 - 0.063	– - –	0.05	NA	No ESV
Copper, Total Metals	mg/kg	2 - 2	100%	17.9 - 19.1	– - –	18.5	18.7	Yes
Copper, Water Extractable Fraction	mg/kg	0 - 2	0%	– - –	0.0045 - 0.0048	–	NA	No ESV
Iron, Carbonate Bound Fraction	mg/kg	2 - 2	100%	7 - 19.3	– - –	13.15	NA	No ESV
Iron, Hydroxide Fraction	mg/kg	2 - 2	100%	659 - 1150	– - –	905	NA	No ESV
Iron, Total Metals	mg/kg	2 - 2	100%	18400 - 21000	– - –	19700	NA	No ESV
Iron, Water Extractable Fraction	mg/kg	0 - 2	0%	– - –	0.22 - 0.23	–	NA	No ESV
Lead, Carbonate Bound Fraction	mg/kg	2 - 2	100%	0.18 - 0.3	– - –	0.24	NA	No ESV
Lead, Hydroxide Fraction	mg/kg	2 - 2	100%	0.37 - 0.8	– - –	0.59	NA	No ESV
Lead, Ion Exchange Fraction	mg/kg	2 - 2	100%	0.012 - 0.021	– - –	0.017	NA	No ESV
Lead, Total Metals	mg/kg	2 - 2	100%	15.4 - 18.8	– - –	17.1	30.2	no
Lead, Water Extractable Fraction	mg/kg	0 - 2	0%	– - –	0.00056 - 0.00061	–	NA	No ESV
Magnesium, Carbonate Bound Fraction	mg/kg	2 - 2	100%	22.3 - 47.7	– - –	35	NA	No ESV
Magnesium, Hydroxide Fraction	mg/kg	2 - 2	100%	43.2 - 44.2	– - –	43.7	NA	No ESV
Magnesium, Ion Exchange Fraction	mg/kg	2 - 2	100%	80 - 127	– - –	104	NA	No ESV
Magnesium, Total Metals	mg/kg	2 - 2	100%	936 - 1350	– - –	1143	NA	No ESV
Magnesium, Water Extractable Fraction	mg/kg	2 - 2	100%	20 - 21.1	– - –	20.55	NA	No ESV
Manganese, Carbonate Bound Fraction	mg/kg	2 - 2	100%	74.8 - 139	– - –	107	NA	No ESV
Manganese, Hydroxide Fraction	mg/kg	2 - 2	100%	252 - 297	– - –	275	NA	No ESV
Manganese, Ion Exchange Fraction	mg/kg	2 - 2	100%	0.89 - 1.6	– - –	1.2	NA	No ESV
Manganese, Total Metals	mg/kg	2 - 2	100%	467 - 717	– - –	592	NA	No ESV
Manganese, Water Extractable Fraction	mg/kg	2 - 2	100%	6.9 - 20.2	– - –	13.6	NA	No ESV
Molybdenum, Carbonate Bound Fraction	mg/kg	0 - 2	0%	– - –	0.0051 - 0.0054	–	NA	No ESV
Molybdenum, Hydroxide Fraction	mg/kg	0 - 2	0%	– - –	0.0051 - 0.0054	–	NA	No ESV
Molybdenum, Ion Exchange Fraction	mg/kg	1 - 2	50%	0.013 - 0.013	0.0051 - 0.0051	0.013	NA	No ESV
Molybdenum, Total Metals	mg/kg	2 - 2	100%	0.84 - 1.3	– - –	1.07	NA	No ESV
Molybdenum, Water Extractable Fraction	mg/kg	0 - 2	0%	– - –	0.0051 - 0.0054	–	NA	No ESV
Nickel, Carbonate Bound Fraction	mg/kg	2 - 2	100%	0.72 - 0.8	– - –	0.76	NA	No ESV

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Table 2-32. Bulk Sediment Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals (continued)								
Nickel, Hydroxide Fraction	mg/kg	2 - 2	100%	2.1 - 2.8	– - –	2.45	NA	No ESV
Nickel, Ion Exchange Fraction	mg/kg	2 - 2	100%	0.057 - 0.13	– - –	0.09	NA	No ESV
Nickel, Total Metals	mg/kg	2 - 2	100%	19.8 - 26.2	– - –	23	15.9	Yes
Nickel, Water Extractable Fraction	mg/kg	2 - 2	100%	0.024 - 0.027	– - –	0.03	NA	No ESV
Selenium, Carbonate Bound Fraction	mg/kg	0 - 2	0%	– - –	0.013 - 0.014	–	NA	No ESV
Selenium, Hydroxide Fraction	mg/kg	2 - 2	100%	0.086 - 0.12	– - –	0.1	NA	No ESV
Selenium, Ion Exchange Fraction	mg/kg	0 - 2	0%	– - –	0.013 - 0.014	–	NA	No ESV
Selenium, Total Metals	mg/kg	2 - 2	100%	1.6 - 1.7	– - –	1.65	NA	No ESV
Selenium, Water Extractable Fraction	mg/kg	0 - 2	0%	– - –	0.013 - 0.014	–	NA	No ESV
Silver, Carbonate Bound Fraction	mg/kg	0 - 2	0%	– - –	0.0012 - 0.0013	–	NA	No ESV
Silver, Hydroxide Fraction	mg/kg	1 - 2	50%	0.0077 - 0.0077	0.0012 - 0.0012	0.0077	NA	No ESV
Silver, Ion Exchange Fraction	mg/kg	0 - 2	0%	– - –	0.0012 - 0.0013	–	NA	No ESV
Silver, Total Metals	mg/kg	2 - 2	100%	0.085 - 0.12	– - –	0.1	2	no
Silver, Water Extractable Fraction	mg/kg	0 - 2	0%	– - –	0.0012 - 0.0013	–	NA	No ESV
Sodium, Carbonate Bound Fraction	mg/kg	0 - 2	0%	– - –	0.57 - 0.62	–	NA	No ESV
Sodium, Hydroxide Fraction	mg/kg	2 - 2	100%	6.4 - 8.1	– - –	7.3	NA	No ESV
Sodium, Ion Exchange Fraction	mg/kg	2 - 2	100%	2.7 - 4.7	– - –	3.7	NA	No ESV
Sodium, Total Metals	mg/kg	2 - 2	100%	21.7 - 62.6	– - –	42.2	NA	No ESV
Sodium, Water Extractable Fraction	mg/kg	2 - 2	100%	4.4 - 6	– - –	5.2	NA	No ESV
Strontium, Carbonate Bound Fraction	mg/kg	2 - 2	100%	1.8 - 1.8	– - –	1.8	NA	No ESV
Strontium, Hydroxide Fraction	mg/kg	2 - 2	100%	2.9 - 5.3	– - –	4.1	NA	No ESV
Strontium, Ion Exchange Fraction	mg/kg	2 - 2	100%	3.5 - 6.5	– - –	5	NA	No ESV
Strontium, Total Metals	mg/kg	2 - 2	100%	22.1 - 52.7	– - –	37.4	NA	No ESV
Strontium, Water Extractable Fraction	mg/kg	2 - 2	100%	0.4 - 0.78	– - –	0.59	NA	No ESV
Thallium, Carbonate Bound Fraction	mg/kg	2 - 2	100%	0.034 - 0.038	– - –	0.036	NA	No ESV
Thallium, Hydroxide Fraction	mg/kg	2 - 2	100%	0.054 - 0.065	– - –	0.06	NA	No ESV
Thallium, Ion Exchange Fraction	mg/kg	2 - 2	100%	0.023 - 0.11	– - –	0.07	NA	No ESV
Thallium, Total Metals	mg/kg	2 - 2	100%	0.34 - 0.39	– - –	0.37	NA	No ESV
Thallium, Water Extractable Fraction	mg/kg	1 - 2	50%	0.0017 - 0.0017	0.00028 - 0.00028	0.0017	NA	No ESV
Vanadium, Carbonate Bound Fraction	mg/kg	0 - 2	0%	– - –	0.014 - 0.015	–	NA	No ESV
Vanadium, Hydroxide Fraction	mg/kg	2 - 2	100%	0.033 - 0.15	– - –	0.09	NA	No ESV
Vanadium, Total Metals	mg/kg	2 - 2	100%	26.4 - 26.5	– - –	26.45	NA	No ESV
Vanadium, Water Extractable Fraction	mg/kg	0 - 2	0%	– - –	0.014 - 0.015	–	NA	No ESV
Zinc, Carbonate Bound Fraction	mg/kg	2 - 2	100%	1.3 - 1.6	– - –	1.5	NA	No ESV

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Table 2-32. Bulk Sediment Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals (continued)										
Zinc, Hydroxide Fraction	mg/kg	2 - 2	100%	11.8	21.6	–	–	16.7	NA	No ESV
Zinc, Ion Exchange Fraction	mg/kg	2 - 2	100%	0.083	0.18	–	–	0.13	NA	No ESV
Zinc, Total Metals	mg/kg	2 - 2	100%	57.4	81.3	–	–	69.4	124	no
Zinc, Water Extractable Fraction	mg/kg	2 - 2	100%	0.056	0.057	–	–	0.06	NA	No ESV
Physical Properties										
% Ash	%	2 - 2	100%	1	26	–	–	13.5	NA	No ESV
Fraction of Organic Carbon	%	2 - 2	100%	2.1	3.2	–	–	2.7	NA	No ESV
Total Organic Carbon	mg/kg	2 - 2	100%	15000	25000	–	–	20000	NA	No ESV
Physical Properties-Grain Size										
Clay	%	2 - 2	100%	14.8	28.2	–	–	21.5	NA	No ESV
Gravel	%	1 - 2	50%	15.5	15.5	–	–	15.5	NA	No ESV
Sand	%	2 - 2	100%	5.6	36.6	–	–	21.1	NA	No ESV
Sand, Coarse	%	2 - 2	100%	0.1	8.3	–	–	4.2	NA	No ESV
Sand, Fine	%	2 - 2	100%	5.1	13.9	–	–	9.5	NA	No ESV
Sand, Medium	%	2 - 2	100%	0.4	14.4	–	–	7.4	NA	No ESV
Silt	%	2 - 2	100%	33.1	66.2	–	–	49.7	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-33. Bulk Sediment Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics								
Aluminum	mg/kg	1 - 1	100%	8050 - 8050	– - –	8050	NA	No ESV
Antimony	mg/kg	0 - 1	0%	– - –	1.33 - 1.33	–	12	–
Arsenic	mg/kg	1 - 1	100%	4.59 - 4.59	– - –	4.6	7.24	no
Barium	mg/kg	1 - 1	100%	53.7 - 53.7	– - –	53.7	NA	No ESV
Beryllium	mg/kg	0 - 1	0%	– - –	0.531 - 0.531	–	NA	No ESV
Boron	mg/kg	1 - 1	100%	9.06 - 9.06	– - –	9.1	NA	No ESV
Cadmium	mg/kg	0 - 1	0%	– - –	0.133 - 0.133	–	1	–
Chromium	mg/kg	1 - 1	100%	13.2 - 13.2	– - –	13.2	52.3	no
Cobalt	mg/kg	1 - 1	100%	7.3 - 7.3	– - –	7.3	NA	No ESV
Copper	mg/kg	1 - 1	100%	6.32 - 6.32	– - –	6.3	18.7	no
Lead	mg/kg	1 - 1	100%	9.35 - 9.35	– - –	9.4	30.2	no
Manganese	mg/kg	1 - 1	100%	877 - 877	– - –	877	NA	No ESV
Mercury	mg/kg	1 - 1	100%	0.41 - 0.41	– - –	0.41	0.13	Yes
Molybdenum	mg/kg	0 - 1	0%	– - –	5.31 - 5.31	–	NA	No ESV
Nickel	mg/kg	1 - 1	100%	8.07 - 8.07	– - –	8.1	15.9	no
Selenium	mg/kg	0 - 1	0%	– - –	1.33 - 1.33	–	NA	No ESV
Silver	mg/kg	0 - 1	0%	– - –	0.664 - 0.664	–	2	–
Strontium	mg/kg	1 - 1	100%	12.4 - 12.4	– - –	12.4	NA	No ESV
Thallium	mg/kg	0 - 1	0%	– - –	1.33 - 1.33	–	NA	No ESV
Vanadium	mg/kg	1 - 1	100%	13.2 - 13.2	– - –	13.2	NA	No ESV
Zinc	mg/kg	1 - 1	100%	41.5 - 41.5	– - –	41.5	124	no
Inorganic-cations/anions								
Calcium	mg/kg	1 - 1	100%	1710 - 1710	– - –	1710	NA	No ESV
Iron	mg/kg	1 - 1	100%	12600 - 12600	– - –	12600	NA	No ESV
Magnesium	mg/kg	1 - 1	100%	1330 - 1330	– - –	1330	NA	No ESV
Potassium	mg/kg	1 - 1	100%	1460 - 1460	– - –	1460	NA	No ESV
Sodium	mg/kg	0 - 1	0%	– - –	133 - 133	–	NA	No ESV
Benzo(a)anthracene	mg/kg	1 - 1	100%	0.025 - 0.025	– - –	0.03	0.33	no
Benzo(a)pyrene	mg/kg	1 - 1	100%	0.028 - 0.028	– - –	0.03	0.33	no
Benzo(b)fluoranthene	mg/kg	1 - 1	100%	0.031 - 0.031	– - –	0.03	NA	No ESV
Benzo(e)pyrene	mg/kg	1 - 1	100%	0.021 - 0.021	– - –	0.02	NA	No ESV
Benzo(g,h,i)perylene	mg/kg	1 - 1	100%	0.011 - 0.011	– - –	0.01	NA	No ESV
Benzo(k)fluoranthene	mg/kg	1 - 1	100%	0.024 - 0.024	– - –	0.02	NA	No ESV
C1-Chrysenes	mg/kg	1 - 1	100%	0.018 - 0.018	– - –	0.02	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	1 - 1	100%	0.033 - 0.033	– - –	0.03	NA	No ESV

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Table 2-33. Bulk Sediment Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)										
C2-Chrysenes	mg/kg	1 - 1	100%	0.013	0.013	–	–	0.01	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	1 - 1	100%	0.028	0.028	–	–	0.03	NA	No ESV
C3-Chrysenes	mg/kg	1 - 1	100%	0.0071	0.0071	–	–	0.007	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	1 - 1	100%	0.015	0.015	–	–	0.02	NA	No ESV
C4-Chrysenes	mg/kg	1 - 1	100%	0.0036	0.0036	–	–	0.004	NA	No ESV
Chrysene	mg/kg	1 - 1	100%	0.024	0.024	–	–	0.02	0.33	no
Dibenz(a,h)anthracene	mg/kg	1 - 1	100%	0.0045	0.0045	–	–	0.005	0.33	no
Fluoranthene	mg/kg	1 - 1	100%	0.042	0.042	–	–	0.04	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	1 - 1	100%	0.011	0.011	–	–	0.01	NA	No ESV
Perylene	mg/kg	1 - 1	100%	0.053	0.053	–	–	0.05	NA	No ESV
Pyrene	mg/kg	1 - 1	100%	0.039	0.039	–	–	0.04	0.33	no
Total HPAH	mg/kg	1 - 1	100%	0.4312	0.4312	–	–	0.43	0.655	no
Acenaphthene	mg/kg	1 - 1	100%	0.0031	0.0031	–	–	0.003	0.33	no
Acenaphthylene	mg/kg	1 - 1	100%	0.0009	0.0009	–	–	0.0009	0.33	no
Anthracene	mg/kg	1 - 1	100%	0.0067	0.0067	–	–	0.007	0.33	no
C1-Fluorenes	mg/kg	1 - 1	100%	0.0043	0.0043	–	–	0.004	NA	No ESV
C1-Naphthalenes	mg/kg	1 - 1	100%	0.048	0.048	–	–	0.05	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.04	0.04	–	–	0.04	NA	No ESV
C2-Fluorenes	mg/kg	1 - 1	100%	0.0095	0.0095	–	–	0.010	NA	No ESV
C2-Naphthalenes	mg/kg	1 - 1	100%	0.11	0.11	–	–	0.11	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.027	0.027	–	–	0.027	NA	No ESV
C3-Fluorenes	mg/kg	1 - 1	100%	0.0066	0.0066	–	–	0.007	NA	No ESV
C3-Naphthalenes	mg/kg	1 - 1	100%	0.075	0.075	–	–	0.08	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.014	0.014	–	–	0.01	NA	No ESV
C4-Naphthalenes	mg/kg	1 - 1	100%	0.045	0.045	–	–	0.05	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	1 - 1	100%	0.0076	0.0076	–	–	0.008	NA	No ESV
Fluorene	mg/kg	1 - 1	100%	0.0044	0.0044	–	–	0.004	0.33	no
Naphthalene	mg/kg	1 - 1	100%	0.018	0.018	–	–	0.02	0.33	no
Phenanthrene	mg/kg	1 - 1	100%	0.037	0.037	–	–	0.04	0.33	no
Total LPAH	mg/kg	1 - 1	100%	0.4571	0.4571	–	–	0.46	0.33	Yes
Total Alkylated PAHs	mg/kg	1 - 1	100%	0.5047	0.5047	–	–	0.50	NA	No ESV
Total Unsubstituted PAHs	mg/kg	1 - 1	100%	0.3836	0.3836	–	–	0.38	NA	No ESV

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Table 2-33. Bulk Sediment Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)										
PCB-1016	mg/kg	0 - 1	0%	–	–	0.019	0.019	–	0.033	–
PCB-1221	mg/kg	0 - 1	0%	–	–	0.019	0.019	–	0.067	–
PCB-1232	mg/kg	0 - 1	0%	–	–	0.019	0.019	–	0.033	–
PCB-1242	mg/kg	0 - 1	0%	–	–	0.019	0.019	–	0.033	–
PCB-1248	mg/kg	0 - 1	0%	–	–	0.019	0.019	–	0.033	–
PCB-1254	mg/kg	1 - 1	100%	0.28	0.28	–	–	0.28	0.033	Yes
PCB-1260	mg/kg	0 - 1	0%	–	–	0.019	0.019	–	0.033	–
PCB-1262	mg/kg	0 - 1	0%	–	–	0.019	0.019	–	0.033	–
PCB-1268	mg/kg	0 - 1	0%	–	–	0.019	0.019	–	0.033	–
Total PCBs	mg/kg	1 - 1	100%	0.432	0.432	–	–	0.43	0.033	Yes
Pesticides										
4,4'-DDD	mg/kg	0 - 1	0%	–	–	0.00072	0.00072	–	0.0033	–
4,4'-DDE	mg/kg	0 - 1	0%	–	–	0.00072	0.00072	–	0.0033	–
4,4'-DDT	mg/kg	0 - 1	0%	–	–	0.00072	0.00072	–	0.0033	–
Aldrin	mg/kg	0 - 1	0%	–	–	0.00037	0.00037	–	NA	No ESV
alpha-BHC	mg/kg	0 - 1	0%	–	–	0.00037	0.00037	–	NA	No ESV
alpha-Chlordane	mg/kg	0 - 1	0%	–	–	0.00037	0.00037	–	0.0017	–
beta-BHC	mg/kg	0 - 1	0%	–	–	0.00037	0.00037	–	NA	No ESV
delta-BHC	mg/kg	0 - 1	0%	–	–	0.00037	0.00037	–	NA	No ESV
Dieldrin	mg/kg	0 - 1	0%	–	–	0.00072	0.00072	–	0.0033	–
Endosulfan I	mg/kg	0 - 1	0%	–	–	0.00037	0.00037	–	NA	No ESV
Endosulfan II	mg/kg	0 - 1	0%	–	–	0.00072	0.00072	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 1	0%	–	–	0.00072	0.00072	–	NA	No ESV
Endrin	mg/kg	0 - 1	0%	–	–	0.00072	0.00072	–	0.0033	–
Endrin aldehyde	mg/kg	0 - 1	0%	–	–	0.00072	0.00072	–	NA	No ESV
Endrin Ketone	mg/kg	0 - 1	0%	–	–	0.00072	0.00072	–	NA	No ESV
gamma-BHC (Lindane)	mg/kg	0 - 1	0%	–	–	0.00037	0.00037	–	0.0033	–
gamma-Chlordane	mg/kg	0 - 1	0.00%	–	–	0.00037	0.00037	–	0.0017	–
Heptachlor	mg/kg	0 - 1	0%	–	–	0.00037	0.00037	–	NA	No ESV
Heptachlor Epoxide	mg/kg	0 - 1	0%	–	–	0.00037	0.00037	–	NA	No ESV
Methoxychlor	mg/kg	0 - 1	0%	–	–	0.0037	0.0037	–	NA	No ESV
Total Chlordane	mg/kg	0 - 1	0%	–	–	0.00074	0.00074	–	0.0017	–
Total DDx	mg/kg	0 - 1	0%	–	–	0.00216	0.00216	–	NA	No ESV
Total Pesticides	mg/kg	0 - 1	0%	–	–	0.05088	0.05088	–	NA	No ESV
Toxaphene	mg/kg	0 - 1	0%	–	–	0.037	0.037	–	NA	No ESV

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Table 2-33. Bulk Sediment Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Radionuclides										
Actinium-228	pCi/g	1 - 1	100%	0.686	0.686	–	–	0.69	NA	No ESV
Americium-241	pCi/g	0 - 1	0%	–	–	70.4	70.4	–	NA	No ESV
Bismuth-214	pCi/g	1 - 1	100%	0.574	0.574	–	–	0.57	NA	No ESV
Cesium-137	pCi/g	1 - 1	100%	2.05	2.05	–	–	2.1	NA	No ESV
Cobalt-60	pCi/g	0 - 1	0%	–	–	0.0571	0.0571	–	NA	No ESV
Lead-212	pCi/g	1 - 1	100%	0.615	0.615	–	–	0.62	NA	No ESV
Lead-214	pCi/g	1 - 1	100%	0.461	0.461	–	–	0.46	NA	No ESV
Potassium-40	pCi/g	1 - 1	100%	6.66	6.66	–	–	6.7	NA	No ESV
Radium-226	pCi/g	1 - 1	100%	0.574	0.574	–	–	0.57	NA	No ESV
Radium-228	pCi/g	1 - 1	100%	0.686	0.686	–	–	0.69	NA	No ESV
Thallium-208	pCi/g	1 - 1	100%	0.184	0.184	–	–	0.18	NA	No ESV
Thorium-228	pCi/g	1 - 1	100%	0.386	0.386	–	–	0.39	NA	No ESV
Thorium-230	pCi/g	1 - 1	100%	0.596	0.596	–	–	0.60	NA	No ESV
Thorium-232	pCi/g	1 - 1	100%	0.539	0.539	–	–	0.54	NA	No ESV
Thorium-234	pCi/g	1 - 1	100%	1.03	1.03	–	–	1.03	NA	No ESV
Uranium-234	pCi/g	1 - 1	100%	0.288	0.288	–	–	0.29	NA	No ESV
Uranium-235	pCi/g	0 - 1	0%	–	–	0.0656	0.0656	–	NA	No ESV
Uranium-238	pCi/g	1 - 1	100%	0.522	0.522	–	–	0.52	NA	No ESV
Speciation										
Arsenate-speciation	mg/kg	1 - 1	100%	2.11	2.11	–	–	2.1	NA	No ESV
Arsenic-speciation	mg/kg	1 - 1	100%	4.36	4.36	–	–	4.4	7.24	no
Arsenite-speciation	mg/kg	1 - 1	100%	1.28	1.28	–	–	1.3	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	1 - 1	100%	3.39	3.39	–	–	3.4	NA	No ESV
Inorganic Mercury-speciation	mg/kg	1 - 1	100%	0.555	0.555	–	–	0.56	NA	No ESV
Inorganic Selenium-speciation	mg/kg	0 - 1	0%	–	–	0.457	0.457	–	NA	No ESV
Mercury-speciation	mg/kg	1 - 1	100%	0.556	0.556	–	–	0.56	0.13	Yes
Methyl mercury-speciation	mg/kg	1 - 1	100%	0.00121	0.00121	–	–	0.001	NA	No ESV
Organic Arsenic-speciation	mg/kg	1 - 1	100%	0.965	0.965	–	–	0.97	NA	No ESV
Organic Selenium-speciation	mg/kg	0 - 1	0%	–	–	0.72	0.72	–	NA	No ESV
Selenate-speciation	mg/kg	0 - 1	0%	–	–	0.362	0.362	–	NA	No ESV
Selenite-speciation	mg/kg	0 - 1	0%	–	–	0.457	0.457	–	NA	No ESV
Selenium-speciation	mg/kg	0 - 1	0%	–	–	0.72	0.72	–	NA	No ESV
Sequentially Extracted Metals										
Aluminum, Carbonate Bound Fraction	mg/kg	1 - 1	100%	2	2	–	–	2	NA	No ESV
Aluminum, Hydroxide Fraction	mg/kg	1 - 1	100%	8.6	8.6	–	–	8.6	NA	No ESV
Aluminum, Ion Exchange Fraction	mg/kg	1 - 1	100%	0.45	0.45	–	–	0.45	NA	No ESV
Aluminum, Total Metals	mg/kg	1 - 1	100%	4290	4290	–	–	4290	NA	No ESV

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Table 2-33. Bulk Sediment Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals (continued)										
Aluminum, Water Extractable Fraction	mg/kg	1 - 1	100%	3	3	–	–	3	NA	No ESV
Arsenic, Carbonate Bound Fraction	mg/kg	0 - 1	0%	–	–	0.0026	0.0026	–	NA	No ESV
Arsenic, Hydroxide Fraction	mg/kg	1 - 1	100%	0.019	0.019	–	–	0.019	NA	No ESV
Arsenic, Total Metals	mg/kg	1 - 1	100%	4.8	4.8	–	–	4.8	7.24	no
Arsenic, Water Extractable Fraction	mg/kg	0 - 1	0%	–	–	0.0026	0.0026	–	NA	No ESV
Barium, Carbonate Bound Fraction	mg/kg	1 - 1	100%	8.9	8.9	–	–	8.9	NA	No ESV
Barium, Hydroxide Fraction	mg/kg	1 - 1	100%	8.7	8.7	–	–	8.7	NA	No ESV
Barium, Ion Exchange Fraction	mg/kg	1 - 1	100%	8.1	8.1	–	–	8.1	NA	No ESV
Barium, Total Metals	mg/kg	1 - 1	100%	48.8	48.8	–	–	48.8	NA	No ESV
Barium, Water Extractable Fraction	mg/kg	1 - 1	100%	0.16	0.16	–	–	0.16	NA	No ESV
Cadmium, Carbonate Bound Fraction	mg/kg	1 - 1	100%	0.026	0.026	–	–	0.03	NA	No ESV
Cadmium, Hydroxide Fraction	mg/kg	1 - 1	100%	0.052	0.052	–	–	0.05	NA	No ESV
Cadmium, Ion Exchange Fraction	mg/kg	1 - 1	100%	0.0028	0.0028	–	–	0.003	NA	No ESV
Cadmium, Total Metals	mg/kg	1 - 1	100%	0.17	0.17	–	–	0.17	1	no
Cadmium, Water Extractable Fraction	mg/kg	0 - 1	0%	–	–	0.00052	0.00052	–	NA	No ESV
Calcium, Carbonate Bound Fraction	mg/kg	1 - 1	100%	509	509	–	–	509	NA	No ESV
Calcium, Hydroxide Fraction	mg/kg	1 - 1	100%	387	387	–	–	387	NA	No ESV
Calcium, Ion Exchange Fraction	mg/kg	1 - 1	100%	779	779	–	–	779	NA	No ESV
Calcium, Total Metals	mg/kg	1 - 1	100%	1920	1920	–	–	1920	NA	No ESV
Calcium, Water Extractable Fraction	mg/kg	1 - 1	100%	64.5	64.5	–	–	64.5	NA	No ESV
Chromium, Carbonate Bound Fraction	mg/kg	1 - 1	100%	0.076	0.076	–	–	0.08	NA	No ESV
Chromium, Hydroxide Fraction	mg/kg	1 - 1	100%	0.12	0.12	–	–	0.12	NA	No ESV
Chromium, Ion Exchange Fraction	mg/kg	1 - 1	100%	0.058	0.058	–	–	0.06	NA	No ESV
Chromium, Total Metals	mg/kg	1 - 1	100%	12.4	12.4	–	–	12.4	52.3	no
Cobalt, Carbonate Bound Fraction	mg/kg	1 - 1	100%	0.015	0.015	–	–	0.02	NA	No ESV
Cobalt, Hydroxide Fraction	mg/kg	1 - 1	100%	1.8	1.8	–	–	1.8	NA	No ESV
Cobalt, Ion Exchange Fraction	mg/kg	1 - 1	100%	0.0048	0.0048	–	–	0.005	NA	No ESV
Cobalt, Total Metals	mg/kg	1 - 1	100%	8.2	8.2	–	–	8.2	NA	No ESV
Cobalt, Water Extractable Fraction	mg/kg	1 - 1	100%	0.0065	0.0065	–	–	0.0065	NA	No ESV
Copper, Carbonate Bound Fraction	mg/kg	1 - 1	100%	0.055	0.055	–	–	0.055	NA	No ESV
Copper, Hydroxide Fraction	mg/kg	1 - 1	100%	0.028	0.028	–	–	0.028	NA	No ESV
Copper, Ion Exchange Fraction	mg/kg	1 - 1	100%	0.053	0.053	–	–	0.053	NA	No ESV
Copper, Total Metals	mg/kg	1 - 1	100%	7	7	–	–	7	18.7	no
Copper, Water Extractable Fraction	mg/kg	1 - 1	100%	0.011	0.011	–	–	0.011	NA	No ESV
Iron, Carbonate Bound Fraction	mg/kg	1 - 1	100%	1.1	1.1	–	–	1.1	NA	No ESV
Iron, Hydroxide Fraction	mg/kg	1 - 1	100%	89.6	89.6	–	–	89.6	NA	No ESV

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Table 2-33. Bulk Sediment Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals (continued)										
Iron, Ion Exchange Fraction	mg/kg	1 - 1	100%	1.5	1.5	–	–	1.5	NA	No ESV
Iron, Total Metals	mg/kg	1 - 1	100%	12500	12500	–	–	12500	NA	No ESV
Iron, Water Extractable Fraction	mg/kg	1 - 1	100%	5.8	5.8	–	–	5.8	NA	No ESV
Lead, Carbonate Bound Fraction	mg/kg	1 - 1	100%	0.041	0.041	–	–	0.0	NA	No ESV
Lead, Hydroxide Fraction	mg/kg	1 - 1	100%	0.18	0.18	–	–	0.18	NA	No ESV
Lead, Ion Exchange Fraction	mg/kg	1 - 1	100%	0.011	0.011	–	–	0.0	NA	No ESV
Lead, Total Metals	mg/kg	1 - 1	100%	12	12	–	–	12	30.2	no
Lead, Water Extractable Fraction	mg/kg	1 - 1	100%	0.011	0.011	–	–	0.0	NA	No ESV
Magnesium, Carbonate Bound Fraction	mg/kg	1 - 1	100%	140	140	–	–	140	NA	No ESV
Magnesium, Hydroxide Fraction	mg/kg	1 - 1	100%	184	184	–	–	184	NA	No ESV
Magnesium, Ion Exchange Fraction	mg/kg	1 - 1	100%	116	116	–	–	116	NA	No ESV
Magnesium, Total Metals	mg/kg	1 - 1	100%	1130	1130	–	–	1130	NA	No ESV
Magnesium, Water Extractable Fraction	mg/kg	1 - 1	100%	14.9	14.9	–	–	14.9	NA	No ESV
Manganese, Carbonate Bound Fraction	mg/kg	1 - 1	100%	49.5	49.5	–	–	49.5	NA	No ESV
Manganese, Hydroxide Fraction	mg/kg	1 - 1	100%	537	537	–	–	537	NA	No ESV
Manganese, Ion Exchange Fraction	mg/kg	1 - 1	100%	0.79	0.79	–	–	0.79	NA	No ESV
Manganese, Total Metals	mg/kg	1 - 1	100%	970	970	–	–	970	NA	No ESV
Manganese, Water Extractable Fraction	mg/kg	1 - 1	100%	1	1	–	–	1	NA	No ESV
Molybdenum, Ion Exchange Fraction	mg/kg	0 - 1	0%	–	–	0.0025	0.0025	–	NA	No ESV
Molybdenum, Total Metals	mg/kg	1 - 1	100%	0.41	0.41	–	–	0.4	NA	No ESV
Nickel, Carbonate Bound Fraction	mg/kg	1 - 1	100%	0.16	0.16	–	–	0.2	NA	No ESV
Nickel, Hydroxide Fraction	mg/kg	1 - 1	100%	0.84	0.84	–	–	0.8	NA	No ESV
Nickel, Ion Exchange Fraction	mg/kg	1 - 1	100%	0.018	0.018	–	–	0.018	NA	No ESV
Nickel, Total Metals	mg/kg	1 - 1	100%	10.3	10.3	–	–	10.3	15.9	no
Nickel, Water Extractable Fraction	mg/kg	1 - 1	100%	0.0084	0.0084	–	–	0.008	NA	No ESV
Selenium, Carbonate Bound Fraction	mg/kg	0 - 1	0%	–	–	0.0066	0.0066	–	NA	No ESV
Selenium, Hydroxide Fraction	mg/kg	1 - 1	100%	0.024	0.024	–	–	0.02	NA	No ESV
Selenium, Total Metals	mg/kg	1 - 1	100%	0.49	0.49	–	–	0.49	NA	No ESV
Silver, Total Metals	mg/kg	1 - 1	100%	0.049	0.049	–	–	0.05	2	no
Sodium, Carbonate Bound Fraction	mg/kg	1 - 1	100%	1.3	1.3	–	–	1.3	NA	No ESV
Sodium, Hydroxide Fraction	mg/kg	1 - 1	100%	3.1	3.1	–	–	3.1	NA	No ESV
Sodium, Ion Exchange Fraction	mg/kg	1 - 1	100%	3.8	3.8	–	–	3.8	NA	No ESV
Sodium, Total Metals	mg/kg	1 - 1	100%	30.5	30.5	–	–	30.5	NA	No ESV
Sodium, Water Extractable Fraction	mg/kg	1 - 1	100%	4.9	4.9	–	–	4.9	NA	No ESV
Strontium, Carbonate Bound Fraction	mg/kg	1 - 1	100%	1.3	1.3	–	–	1.3	NA	No ESV
Strontium, Hydroxide Fraction	mg/kg	1 - 1	100%	0.79	0.79	–	–	0.8	NA	No ESV
Strontium, Ion Exchange Fraction	mg/kg	1 - 1	100%	2.5	2.5	–	–	2.5	NA	No ESV

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Table 2-33. Bulk Sediment Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals (continued)								
Strontium, Total Metals	mg/kg	1 - 1	100%	7.6 - 7.6	– - –	7.6	NA	No ESV
Strontium, Water Extractable Fraction	mg/kg	1 - 1	100%	0.2 - 0.2	– - –	0.2	NA	No ESV
Thallium, Carbonate Bound Fraction	mg/kg	1 - 1	100%	0.0082 - 0.0082	– - –	0.008	NA	No ESV
Thallium, Hydroxide Fraction	mg/kg	1 - 1	100%	0.014 - 0.014	– - –	0.01	NA	No ESV
Thallium, Ion Exchange Fraction	mg/kg	1 - 1	100%	0.003 - 0.003	– - –	0.003	NA	No ESV
Thallium, Total Metals	mg/kg	1 - 1	100%	0.12 - 0.12	– - –	0.1	NA	No ESV
Thallium, Water Extractable Fraction	mg/kg	0 - 1	0%	– - –	0.00014 - 0.00014	–	NA	No ESV
Vanadium, Carbonate Bound Fraction	mg/kg	0 - 1	0%	– - –	0.0069 - 0.0069	–	NA	No ESV
Vanadium, Hydroxide Fraction	mg/kg	1 - 1	100%	0.034 - 0.034	– - –	0.03	NA	No ESV
Vanadium, Total Metals	mg/kg	1 - 1	100%	10.2 - 10.2	– - –	10.2	NA	No ESV
Zinc, Carbonate Bound Fraction	mg/kg	1 - 1	100%	1.1 - 1.1	– - –	1.1	NA	No ESV
Zinc, Hydroxide Fraction	mg/kg	1 - 1	100%	7.5 - 7.5	– - –	7.5	NA	No ESV
Zinc, Ion Exchange Fraction	mg/kg	0 - 1	0%	– - –	0.12 - 0.12	–	NA	No ESV
Zinc, Total Metals	mg/kg	1 - 1	100%	41.3 - 41.3	– - –	41.3	124	no
Zinc, Water Extractable Fraction	mg/kg	1 - 1	100%	0.034 - 0.034	– - –	0.03	NA	No ESV
Physical Properties						–		
% Ash	%	0 - 1	0%	– - –	1 - 1	–	NA	No ESV
Fraction of Organic Carbon	%	1 - 1	100%	1.8 - 1.8	– - –	1.8	NA	No ESV
Total Organic Carbon	mg/kg	1 - 1	100%	5300 - 5300	– - –	5300	NA	No ESV
Physical Properties-Grain Size								
Clay	%	1 - 1	100%	5.3 - 5.3	– - –	5.3	NA	No ESV
Gravel	%	1 - 1	100%	0.5 - 0.5	– - –	0.5	NA	No ESV
Sand	%	1 - 1	100%	82.7 - 82.7	– - –	82.7	NA	No ESV
Sand, Coarse	%	1 - 1	100%	1.7 - 1.7	– - –	1.7	NA	No ESV
Sand, Fine	%	1 - 1	100%	78.1 - 78.1	– - –	78.1	NA	No ESV
Sand, Medium	%	1 - 1	100%	2.9 - 2.9	– - –	2.9	NA	No ESV
Silt	%	1 - 1	100%	11.5 - 11.5	– - –	11.5	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-34. Bulk Sediment Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics								
Aluminum	mg/kg	4 - 4	100%	15300 - 30100	– - –	20925	NA	No ESV
Antimony	mg/kg	0 - 4	0%	– - –	1.69 - 2.43	–	12	–
Arsenic	mg/kg	4 - 4	100%	18.7 - 32.5	– - –	23.2	7.24	Yes
Barium	mg/kg	4 - 4	100%	194 - 261	– - –	218	NA	No ESV
Beryllium	mg/kg	4 - 4	100%	1.69 - 2.32	– - –	1.9	NA	No ESV
Boron	mg/kg	4 - 4	100%	18.4 - 26.3	– - –	21.8	NA	No ESV
Cadmium	mg/kg	0 - 4	0%	– - –	0.169 - 0.243	–	1	–
Chromium	mg/kg	4 - 4	100%	22.7 - 36	– - –	28.3	52.3	no
Cobalt	mg/kg	4 - 4	100%	12.6 - 21.6	– - –	17	NA	No ESV
Copper	mg/kg	4 - 4	100%	34.2 - 60.8	– - –	41.9	18.7	Yes
Lead	mg/kg	4 - 4	100%	13.9 - 29.8	– - –	20.2	30.2	no
Manganese	mg/kg	4 - 4	100%	660 - 2200	– - –	1163	NA	No ESV
Mercury	mg/kg	4 - 4	100%	0.3 - 0.77	– - –	0.45	0.13	Yes
Molybdenum	mg/kg	0 - 4	0%	– - –	6.74 - 9.73	–	NA	No ESV
Nickel	mg/kg	4 - 4	100%	20.5 - 32	– - –	26.5	15.9	Yes
Selenium	mg/kg	4 - 4	100%	2.6 - 4.06	– - –	3.3	NA	No ESV
Silver	mg/kg	0 - 4	0%	– - –	0.843 - 1.22	–	2	–
Strontium	mg/kg	4 - 4	100%	61.5 - 143	– - –	108	NA	No ESV
Thallium	mg/kg	0 - 4	0%	– - –	1.69 - 2.43	–	NA	No ESV
Vanadium	mg/kg	4 - 4	100%	43 - 59.1	– - –	50.7	NA	No ESV
Zinc	mg/kg	4 - 4	100%	61.6 - 145	– - –	92.2	124	Yes
Inorganic-cations/anions								
Calcium	mg/kg	4 - 4	100%	3120 - 4060	– - –	3648	NA	No ESV
Iron	mg/kg	4 - 4	100%	21200 - 35100	– - –	26750	NA	No ESV
Magnesium	mg/kg	4 - 4	100%	1620 - 3370	– - –	2213	NA	No ESV
Potassium	mg/kg	4 - 4	100%	1770 - 3760	– - –	2435	NA	No ESV
Sodium	mg/kg	0 - 4	0%	– - –	169 - 243	–	NA	No ESV
Benzo(a)anthracene	mg/kg	4 - 4	100%	0.014 - 0.031	– - –	0.02	0.33	no
Benzo(a)pyrene	mg/kg	4 - 4	100%	0.015 - 0.035	– - –	0.02	0.33	no
Benzo(b)fluoranthene	mg/kg	4 - 4	100%	0.023 - 0.052	– - –	0.04	NA	No ESV
Benzo(e)pyrene	mg/kg	4 - 4	100%	0.015 - 0.032	– - –	0.02	NA	No ESV
Benzo(g,h,i)perylene	mg/kg	4 - 4	100%	0.0073 - 0.018	– - –	0.01	NA	No ESV
Benzo(k)fluoranthene	mg/kg	4 - 4	100%	0.017 - 0.037	– - –	0.02	NA	No ESV
C1-Chrysenes	mg/kg	4 - 4	100%	0.0074 - 0.024	– - –	0.01	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	4 - 4	100%	0.021 - 0.041	– - –	0.03	NA	No ESV

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Table 2-34. Bulk Sediment Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic-cations/anions (continued)										
C2-Chrysenes	mg/kg	4 - 4	100%	0.0075	0.017	–	–	0.01	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	4 - 4	100%	0.024	0.037	–	–	0.03	NA	No ESV
C3-Chrysenes	mg/kg	4 - 4	100%	0.0039	0.0096	–	–	0.01	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	4 - 4	100%	0.01	0.019	–	–	0.01	NA	No ESV
C4-Chrysenes	mg/kg	4 - 4	100%	0.0022	0.0047	–	–	0.00	NA	No ESV
Chrysene	mg/kg	4 - 4	100%	0.019	0.037	–	–	0.03	0.33	no
Dibenz(a,h)anthracene	mg/kg	4 - 4	100%	0.0024	0.0059	–	–	0.004	0.33	no
Fluoranthene	mg/kg	4 - 4	100%	0.034	0.06	–	–	0.04	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	4 - 4	100%	0.0066	0.017	–	–	0.01	NA	No ESV
Perylene	mg/kg	4 - 4	100%	0.034	0.35	–	–	0.12	NA	No ESV
Pyrene	mg/kg	4 - 4	100%	0.032	0.06	–	–	0.04	0.33	no
Total HPAH	mg/kg	4 - 4	100%	0.2954	0.8872	–	–	0.49	0.655	Yes
Acenaphthene	mg/kg	3 - 4	75%	0.0013	0.0015	0.001	0.001	0.001	0.33	no
Acenaphthylene	mg/kg	4 - 4	100%	0.00098	0.002	–	–	0.001	0.33	no
Anthracene	mg/kg	4 - 4	100%	0.0021	0.0042	–	–	0.003	0.33	no
C1-Fluorenes	mg/kg	4 - 4	100%	0.0025	0.0048	–	–	0.003	NA	No ESV
C1-Naphthalenes	mg/kg	4 - 4	100%	0.02	0.035	–	–	0.03	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	4 - 4	100%	0.019	0.036	–	–	0.03	NA	No ESV
C2-Fluorenes	mg/kg	4 - 4	100%	0.0057	0.01	–	–	0.01	NA	No ESV
C2-Naphthalenes	mg/kg	4 - 4	100%	0.044	0.08	–	–	0.06	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	4 - 4	100%	0.014	0.026	–	–	0.02	NA	No ESV
C3-Fluorenes	mg/kg	4 - 4	100%	0.0042	0.008	–	–	0.01	NA	No ESV
C3-Naphthalenes	mg/kg	4 - 4	100%	0.035	0.061	–	–	0.04	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	4 - 4	100%	0.0069	0.014	–	–	0.01	NA	No ESV
C4-Naphthalenes	mg/kg	4 - 4	100%	0.021	0.038	–	–	0.03	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	4 - 4	100%	0.0077	0.015	–	–	0.01	NA	No ESV
Fluorene	mg/kg	4 - 4	100%	0.002	0.0041	–	–	0.003	0.33	no
Naphthalene	mg/kg	4 - 4	100%	0.0079	0.013	–	–	0.01	0.33	no
Phenanthrene	mg/kg	4 - 4	100%	0.017	0.03	–	–	0.02	0.33	no
Total LPAH	mg/kg	4 - 4	100%	0.211	0.3784	–	–	0.28	0.33	
Total Alkylated PAHs	mg/kg	4 - 4	100%	0.2561	0.4761	–	–	0.34	NA	No ESV
Total Unsubstituted PAHs	mg/kg	4 - 4	100%	0.2503	0.7895	–	–	0.43	NA	
PCB-1016	mg/kg	0 - 4	0%	–	–	0.0023	0.0032	–	0.033	–
PCB-1221	mg/kg	0 - 4	0%	–	–	0.0023	0.0032	–	0.067	–
PCB-1232	mg/kg	0 - 4	0%	–	–	0.0023	0.0032	–	0.033	–

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Table 2-34. Bulk Sediment Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Inorganic-cations/anions (continued)										
PCB-1242	mg/kg	0 - 4	0%	–	–	0.0023	0.0032	–	0.033	–
PCB-1248	mg/kg	0 - 4	0%	–	–	0.0023	0.0032	–	0.033	no
PCB-1254	mg/kg	4 - 4	100%	0.0049	0.0099	–	–	0.01	0.033	no
PCB-1260	mg/kg	4 - 4	100%	0.0059	0.014	–	–	0.01	0.033	–
PCB-1262	mg/kg	0 - 4	0%	–	–	0.0023	0.0032	–	0.033	–
PCB-1268	mg/kg	0 - 4	0%	–	–	0.0023	0.0032	–	0.033	Yes
Total PCBs	mg/kg	4 - 4	100%	0.0269	0.0414	–	–	0.03	0.033	
Pesticides										–
4,4'-DDD	mg/kg	0 - 4	0%	–	–	0.00087	0.0012	–	0.0033	–
4,4'-DDE	mg/kg	0 - 4	0%	–	–	0.00087	0.0012	–	0.0033	no
4,4'-DDT	mg/kg	2 - 4	50%	0.0017	0.0021	0.00087	0.0011	0.002	0.0033	No ESV
Aldrin	mg/kg	0 - 4	0%	–	–	0.00045	0.00063	–	NA	No ESV
alpha-BHC	mg/kg	3 - 4	75%	0.00074	0.0021	0.00052	0.00052	0.001	NA	–
alpha-Chlordane	mg/kg	0 - 4	0%	–	–	0.00045	0.00063	–	0.0017	No ESV
beta-BHC	mg/kg	4 - 4	100%	0.0013	0.0067	–	–	0.003	NA	No ESV
delta-BHC	mg/kg	3 - 4	75%	0.0011	0.0027	0.00052	0.00052	0.002	NA	–
Dieldrin	mg/kg	0 - 4	0%	–	–	0.00087	0.0012	–	0.0033	No ESV
Endosulfan I	mg/kg	0 - 4	0%	–	–	0.00045	0.00063	–	NA	No ESV
Endosulfan II	mg/kg	0 - 4	0%	–	–	0.00087	0.0012	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 4	0%	–	–	0.00087	0.0012	–	NA	–
Endrin	mg/kg	0 - 4	0%	–	–	0.00087	0.0012	–	0.0033	No ESV
Endrin aldehyde	mg/kg	0 - 4	0%	–	–	0.00087	0.0012	–	NA	No ESV
Endrin Ketone	mg/kg	0 - 4	0%	–	–	0.00087	0.0012	–	NA	No ESV
gamma-BHC (Lindane)	mg/kg	3 - 4	75%	0.00093	0.0015	0.00052	0.00052	0.001	0.0033	–
gamma-Chlordane	mg/kg	0 - 4	0%	–	–	0.00045	0.00063	–	0.0017	No ESV
Heptachlor	mg/kg	4 - 4	100%	0.00056	0.0025	–	–	0.001	NA	No ESV
Heptachlor Epoxide	mg/kg	0 - 4	0%	–	–	0.00045	0.00063	–	NA	No ESV
Methoxychlor	mg/kg	0 - 4	0%	–	–	0.0045	0.0063	–	NA	–
Total Chlordane	mg/kg	0 - 4	0%	–	–	0.0009	0.00126	–	0.0017	No ESV
Total DDx	mg/kg	2 - 4	50%	0.0041	0.0041	0.00261	0.0033	0.004	NA	No ESV
Total Pesticides	mg/kg	4 - 4	100%	0.06573	0.09925	–	–	0.08	NA	No ESV
Toxaphene	mg/kg	0 - 4	0%	–	–	0.045	0.063	–	NA	

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Table 2-34. Bulk Sediment Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Radionuclides										No ESV
Actinium-228	pCi/g	4 - 4	100%	1.96	2.4	–	–	2.1	NA	No ESV
Americium-241	pCi/g	0 - 4	0%	–	–	200	339	–	NA	No ESV
Bismuth-214	pCi/g	4 - 4	100%	1.66	2.55	–	–	2.3	NA	No ESV
Cesium-137	pCi/g	4 - 4	100%	0.626	3.7	–	–	1.5	NA	No ESV
Cobalt-60	pCi/g	0 - 4	0%	–	–	0.072	0.0832	–	NA	No ESV
Lead-212	pCi/g	4 - 4	100%	1.63	2.28	–	–	2.04	NA	No ESV
Lead-214	pCi/g	4 - 4	100%	1.98	2.97	–	–	2.7	NA	No ESV
Potassium-40	pCi/g	4 - 4	100%	14.6	18.3	–	–	16.9	NA	No ESV
Radium-226	pCi/g	4 - 4	100%	1.66	2.55	–	–	2.3	NA	No ESV
Radium-228	pCi/g	4 - 4	100%	1.96	2.4	–	–	2.1	NA	No ESV
Thallium-208	pCi/g	4 - 4	100%	0.502	0.643	–	–	0.6	NA	No ESV
Thorium-228	pCi/g	4 - 4	100%	1.76	2.43	–	–	2.1	NA	No ESV
Thorium-230	pCi/g	4 - 4	100%	2.12	3.29	–	–	2.7	NA	No ESV
Thorium-232	pCi/g	4 - 4	100%	1.77	2.35	–	–	2	NA	No ESV
Thorium-234	pCi/g	1 - 4	25%	3.28	3.28	1.86	2.86	3.3	NA	No ESV
Uranium-234	pCi/g	4 - 4	100%	1.65	2.57	–	–	2.2	NA	No ESV
Uranium-235	pCi/g	3 - 4	75%	0.0557	0.192	0.101	0.101	0.13	NA	No ESV
Uranium-238	pCi/g	4 - 4	100%	1.7	2.53	–	–	2.2	NA	
Speciation										No ESV
Arsenate-speciation	mg/kg	4 - 4	100%	4.42	11.4	–	–	7.8	NA	Yes
Arsenic-speciation	mg/kg	4 - 4	100%	13.2	26.4	–	–	18.8	7.24	No ESV
Arsenite-speciation	mg/kg	4 - 4	100%	6.46	17	–	–	11.2	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	4 - 4	100%	10.9	28.3	–	–	19	NA	No ESV
Inorganic Mercury-speciation	mg/kg	4 - 4	100%	0.38	1.66	–	–	0.79	NA	No ESV
Inorganic Selenium-speciation	mg/kg	1 - 4	25%	0.887	0.887	0.491	0.752	0.89	NA	No ESV
Mercury-speciation	mg/kg	4 - 4	100%	0.382	1.66	–	–	0.79	0.13	Yes
Methyl mercury-speciation	mg/kg	4 - 4	100%	0.00107	0.0018	–	–	0.002	NA	No ESV
Organic Arsenic-speciation	mg/kg	1 - 4	25%	2.32	2.32	2.4	6.02	2.3	NA	No ESV
Organic Selenium-speciation	mg/kg	3 - 4	75%	1.44	2.86	0.926	0.926	2.2	NA	No ESV
Selenate-speciation	mg/kg	0 - 4	0%	–	–	0.388	0.595	–	NA	No ESV
Selenite-speciation	mg/kg	1 - 4	25%	0.887	0.887	0.491	0.752	0.89	NA	No ESV
Selenium-speciation	mg/kg	3 - 4	75%	2.23	2.86	0.926	0.926	2.5	NA	No ESV

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Table 2-34. Bulk Sediment Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals								
Aluminum, Carbonate Bound Fraction	mg/kg	4 - 4	100%	11.8 - 22.6	– - –	15.6	NA	No ESV
Aluminum, Hydroxide Fraction	mg/kg	4 - 4	100%	74.8 - 134	– - –	94.3	NA	No ESV
Aluminum, Ion Exchange Fraction	mg/kg	4 - 4	100%	2.8 - 5.5	– - –	4.03	NA	No ESV
Aluminum, Total Metals	mg/kg	4 - 4	100%	13500 - 18800	– - –	15925	NA	No ESV
Aluminum, Water Extractable Fraction	mg/kg	4 - 4	100%	17 - 23.3	– - –	19.4	NA	No ESV
Arsenic, Carbonate Bound Fraction	mg/kg	4 - 4	100%	0.039 - 0.11	– - –	0.07	NA	No ESV
Arsenic, Hydroxide Fraction	mg/kg	4 - 4	100%	0.11 - 0.29	– - –	0.18	NA	No ESV
Arsenic, Ion Exchange Fraction	mg/kg	4 - 4	100%	0.025 - 0.078	– - –	0.05	NA	No ESV
Arsenic, Total Metals	mg/kg	4 - 4	100%	15.7 - 32.6	– - –	24.3	7.24	Yes
Arsenic, Water Extractable Fraction	mg/kg	4 - 4	100%	0.015 - 0.083	– - –	0.05	NA	No ESV
Barium, Carbonate Bound Fraction	mg/kg	4 - 4	100%	23.9 - 34.2	– - –	28.7	NA	No ESV
Barium, Hydroxide Fraction	mg/kg	4 - 4	100%	28.8 - 44.7	– - –	34.2	NA	No ESV
Barium, Ion Exchange Fraction	mg/kg	4 - 4	100%	24.3 - 34.5	– - –	28.5	NA	No ESV
Barium, Total Metals	mg/kg	4 - 4	100%	198 - 272	– - –	226	NA	No ESV
Barium, Water Extractable Fraction	mg/kg	4 - 4	100%	0.43 - 0.89	– - –	0.65	NA	No ESV
Cadmium, Carbonate Bound Fraction	mg/kg	4 - 4	100%	0.1 - 0.21	– - –	0.15	NA	No ESV
Cadmium, Hydroxide Fraction	mg/kg	4 - 4	100%	0.12 - 0.2	– - –	0.16	NA	No ESV
Cadmium, Ion Exchange Fraction	mg/kg	4 - 4	100%	0.012 - 0.019	– - –	0.02	NA	No ESV
Cadmium, Total Metals	mg/kg	4 - 4	100%	0.46 - 0.61	– - –	0.53	1	no
Cadmium, Water Extractable Fraction	mg/kg	0 - 4	0%	– - –	0.00092 - 0.0013	–	NA	No ESV
Calcium, Carbonate Bound Fraction	mg/kg	4 - 4	100%	557 - 858	– - –	673	NA	No ESV
Calcium, Hydroxide Fraction	mg/kg	4 - 4	100%	544 - 777	– - –	658	NA	No ESV
Calcium, Ion Exchange Fraction	mg/kg	4 - 4	100%	998 - 1850	– - –	1335	NA	No ESV
Calcium, Total Metals	mg/kg	4 - 4	100%	3520 - 4500	– - –	4003	NA	No ESV
Calcium, Water Extractable Fraction	mg/kg	4 - 4	100%	94.7 - 190	– - –	125	NA	No ESV
Chromium, Carbonate Bound Fraction	mg/kg	4 - 4	100%	0.28 - 0.52	– - –	0.34	NA	No ESV
Chromium, Hydroxide Fraction	mg/kg	4 - 4	100%	0.36 - 0.58	– - –	0.43	NA	No ESV
Chromium, Ion Exchange Fraction	mg/kg	4 - 4	100%	0.11 - 0.16	– - –	0.14	NA	No ESV
Chromium, Total Metals	mg/kg	4 - 4	100%	19.2 - 27	– - –	22.9	52.3	no
Chromium, Water Extractable Fraction	mg/kg	3 - 3	100%	0.026 - 0.032	– - –	0.03	NA	No ESV
Cobalt, Carbonate Bound Fraction	mg/kg	4 - 4	100%	0.028 - 0.072	– - –	0.04	NA	No ESV
Cobalt, Hydroxide Fraction	mg/kg	4 - 4	100%	1.6 - 5.1	– - –	2.9	NA	No ESV
Cobalt, Ion Exchange Fraction	mg/kg	4 - 4	100%	0.0067 - 0.017	– - –	0.01	NA	No ESV
Cobalt, Total Metals	mg/kg	4 - 4	100%	13 - 19.3	– - –	15.9	NA	No ESV

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Table 2-34. Bulk Sediment Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals (continued)										
Cobalt, Water Extractable Fraction	mg/kg	4 - 4	100%	0.018	0.026	–	–	0.02	NA	No ESV
Copper, Carbonate Bound Fraction	mg/kg	4 - 4	100%	0.39	1.4	–	–	0.77	NA	No ESV
Copper, Hydroxide Fraction	mg/kg	4 - 4	100%	0.23	0.34	–	–	0.28	NA	No ESV
Copper, Ion Exchange Fraction	mg/kg	4 - 4	100%	0.15	0.27	–	–	0.2	NA	No ESV
Copper, Total Metals	mg/kg	4 - 4	100%	36.3	58.3	–	–	43.0	18.7	Yes
Copper, Water Extractable Fraction	mg/kg	4 - 4	100%	0.086	0.12	–	–	0.1	NA	No ESV
Iron, Carbonate Bound Fraction	mg/kg	4 - 4	100%	7.5	16.1	–	–	11.6	NA	No ESV
Iron, Hydroxide Fraction	mg/kg	4 - 4	100%	181	548	–	–	334	NA	No ESV
Iron, Ion Exchange Fraction	mg/kg	4 - 4	100%	1.9	7.7	–	–	4.3	NA	No ESV
Iron, Total Metals	mg/kg	4 - 4	100%	18800	28600	–	–	22775	NA	No ESV
Iron, Water Extractable Fraction	mg/kg	4 - 4	100%	15.7	17.8	–	–	17.1	NA	No ESV
Lead, Carbonate Bound Fraction	mg/kg	4 - 4	100%	0.14	0.24	–	–	0.18	NA	No ESV
Lead, Hydroxide Fraction	mg/kg	4 - 4	100%	0.33	0.8	–	–	0.54	NA	No ESV
Lead, Ion Exchange Fraction	mg/kg	4 - 4	100%	0.022	0.048	–	–	0.03	NA	No ESV
Lead, Total Metals	mg/kg	4 - 4	100%	20	34.2	–	–	25.1	30.2	Yes
Lead, Water Extractable Fraction	mg/kg	4 - 4	100%	0.027	0.044	–	–	0.03	NA	No ESV
Magnesium, Carbonate Bound Fraction	mg/kg	4 - 4	100%	151	237	–	–	187	NA	No ESV
Magnesium, Hydroxide Fraction	mg/kg	4 - 4	100%	188	222	–	–	200	NA	No ESV
Magnesium, Ion Exchange Fraction	mg/kg	4 - 4	100%	173	394	–	–	244	NA	No ESV
Magnesium, Total Metals	mg/kg	4 - 4	100%	1660	2640	–	–	1998	NA	No ESV
Magnesium, Water Extractable Fraction	mg/kg	4 - 4	100%	26.2	44.5	–	–	33.1	NA	No ESV
Manganese, Carbonate Bound Fraction	mg/kg	4 - 4	100%	62.9	131	–	–	95.9	NA	No ESV
Manganese, Hydroxide Fraction	mg/kg	4 - 4	100%	548	1420	–	–	849	NA	No ESV
Manganese, Ion Exchange Fraction	mg/kg	4 - 4	100%	0.58	2	–	–	1.2	NA	No ESV
Manganese, Total Metals	mg/kg	4 - 4	100%	889	2030	–	–	1300	NA	No ESV
Manganese, Water Extractable Fraction	mg/kg	4 - 4	100%	0.61	0.97	–	–	0.8	NA	No ESV
Molybdenum, Hydroxide Fraction	mg/kg	1 - 1	100%	0.012	0.012	–	–	0.01	NA	No ESV
Molybdenum, Ion Exchange Fraction	mg/kg	1 - 4	25%	0.032	0.032	0.0045	0.0064	0.03	NA	No ESV
Molybdenum, Total Metals	mg/kg	4 - 4	100%	1.2	2.2	–	–	1.5	NA	No ESV
Molybdenum, Water Extractable Fraction	mg/kg	0 - 3	0%	–	–	0.014	0.057	–	NA	No ESV
Nickel, Carbonate Bound Fraction	mg/kg	4 - 4	100%	0.45	1	–	–	0.7	NA	No ESV
Nickel, Hydroxide Fraction	mg/kg	4 - 4	100%	0.85	2.9	–	–	1.6	NA	No ESV
Nickel, Ion Exchange Fraction	mg/kg	4 - 4	100%	0.042	0.11	–	–	0.08	NA	No ESV
Nickel, Total Metals	mg/kg	4 - 4	100%	22.7	31.1	–	–	26.7	15.9	Yes
Nickel, Water Extractable Fraction	mg/kg	4 - 4	100%	0.03	0.062	–	–	0.04	NA	No ESV

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Table 2-34. Bulk Sediment Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals (continued)										
Selenium, Carbonate Bound Fraction	mg/kg	0 - 4	0%	–	–	0.012	0.017	–	NA	No ESV
Selenium, Hydroxide Fraction	mg/kg	4 - 4	100%	0.095	0.14	–	–	0.12	NA	No ESV
Selenium, Total Metals	mg/kg	4 - 4	100%	2	3.2	–	–	2.6	NA	No ESV
Silver, Total Metals	mg/kg	4 - 4	100%	0.098	0.25	–	–	0.14	2	no
Sodium, Carbonate Bound Fraction	mg/kg	4 - 4	100%	2.1	3.5	–	–	2.6	NA	No ESV
Sodium, Hydroxide Fraction	mg/kg	4 - 4	100%	12.8	17.3	–	–	15.1	NA	No ESV
Sodium, Ion Exchange Fraction	mg/kg	4 - 4	100%	6.4	10.9	–	–	8.1	NA	No ESV
Sodium, Total Metals	mg/kg	4 - 4	100%	120	183	–	–	158	NA	No ESV
Sodium, Water Extractable Fraction	mg/kg	4 - 4	100%	9.5	17.2	–	–	12.1	NA	No ESV
Strontium, Carbonate Bound Fraction	mg/kg	4 - 4	100%	3	4.5	–	–	3.6	NA	No ESV
Strontium, Hydroxide Fraction	mg/kg	4 - 4	100%	8.9	21.9	–	–	14.7	NA	No ESV
Strontium, Ion Exchange Fraction	mg/kg	4 - 4	100%	5.8	8.7	–	–	7.1	NA	No ESV
Strontium, Total Metals	mg/kg	4 - 4	100%	56.9	155	–	–	119	NA	No ESV
Strontium, Water Extractable Fraction	mg/kg	4 - 4	100%	0.5	1.1	–	–	0.7	NA	No ESV
Thallium, Carbonate Bound Fraction	mg/kg	4 - 4	100%	0.046	0.14	–	–	0.09	NA	No ESV
Thallium, Hydroxide Fraction	mg/kg	4 - 4	100%	0.067	0.17	–	–	0.12	NA	No ESV
Thallium, Ion Exchange Fraction	mg/kg	4 - 4	100%	0.013	0.078	–	–	0.04	NA	No ESV
Thallium, Total Metals	mg/kg	4 - 4	100%	0.52	1	–	–	0.75	NA	No ESV
Thallium, Water Extractable Fraction	mg/kg	3 - 4	75%	0.0015	0.0031	0.00035	0.00035	0.002	NA	No ESV
Vanadium, Carbonate Bound Fraction	mg/kg	4 - 4	100%	0.047	0.065	–	–	0.06	NA	No ESV
Vanadium, Hydroxide Fraction	mg/kg	4 - 4	100%	0.22	0.39	–	–	0.28	NA	No ESV
Vanadium, Ion Exchange Fraction	mg/kg	4 - 4	100%	0.041	0.067	–	–	0.05	NA	No ESV
Vanadium, Total Metals	mg/kg	4 - 4	100%	39.4	49.9	–	–	43.4	NA	No ESV
Vanadium, Water Extractable Fraction	mg/kg	4 - 4	100%	0.037	0.082	–	–	0.06	NA	No ESV
Zinc, Carbonate Bound Fraction	mg/kg	4 - 4	100%	1.9	5.9	–	–	3	NA	No ESV
Zinc, Hydroxide Fraction	mg/kg	4 - 4	100%	9.3	24.5	–	–	14.4	NA	No ESV
Zinc, Ion Exchange Fraction	mg/kg	3 - 4	75%	0.2	0.4	0.16	0.16	0.33	NA	No ESV
Zinc, Total Metals	mg/kg	4 - 4	100%	62	114	–	–	79.7	124	no
Zinc, Water Extractable Fraction	mg/kg	4 - 4	100%	0.12	0.31	–	–	0.18	NA	No ESV
Physical Properties										
% Ash	%	4 - 4	100%	20	41	–	–	26.8	NA	No ESV
Fraction of Organic Carbon	%	4 - 4	100%	1.4	2.5	–	–	1.95	NA	No ESV
Total Organic Carbon	mg/kg	4 - 4	100%	11000	20000	–	–	13750	NA	No ESV

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Table 2-34. Bulk Sediment Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Physical Properties-Grain Size										
Clay	%	4 - 4	100%	14.6	30.6	–	–	22.7	NA	No ESV
Gravel	%	1 - 4	25%	0.2	0.2	0	0	0.2	NA	No ESV
Sand	%	4 - 4	100%	3.6	13.7	–	–	8.7	NA	No ESV
Sand, Coarse	%	2 - 4	50%	0.2	0.4	0	0	0.3	NA	No ESV
Sand, Fine	%	4 - 4	100%	3.3	13.1	–	–	8.1	NA	No ESV
Sand, Medium	%	4 - 4	100%	0.3	0.7	–	–	0.43	NA	No ESV
Silt	%	4 - 4	100%	64.6	72.9	–	–	68.7	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-35. Bulk Sediment Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganics										
Aluminum	mg/kg	4 - 4	100%	15100	24900	–	–	21675	NA	No ESV
Antimony	mg/kg	0 - 4	0%	–	–	1.87	2.15	–	NA	No ESV
Arsenic	mg/kg	4 - 4	100%	19.2	45.1	–	–	30	12	Yes
Barium	mg/kg	4 - 4	100%	193	257	–	–	236	7.24	Yes
Beryllium	mg/kg	4 - 4	100%	1.76	2.26	–	–	2.1	NA	No ESV
Boron	mg/kg	4 - 4	100%	19.1	27.1	–	–	24	NA	No ESV
Cadmium	mg/kg	0 - 4	0%	–	–	0.187	0.215	–	NA	No ESV
Chromium	mg/kg	4 - 4	100%	21.9	34.6	–	–	30	1	Yes
Cobalt	mg/kg	4 - 4	100%	13.3	19.4	–	–	16.9	52.3	no
Copper	mg/kg	4 - 4	100%	29.2	38	–	–	34.2	NA	No ESV
Lead	mg/kg	4 - 4	100%	14.9	22.5	–	–	19.2	18.7	Yes
Manganese	mg/kg	4 - 4	100%	451	1200	–	–	912	30.2	Yes
Mercury	mg/kg	4 - 4	100%	0.18	0.39	–	–	0.3	NA	No ESV
Molybdenum	mg/kg	0 - 4	0%	–	–	7.47	8.59	–	0.13	–
Nickel	mg/kg	4 - 4	100%	21	31.4	–	–	27.7	NA	No ESV
Selenium	mg/kg	4 - 4	100%	2.84	3.39	–	–	3.1	15.9	no
Silver	mg/kg	0 - 4	0%	–	–	0.934	1.07	–	NA	No ESV
Strontium	mg/kg	4 - 4	100%	112	137	–	–	127	2	Yes
Thallium	mg/kg	0 - 4	0%	–	–	1.87	2.15	–	NA	No ESV
Vanadium	mg/kg	4 - 4	100%	42.1	59.8	–	–	54.3	NA	No ESV
Zinc	mg/kg	4 - 4	100%	62.2	87.5	–	–	79	NA	No ESV
Inorganic-cations/anions									124	
Calcium	mg/kg	4 - 4	100%	3090	3970	–	–	3710		No ESV
Iron	mg/kg	4 - 4	100%	20200	31000	–	–	26200	NA	No ESV
Magnesium	mg/kg	4 - 4	100%	1540	2510	–	–	2118	NA	No ESV
Potassium	mg/kg	4 - 4	100%	1660	3380	–	–	2683	NA	No ESV
Sodium	mg/kg	2 - 4	50%	246	278	187	204	262	NA	No ESV
Benzo(a)anthracene	mg/kg	4 - 4	100%	0.015	0.018	–	–	0.016		No ESV
Benzo(a)pyrene	mg/kg	4 - 4	100%	0.015	0.019	–	–	0.017	0.33	no
Benzo(b)fluoranthene	mg/kg	4 - 4	100%	0.023	0.029	–	–	0.027	0.33	no
Benzo(e)pyrene	mg/kg	4 - 4	100%	0.015	0.018	–	–	0.017	NA	No ESV
Benzo(g,h,i)perylene	mg/kg	4 - 4	100%	0.0068	0.0084	–	–	0.008	NA	No ESV
Benzo(k)fluoranthene	mg/kg	4 - 4	100%	0.018	0.021	–	–	0.019	NA	No ESV

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Table 2-35. Bulk Sediment Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Inorganic-cations/anions (continued)									NA	
C1-Chrysenes	mg/kg	4 - 4	100%	0.0075	0.0081	–	–	0.008	NA	No ESV
C1-Fluoranthenes/Pyrenes	mg/kg	4 - 4	100%	0.021	0.025	–	–	0.023	NA	No ESV
C2-Chrysenes	mg/kg	4 - 4	100%	0.0075	0.0093	–	–	0.009	NA	No ESV
C2-Fluoranthenes/Pyrene	mg/kg	4 - 4	100%	0.023	0.044	–	–	0.032	NA	No ESV
C3-Chrysenes	mg/kg	2 - 4	50%	0.0036	0.0042	0.0011	0.0012	0.004	NA	No ESV
C3-Fluoranthenes/Pyrene	mg/kg	4 - 4	100%	0.0089	0.015	–	–	0.011	NA	No ESV
C4-Chrysenes	mg/kg	2 - 4	50%	0.0022	0.0025	0.0011	0.0012	0.002	NA	No ESV
Chrysene	mg/kg	4 - 4	100%	0.019	0.023	–	–	0.022	NA	No ESV
Dibenz(a,h)anthracene	mg/kg	4 - 4	100%	0.002	0.0027	–	–	0.002	0.33	no
Fluoranthene	mg/kg	4 - 4	100%	0.032	0.04	–	–	0.037	0.33	no
Indeno(1,2,3-cd)pyrene	mg/kg	4 - 4	100%	0.0061	0.0081	–	–	0.007	0.33	no
Perylene	mg/kg	4 - 4	100%	0.026	0.046	–	–	0.036	NA	No ESV
Pyrene	mg/kg	4 - 4	100%	0.031	0.038	–	–	0.035	NA	No ESV
Total HPAH	mg/kg	4 - 4	100%	0.3095	0.3548	–	–	0.33	0.33	Yes
Acenaphthene	mg/kg	2 - 4	50%	0.0011	0.0011	0.001	0.0012	0.001		No ESV
Acenaphthylene	mg/kg	4 - 4	100%	0.001	0.0013	–	–	0.001	0.33	no
Anthracene	mg/kg	4 - 4	100%	0.0022	0.0034	–	–	0.003	0.33	no
C1-Fluorenes	mg/kg	4 - 4	100%	0.0025	0.0031	–	–	0.003	0.33	no
C1-Naphthalenes	mg/kg	4 - 4	100%	0.016	0.026	–	–	0.02	NA	No ESV
C1-Phenanthrenes/Anthracenes	mg/kg	4 - 4	100%	0.018	0.023	–	–	0.02	NA	No ESV
C2-Fluorenes	mg/kg	4 - 4	100%	0.0051	0.0067	–	–	0.006	NA	No ESV
C2-Naphthalenes	mg/kg	4 - 4	100%	0.037	0.058	–	–	0.046	NA	No ESV
C2-Phenanthrenes/Anthracenes	mg/kg	4 - 4	100%	0.013	0.017	–	–	0.014	NA	No ESV
C3-Fluorenes	mg/kg	4 - 4	100%	0.0039	0.0052	–	–	0.005	NA	No ESV
C3-Naphthalenes	mg/kg	4 - 4	100%	0.029	0.045	–	–	0.035	NA	No ESV
C3-Phenanthrenes/Anthracenes	mg/kg	4 - 4	100%	0.0064	0.0075	–	–	0.007	NA	No ESV
C4-Naphthalenes	mg/kg	4 - 4	100%	0.018	0.027	–	–	0.021	NA	No ESV
C4-Phenanthrenes/Anthracenes	mg/kg	4 - 4	100%	0.0082	0.021	–	–	0.012	NA	No ESV
Fluorene	mg/kg	4 - 4	100%	0.002	0.0024	–	–	0.002	NA	No ESV
Naphthalene	mg/kg	4 - 4	100%	0.0064	0.01	–	–	0.008	0.33	no
Phenanthrene	mg/kg	4 - 4	100%	0.018	0.019	–	–	0.019	0.33	no
Total LPAH	mg/kg	4 - 4	100%	0.193	0.275	–	–	0.22	0.33	no
Total Alkylated PAHs	mg/kg	4 - 4	100%	0.2344	0.3455	–	–	0.28		No ESV
Total Unsubstituted PAHs	mg/kg	4 - 4	100%	0.2572	0.2981	–	–	0.28	NA	No ESV

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Table 2-35. Bulk Sediment Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Inorganic-cations/anions (continued)									0.655	
PCB-1016	mg/kg	0 - 4	0%	–	–	0.0026	0.0031	–		No ESV
PCB-1221	mg/kg	0 - 4	0%	–	–	0.0026	0.0031	–	0.033	–
PCB-1232	mg/kg	0 - 4	0%	–	–	0.0026	0.0031	–	0.067	–
PCB-1242	mg/kg	0 - 4	0%	–	–	0.0026	0.0031	–	0.033	–
PCB-1248	mg/kg	0 - 4	0%	–	–	0.0026	0.0031	–	0.033	–
PCB-1254	mg/kg	4 - 4	100%	0.0052	0.0067	–	–	0.006	0.033	no
PCB-1260	mg/kg	4 - 4	100%	0.0059	0.012	–	–	0.009	0.033	no
PCB-1262	mg/kg	0 - 4	0%	–	–	0.0026	0.0031	–	0.033	–
PCB-1268	mg/kg	0 - 4	0%	–	–	0.0026	0.0031	–	0.033	–
Total PCBs	mg/kg	4 - 4	100%	0.0295	0.0384	–	–	0.034	0.033	Yes
Pesticides									0.033	
4,4'-DDD	mg/kg	0 - 4	0%	–	–	0.001	0.0012	–		No ESV
4,4'-DDE	mg/kg	0 - 4	0%	–	–	0.001	0.0012	–	0.0033	–
4,4'-DDT	mg/kg	2 - 4	50%	0.0016	0.0029	0.001	0.0011	0.002	0.0033	no
Aldrin	mg/kg	0 - 4	0%	–	–	0.00052	0.00062	–	0.0033	–
alpha-BHC	mg/kg	3 - 4	75%	0.00055	0.0014	0.00052	0.00052	0.001	NA	No ESV
alpha-Chlordane	mg/kg	0 - 4	0%	–	–	0.00052	0.00062	–	NA	No ESV
beta-BHC	mg/kg	3 - 4	75%	0.0017	0.0043	0.00052	0.00052	0.003	0.0017	Yes
delta-BHC	mg/kg	3 - 4	75%	0.00078	0.0019	0.00052	0.00052	0.001	NA	No ESV
Dieldrin	mg/kg	0 - 4	0%	–	–	0.001	0.0012	–	NA	No ESV
Endosulfan I	mg/kg	0 - 4	0%	–	–	0.00052	0.00062	–	0.0033	–
Endosulfan II	mg/kg	0 - 4	0%	–	–	0.001	0.0012	–	NA	No ESV
Endosulfan Sulfate	mg/kg	0 - 4	0%	–	–	0.001	0.0012	–	NA	No ESV
Endrin	mg/kg	0 - 4	0%	–	–	0.001	0.0012	–	NA	No ESV
Endrin aldehyde	mg/kg	0 - 4	0%	–	–	0.001	0.0012	–	0.0033	–
Endrin Ketone	mg/kg	0 - 4	0%	–	–	0.001	0.0012	–	NA	No ESV
gamma-BHC (Lindane)	mg/kg	2 - 4	50%	0.00095	0.0016	0.00052	0.00052	0.001	NA	No ESV
gamma-Chlordane	mg/kg	0 - 4	0%	–	–	0.00052	0.00062	–	0.0033	–
Heptachlor	mg/kg	3 - 4	75%	0.0007	0.0016	0.00052	0.00052	0.001	0.0017	no
Heptachlor Epoxide	mg/kg	0 - 4	0%	–	–	0.00052	0.00062	–	NA	No ESV
Methoxychlor	mg/kg	0 - 4	0%	–	–	0.0052	0.0062	–	NA	No ESV

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Table 2-35. Bulk Sediment Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Pesticides (continued)									0.033	
Total Chlordane	mg/kg	0 - 4	0%	–	–	0.00104	0.00124	–	NA	No ESV
Total DDx	mg/kg	2 - 4	50%	0.004	0.0049	0.003	0.0033	0.004	0.0017	Yes
Total Pesticides	mg/kg	4 - 4	100%	0.07305	0.08956	–	–	0.08	NA	No ESV
Toxaphene	mg/kg	0 - 4	0%	–	–	0.052	0.062	–	NA	No ESV
Radionuclides									NA	
Actinium-228	pCi/g	4 - 4	100%	1.92	2.38	–	–	2.1		No ESV
Americium-241	pCi/g	0 - 4	0%	–	–	211	525	–	NA	No ESV
Bismuth-214	pCi/g	4 - 4	100%	2.25	2.91	–	–	2.5	NA	No ESV
Cesium-137	pCi/g	4 - 4	100%	0.399	1.3	–	–	0.85	NA	No ESV
Cobalt-60	pCi/g	0 - 4	0%	–	–	0.0722	0.0843	–	NA	No ESV
Lead-212	pCi/g	4 - 4	100%	2.26	2.39	–	–	2.31	NA	No ESV
Lead-214	pCi/g	4 - 4	100%	2.78	3.14	–	–	3.02	NA	No ESV
Potassium-40	pCi/g	4 - 4	100%	14.6	19.6	–	–	17.2	NA	No ESV
Radium-226	pCi/g	4 - 4	100%	2.25	2.91	–	–	2.5	NA	No ESV
Radium-228	pCi/g	4 - 4	100%	1.92	2.38	–	–	2.08	NA	No ESV
Thallium-208	pCi/g	4 - 4	100%	0.591	0.77	–	–	0.68	NA	No ESV
Thorium-228	pCi/g	4 - 4	100%	2.09	2.87	–	–	2.4	NA	No ESV
Thorium-230	pCi/g	4 - 4	100%	2.84	3.68	–	–	3.2	NA	No ESV
Thorium-232	pCi/g	4 - 4	100%	2.01	2.6	–	–	2.3	NA	No ESV
Thorium-234	pCi/g	3 - 4	75%	3.11	4.46	3.8	3.8	3.99	NA	No ESV
Uranium-234	pCi/g	4 - 4	100%	2.21	2.7	–	–	2.4	NA	No ESV
Uranium-235	pCi/g	4 - 4	100%	0.11	0.233	–	–	0.16	NA	No ESV
Uranium-238	pCi/g	4 - 4	100%	2.25	2.7	–	–	2.5	NA	No ESV
Speciation									NA	
Arsenate-speciation	mg/kg	2 - 4	50%	8.3	9.04	3.7	3.78	8.7		No ESV
Arsenic-speciation	mg/kg	4 - 4	100%	19.9	30.6	–	–	24	NA	No ESV
Arsenite-speciation	mg/kg	4 - 4	100%	15.6	26.2	–	–	19.1	7.24	Yes
Inorganic Arsenic-speciation	mg/kg	4 - 4	100%	19	35.2	–	–	24.4	NA	No ESV
Inorganic Mercury-speciation	mg/kg	4 - 4	100%	0.247	0.692	–	–	0.5	NA	No ESV
Inorganic Selenium-speciation	mg/kg	2 - 4	50%	0.661	0.83	0.635	0.743	0.75	NA	No ESV
Mercury-speciation	mg/kg	4 - 4	100%	0.248	0.694	–	–	0.5	NA	No ESV
Methyl mercury-speciation	mg/kg	4 - 4	100%	0.0014	0.00379	–	–	0.002	0.13	no
Organic Arsenic-speciation	mg/kg	1 - 4	25%	4.99	4.99	3.7	6.97	4.99	NA	No ESV
Organic Selenium-speciation	mg/kg	4 - 4	100%	1.66	2.66	–	–	2.4	NA	No ESV

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Table 2-35. Bulk Sediment Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Speciation (continued)									NA	
Selenate-speciation	mg/kg	0 - 4	0%	–	–	0.391	0.594	–	NA	No ESV
Selenite-speciation	mg/kg	2 - 4	50%	0.661	0.83	0.635	0.743	0.75	NA	No ESV
Selenium-speciation	mg/kg	4 - 4	100%	2.49	3.19	–	–	2.7	NA	No ESV
Sequentially Extracted Metals									NA	
Aluminum, Carbonate Bound Fraction	mg/kg	4 - 4	100%	14.3	26.8	–	–	20.6		No ESV
Aluminum, Hydroxide Fraction	mg/kg	4 - 4	100%	86.5	179	–	–	125	NA	No ESV
Aluminum, Ion Exchange Fraction	mg/kg	4 - 4	100%	3.9	12.6	–	–	8.4	NA	No ESV
Aluminum, Total Metals	mg/kg	4 - 4	100%	14500	19100	–	–	17075	NA	No ESV
Aluminum, Water Extractable Fraction	mg/kg	4 - 4	100%	21.7	43.8	–	–	27.9	NA	No ESV
Arsenic, Carbonate Bound Fraction	mg/kg	4 - 4	100%	0.061	0.13	–	–	0.11	NA	No ESV
Arsenic, Hydroxide Fraction	mg/kg	4 - 4	100%	0.23	0.28	–	–	0.27	NA	No ESV
Arsenic, Ion Exchange Fraction	mg/kg	4 - 4	100%	0.055	0.1	–	–	0.08	NA	No ESV
Arsenic, Total Metals	mg/kg	4 - 4	100%	22.6	42.2	–	–	30.4	NA	No ESV
Arsenic, Water Extractable Fraction	mg/kg	4 - 4	100%	0.042	0.084	–	–	0.06	7.24	no
Barium, Carbonate Bound Fraction	mg/kg	4 - 4	100%	26	33.1	–	–	29.2	NA	No ESV
Barium, Hydroxide Fraction	mg/kg	4 - 4	100%	30.3	39.6	–	–	36.5	NA	No ESV
Barium, Ion Exchange Fraction	mg/kg	4 - 4	100%	24.4	30.4	–	–	28.4	NA	No ESV
Barium, Total Metals	mg/kg	4 - 4	100%	232	270	–	–	255	NA	No ESV
Barium, Water Extractable Fraction	mg/kg	4 - 4	100%	0.67	1.2	–	–	0.89	NA	No ESV
Cadmium, Carbonate Bound Fraction	mg/kg	4 - 4	100%	0.12	0.14	–	–	0.13	NA	No ESV
Cadmium, Hydroxide Fraction	mg/kg	4 - 4	100%	0.13	0.17	–	–	0.15	NA	No ESV
Cadmium, Ion Exchange Fraction	mg/kg	4 - 4	100%	0.013	0.021	–	–	0.02	NA	No ESV
Cadmium, Total Metals	mg/kg	4 - 4	100%	0.5	0.62	–	–	0.56	NA	No ESV
Cadmium, Water Extractable Fraction	mg/kg	0 - 4	0%	–	–	0.00094	0.0014		1	–
Calcium, Carbonate Bound Fraction	mg/kg	4 - 4	100%	594	755	–	–	663	NA	No ESV
Calcium, Hydroxide Fraction	mg/kg	4 - 4	100%	637	734	–	–	688	NA	No ESV
Calcium, Ion Exchange Fraction	mg/kg	4 - 4	100%	1050	1450	–	–	1275	NA	No ESV
Calcium, Total Metals	mg/kg	4 - 4	100%	4200	4660	–	–	4428	NA	No ESV
Calcium, Water Extractable Fraction	mg/kg	4 - 4	100%	117	210	–	–	161	NA	No ESV
Chromium, Carbonate Bound Fraction	mg/kg	4 - 4	100%	0.36	0.49	–	–	0.41	NA	No ESV
Chromium, Hydroxide Fraction	mg/kg	4 - 4	100%	0.4	0.73	–	–	0.54	NA	No ESV
Chromium, Ion Exchange Fraction	mg/kg	4 - 4	100%	0.11	0.19	–	–	0.15	NA	No ESV

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Table 2-35. Bulk Sediment Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals (continued)									NA	
Chromium, Total Metals	mg/kg	4 - 4	100%	21.4	26.3	–	–	24.3	NA	No ESV
Chromium, Water Extractable Fraction	mg/kg	3 - 3	100%	0.021	0.049	–	–	0.03	52.3	no
Cobalt, Carbonate Bound Fraction	mg/kg	4 - 4	100%	0.038	0.079	–	–	0.06	NA	No ESV
Cobalt, Hydroxide Fraction	mg/kg	4 - 4	100%	1.8	3.7	–	–	2.6	NA	No ESV
Cobalt, Ion Exchange Fraction	mg/kg	4 - 4	100%	0.011	0.026	–	–	0.02	NA	No ESV
Cobalt, Total Metals	mg/kg	4 - 4	100%	14.5	18.1	–	–	16.3	NA	No ESV
Cobalt, Water Extractable Fraction	mg/kg	4 - 4	100%	0.015	0.049	–	–	0.03	NA	No ESV
Copper, Carbonate Bound Fraction	mg/kg	4 - 4	100%	0.29	0.59	–	–	0.42	NA	No ESV
Copper, Hydroxide Fraction	mg/kg	4 - 4	100%	0.14	0.3	–	–	0.23	NA	No ESV
Copper, Ion Exchange Fraction	mg/kg	4 - 4	100%	0.13	0.23	–	–	0.16	NA	No ESV
Copper, Total Metals	mg/kg	4 - 4	100%	31.5	42	–	–	37.9	NA	No ESV
Copper, Water Extractable Fraction	mg/kg	4 - 4	100%	0.07	0.15	–	–	0.09	18.7	no
Iron, Carbonate Bound Fraction	mg/kg	4 - 4	100%	6.1	23.9	–	–	15	NA	No ESV
Iron, Hydroxide Fraction	mg/kg	4 - 4	100%	303	941	–	–	474	NA	No ESV
Iron, Ion Exchange Fraction	mg/kg	4 - 4	100%	4.4	10.5	–	–	6.9	NA	No ESV
Iron, Total Metals	mg/kg	4 - 4	100%	19900	25100	–	–	22400	NA	No ESV
Iron, Water Extractable Fraction	mg/kg	4 - 4	100%	11.2	35.1	–	–	20.9	NA	No ESV
Lead, Carbonate Bound Fraction	mg/kg	4 - 4	100%	0.16	0.31	–	–	0.23	NA	No ESV
Lead, Hydroxide Fraction	mg/kg	4 - 4	100%	0.41	1.2	–	–	0.66	NA	No ESV
Lead, Ion Exchange Fraction	mg/kg	4 - 4	100%	0.029	0.052	–	–	0.04	NA	No ESV
Lead, Total Metals	mg/kg	4 - 4	100%	21.5	29.4	–	–	25.4	NA	No ESV
Lead, Water Extractable Fraction	mg/kg	4 - 4	100%	0.03	0.081	–	–	0.05	30.2	no
Magnesium, Carbonate Bound Fraction	mg/kg	4 - 4	100%	157	186	–	–	168	NA	No ESV
Magnesium, Hydroxide Fraction	mg/kg	4 - 4	100%	165	254	–	–	198	NA	No ESV
Magnesium, Ion Exchange Fraction	mg/kg	4 - 4	100%	181	242	–	–	211	NA	No ESV
Magnesium, Total Metals	mg/kg	4 - 4	100%	1720	2210	–	–	1985	NA	No ESV
Magnesium, Water Extractable Fraction	mg/kg	4 - 4	100%	31.1	52.8	–	–	39.6	NA	No ESV
Manganese, Carbonate Bound Fraction	mg/kg	4 - 4	100%	64.8	112	–	–	93.2	NA	No ESV
Manganese, Hydroxide Fraction	mg/kg	4 - 4	100%	400	739	–	–	629	NA	No ESV
Manganese, Ion Exchange Fraction	mg/kg	4 - 4	100%	0.54	1.9	–	–	1.3	NA	No ESV
Manganese, Total Metals	mg/kg	4 - 4	100%	657	1200	–	–	975	NA	No ESV
Manganese, Water Extractable Fraction	mg/kg	4 - 4	100%	0.46	1.6	–	–	0.83	NA	No ESV
Molybdenum, Carbonate Bound Fraction	mg/kg	1 - 1	100%	0.012	0.012	–	–	0.012	NA	No ESV
Molybdenum, Hydroxide Fraction	mg/kg	1 - 1	100%	0.012	0.012	–	–	0.012	NA	No ESV

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Table 2-35. Bulk Sediment Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals (continued)							NA	
Molybdenum, Ion Exchange Fraction	mg/kg	1 - 4	25%	0.011 - 0.011	0.0058 - 0.0069	0.011	NA	No ESV
Molybdenum, Total Metals	mg/kg	4 - 4	100%	1.6 - 3.1	– - –	2.1	NA	No ESV
Molybdenum, Water Extractable Fraction	mg/kg	0 - 1	0%	– - –	0.011 - 0.011	–	NA	No ESV
Nickel, Carbonate Bound Fraction	mg/kg	4 - 4	100%	0.55 - 0.91	– - –	0.73	NA	No ESV
Nickel, Hydroxide Fraction	mg/kg	4 - 4	100%	1 - 2.7	– - –	1.65	NA	No ESV
Nickel, Ion Exchange Fraction	mg/kg	4 - 4	100%	0.057 - 0.12	– - –	0.09	NA	No ESV
Nickel, Total Metals	mg/kg	4 - 4	100%	24.7 - 30.7	– - –	28	NA	No ESV
Nickel, Water Extractable Fraction	mg/kg	4 - 4	100%	0.03 - 0.083	– - –	0.05	15.9	no
Selenium, Carbonate Bound Fraction	mg/kg	1 - 4	25%	0.026 - 0.026	0.015 - 0.018	0.03	NA	No ESV
Selenium, Hydroxide Fraction	mg/kg	4 - 4	100%	0.1 - 0.2	– - –	0.15	NA	No ESV
Selenium, Total Metals	mg/kg	4 - 4	100%	3 - 3.8	– - –	3.2	NA	No ESV
Silver, Total Metals	mg/kg	4 - 4	100%	0.11 - 0.15	– - –	0.13	NA	No ESV
Sodium, Carbonate Bound Fraction	mg/kg	4 - 4	100%	2.4 - 3.5	– - –	2.9	2	Yes
Sodium, Hydroxide Fraction	mg/kg	4 - 4	100%	14.1 - 18.3	– - –	16.5	NA	No ESV
Sodium, Ion Exchange Fraction	mg/kg	4 - 4	100%	7.4 - 9.4	– - –	8.5	NA	No ESV
Sodium, Total Metals	mg/kg	4 - 4	100%	167 - 237	– - –	192	NA	No ESV
Sodium, Water Extractable Fraction	mg/kg	4 - 4	100%	11 - 17.1	– - –	13.5	NA	No ESV
Strontium, Carbonate Bound Fraction	mg/kg	4 - 4	100%	3.1 - 4.8	– - –	3.9	NA	No ESV
Strontium, Hydroxide Fraction	mg/kg	4 - 4	100%	15 - 18.6	– - –	16.6	NA	No ESV
Strontium, Ion Exchange Fraction	mg/kg	4 - 4	100%	6.1 - 8.4	– - –	7.2	NA	No ESV
Strontium, Total Metals	mg/kg	4 - 4	100%	144 - 146	– - –	145	NA	No ESV
Strontium, Water Extractable Fraction	mg/kg	4 - 4	100%	0.73 - 1.1	– - –	0.93	NA	No ESV
Thallium, Carbonate Bound Fraction	mg/kg	4 - 4	100%	0.1 - 0.16	– - –	0.13	NA	No ESV
Thallium, Hydroxide Fraction	mg/kg	4 - 4	100%	0.14 - 0.21	– - –	0.17	NA	No ESV
Thallium, Ion Exchange Fraction	mg/kg	4 - 4	100%	0.039 - 0.072	– - –	0.06	NA	No ESV
Thallium, Total Metals	mg/kg	4 - 4	100%	0.89 - 1.3	– - –	1.02	NA	No ESV
Thallium, Water Extractable Fraction	mg/kg	4 - 4	100%	0.0019 - 0.0034	– - –	0.003	NA	No ESV
Vanadium, Carbonate Bound Fraction	mg/kg	4 - 4	100%	0.058 - 0.084	– - –	0.07	NA	No ESV
Vanadium, Hydroxide Fraction	mg/kg	4 - 4	100%	0.22 - 0.42	– - –	0.33	NA	No ESV
Vanadium, Ion Exchange Fraction	mg/kg	4 - 4	100%	0.061 - 0.088	– - –	0.07	NA	No ESV
Vanadium, Total Metals	mg/kg	4 - 4	100%	44.8 - 55.1	– - –	49.2	NA	No ESV
Vanadium, Water Extractable Fraction	mg/kg	4 - 4	100%	0.072 - 0.13	– - –	0.09	NA	No ESV

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Table 2-35. Bulk Sediment Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Sequentially Extracted Metals (continued)									NA	
Zinc, Carbonate Bound Fraction	mg/kg	4 - 4	100%	1.3	3.1	–	–	2.2	NA	No ESV
Zinc, Hydroxide Fraction	mg/kg	4 - 4	100%	10	17.1	–	–	12.6	NA	No ESV
Zinc, Ion Exchange Fraction	mg/kg	3 - 4	75%	0.23	0.35	0.17	0.17	0.3	NA	No ESV
Zinc, Total Metals	mg/kg	4 - 4	100%	65.4	83.6	–	–	73.7	NA	No ESV
Zinc, Water Extractable Fraction	mg/kg	4 - 4	100%	0.088	0.26	–	–	0.15	124	no
Physical Properties									NA	
% Ash	%	4 - 4	100%	28	39	–	–	33		No ESV
Fraction of Organic Carbon	%	4 - 4	100%	2	2.5	–	–	2.3	NA	No ESV
Total Organic Carbon	mg/kg	4 - 4	100%	9600	21000	–	–	15400	NA	No ESV
Physical Properties-Grain Size									NA	
Clay	%	4 - 4	100%	14.5	30.2	–	–	21.1		No ESV
Gravel	%	1 - 4	25%	0.3	0.3	0	0	0.3	NA	No ESV
Sand	%	4 - 4	100%	4.8	8.8	–	–	6.98	NA	No ESV
Sand, Coarse	%	4 - 4	100%	0.1	0.6	–	–	0.23	NA	No ESV
Sand, Fine	%	4 - 4	100%	4.5	8.6	–	–	6.5	NA	No ESV
Sand, Medium	%	4 - 4	100%	0.1	0.7	–	–	0.3	NA	No ESV
Silt	%	4 - 4	100%	61.8	78.9	–	–	71.9	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg = Milligram per kilogram.
NA = Not available.
pCi/g = Picocuries per gram.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-36. Sediment Porewater Dataset: Emory River - Reference (Above ERM 6.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics										
Aluminum, Dissolved	mg/L	0 - 1	0%	–	–	0.05	0.05	–	0.087	–
Antimony, Dissolved	mg/L	0 - 1	0%	–	–	0.00033	0.00033	–	0.16	–
Arsenic, Dissolved	mg/L	1 - 1	100%	0.00368	0.00368	–	–	0.0037	0.19	no
Barium, Dissolved	mg/L	1 - 1	100%	0.198	0.198	–	–	0.198	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 1	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Dissolved	mg/L	1 - 1	100%	0.0154	0.0154	–	–	0.0154	0.75	no
Cadmium, Dissolved	mg/L	0 - 1	0%	–	–	0.00033	0.00033	–	0.00066	–
Chromium, Dissolved	mg/L	1 - 1	100%	0.00244	0.00244	–	–	0.0024	0.12	no
Cobalt, Dissolved	mg/L	1 - 1	100%	0.0116	0.0116	–	–	0.0116	NA	No ESV
Copper, Dissolved	mg/L	1 - 1	100%	0.00086	0.00086	–	–	0.0009	0.0065	no
Lead, Dissolved	mg/L	0 - 1	0%	–	–	0.00033	0.00033	–	0.0013	–
Manganese, Dissolved	mg/L	1 - 1	100%	5.53	5.53	–	–	5.53	NA	No ESV
Mercury, Dissolved	mg/L	0 - 1	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	1 - 1	100%	0.00044	0.00044	–	–	0.0004	NA	No ESV
Nickel, Dissolved	mg/L	1 - 1	100%	0.00565	0.00565	–	–	0.0057	0.088	no
Selenium, Dissolved	mg/L	0 - 1	0%	–	–	0.00033	0.00033	–	0.005	–
Silver, Dissolved	mg/L	0 - 1	0%	–	–	0.00033	0.00033	–	0.000012	–
Strontium, Dissolved	mg/L	1 - 1	100%	0.161	0.161	–	–	0.161	NA	No ESV
Thallium, Dissolved	mg/L	0 - 1	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	0 - 1	0%	–	–	0.001	0.001	–	NA	No ESV
Zinc, Dissolved	mg/L	1 - 1	100%	0.0135	0.0135	–	–	0.0135	0.059	no
Inorganic-cations/anions										
Chloride	mg/L	1 - 1	100%	5.55	5.55	–	–	5.55	NA	No ESV
Sulfate	mg/L	1 - 1	100%	1.82	1.82	–	–	1.82	NA	No ESV
Dissolved Inorganic-cations/anions										
Calcium, Dissolved	mg/L	1 - 1	100%	52.4	52.4	–	–	52.4	NA	No ESV
Iron, Dissolved	mg/L	1 - 1	100%	14	14	–	–	14	1	Yes
Magnesium, Dissolved	mg/L	1 - 1	100%	8.79	8.79	–	–	8.79	NA	No ESV
Potassium, Dissolved	mg/L	1 - 1	100%	2.78	2.78	–	–	2.78	NA	No ESV
Sodium, Dissolved	mg/L	1 - 1	100%	4.32	4.32	–	–	4.32	NA	No ESV

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Table 2-36. Sediment Porewater Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Speciation										
Selenate-speciation	mg/L	0 - 1	0%	–	–	0.00016	0.00016	–	NA	No ESV
Selenite-speciation	mg/L	0 - 1	0%	–	–	0.00029	0.00029	–	NA	No ESV
Dissolved Speciation										
Arsenate, Dissolved-speciation	mg/L	1 - 1	100%	0.00104	0.00104	–	–	0.001	NA	No ESV
Arsenic, Dissolved-speciation	mg/L	1 - 1	100%	0.00395	0.00395	–	–	0.004	NA	No ESV
Arsenite, Dissolved-speciation	mg/L	0 - 1	0%	–	–	0.00244	0.00244	–	0.19	–
Inorganic Arsenic, Dissolved-speciation	mg/L	1 - 1	100%	0.00349	0.00349	–	–	0.0035	NA	No ESV
Inorganic Selenium, Dissolved-speciation	mg/L	0 - 1	0%	–	–	0.00029	0.00029	–	NA	No ESV
Organic Arsenic, Dissolved-speciation	mg/L	1 - 1	100%	0.00046	0.00046	–	–	0.0005	NA	No ESV
Organic Selenium, Dissolved-speciation	mg/L	1 - 1	100%	0.00068	0.00068	–	–	0.0007	NA	No ESV
Selenium, Dissolved-speciation	mg/L	1 - 1	100%	0.00068	0.00068	–	–	0.0007	0.005	no
Physical Properties										
Alkalinity	mg/L	1 - 1	100%	163	163	–	–	163	NA	No ESV
Dissolved Organic Carbon	mg/L	1 - 1	100%	8300	8300	–	–	8300	NA	No ESV
Hardness (As CaCO3)	mg/L	1 - 1	100%	167	167	–	–	167	NA	No ESV

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/L = Milligram per liter.

NA = Not available.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-37. Sediment Porewater Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics										
Aluminum, Dissolved	mg/L	0 - 3	0%	–	–	0.05	0.05	–	0.087	–
Antimony, Dissolved	mg/L	1 - 3	33%	0.00034	0.00034	0.00033	0.00033	0.00034	0.16	no
Arsenic, Dissolved	mg/L	3 - 3	100%	0.0633	0.104	–	–	0.0792	0.19	no
Barium, Dissolved	mg/L	3 - 3	100%	0.163	0.194	–	–	0.176	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 3	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Dissolved	mg/L	3 - 3	100%	0.0349	0.0476	–	–	0.04	0.75	no
Cadmium, Dissolved	mg/L	0 - 3	0%	–	–	0.00033	0.00033	–	0.00066	–
Chromium, Dissolved	mg/L	2 - 3	67%	0.00103	0.00235	0.00033	0.00033	0.00169	0.12	no
Cobalt, Dissolved	mg/L	3 - 3	100%	0.0029	0.00333	–	–	0.00315	NA	No ESV
Copper, Dissolved	mg/L	3 - 3	100%	0.00069	0.00268	–	–	0.0015	0.0065	no
Lead, Dissolved	mg/L	1 - 3	33%	0.00034	0.00034	0.00033	0.00033	0.00034	0.0013	no
Manganese, Dissolved	mg/L	3 - 3	100%	4.14	5.34	–	–	4.78	NA	No ESV
Mercury, Dissolved	mg/L	0 - 3	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	3 - 3	100%	0.00186	0.00215	–	–	0.002	NA	No ESV
Nickel, Dissolved	mg/L	3 - 3	100%	0.00186	0.00271	–	–	0.0023	0.088	no
Selenium, Dissolved	mg/L	2 - 3	67%	0.00033	0.00045	0.00033	0.00033	0.00039	0.005	no
Silver, Dissolved	mg/L	0 - 3	0%	–	–	0.00033	0.00033	–	0.000012	–
Strontium, Dissolved	mg/L	3 - 3	100%	0.173	0.218	–	–	0.188	NA	No ESV
Thallium, Dissolved	mg/L	0 - 3	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	1 - 3	33%	0.00117	0.00117	0.001	0.001	0.00117	NA	No ESV
Zinc, Dissolved	mg/L	3 - 3	100%	0.00905	0.05	–	–	0.0277	0.059	no
Inorganic-cations/anions										
Chloride	mg/L	3 - 3	100%	7.69	10.4	–	–	8.97	NA	No ESV
Sulfate	mg/L	3 - 3	100%	2.26	3.2	–	–	2.7	NA	No ESV
Dissolved Inorganic-cations/anions										
Calcium, Dissolved	mg/L	3 - 3	100%	37.1	47.8	–	–	42.4	NA	No ESV
Iron, Dissolved	mg/L	3 - 3	100%	2.11	2.88	–	–	2.51	1	Yes
Magnesium, Dissolved	mg/L	3 - 3	100%	9.92	12.6	–	–	11.6	NA	No ESV
Potassium, Dissolved	mg/L	3 - 3	100%	2.34	2.89	–	–	2.52	NA	No ESV
Sodium, Dissolved	mg/L	3 - 3	100%	6.05	6.8	–	–	6.45	NA	No ESV

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Table 2-37. Sediment Porewater Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Speciation										
Selenate-speciation	mg/L	0 - 2	0%	– - –		0.00016 - 0.00016		–	NA	No ESV
Selenite-speciation	mg/L	0 - 2	0%	– - –		0.00029 - 0.00029		–	NA	No ESV
Dissolved Speciation										
Arsenate, Dissolved-speciation	mg/L	2 - 2	100%	0.013 - 0.048		– - –		0.031	NA	No ESV
Arsenic, Dissolved-speciation	mg/L	2 - 2	100%	0.0606 - 0.112		– - –		0.086	NA	No ESV
Arsenite, Dissolved-speciation	mg/L	2 - 2	100%	0.0861 - 0.0992		– - –		0.093	0.19	no
Inorganic Arsenic, Dissolved-speciation	mg/L	2 - 2	100%	0.0746 - 0.147		– - –		0.11	NA	No ESV
Inorganic Selenium, Dissolved-speciation	mg/L	0 - 2	0%	– - –		0.00029 - 0.00029		–	NA	No ESV
Organic Arsenic, Dissolved-speciation	mg/L	0 - 2	0%	– - –		0.0009 - 0.003		–	NA	No ESV
Organic Selenium, Dissolved-speciation	mg/L	2 - 2	100%	0.00055 - 0.00082		– - –		0.0007	NA	No ESV
Selenium, Dissolved-speciation	mg/L	2 - 2	100%	0.00055 - 0.00082		– - –		0.0007	0.005	no
Physical Properties										
Alkalinity	mg/L	3 - 3	100%	139 - 188		– - –		162	NA	No ESV
Dissolved Organic Carbon	mg/L	3 - 3	100%	11000 - 14300		– - –		12400	NA	No ESV
Hardness (As CaCO3)	mg/L	3 - 3	100%	133 - 171		– - –		153	NA	No ESV

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/L = Milligram per liter.

NA = Not available.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-38. Sediment Porewater Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics										
Aluminum, Dissolved	mg/L	0 - 2	0%	–	–	0.05	0.05	–	0.087	–
Antimony, Dissolved	mg/L	1 - 2	50%	0.00065	0.00065	0.00033	0.00033	0.0007	0.16	no
Arsenic, Dissolved	mg/L	2 - 2	100%	0.013	0.564	–	–	0.29	0.19	Yes
Barium, Dissolved	mg/L	2 - 2	100%	0.169	0.265	–	–	0.217	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 2	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Dissolved	mg/L	2 - 2	100%	0.0158	1.06	–	–	0.538	0.75	Yes
Cadmium, Dissolved	mg/L	0 - 2	0%	–	–	0.00033	0.00033	–	0.00066	–
Chromium, Dissolved	mg/L	2 - 2	100%	0.00055	0.00333	–	–	0.0019	0.12	no
Cobalt, Dissolved	mg/L	2 - 2	100%	0.00232	0.00777	–	–	0.005	NA	No ESV
Copper, Dissolved	mg/L	2 - 2	100%	0.00133	0.00284	–	–	0.0021	0.0065	no
Lead, Dissolved	mg/L	0 - 2	0%	–	–	0.00033	0.00033	–	0.0013	–
Manganese, Dissolved	mg/L	2 - 2	100%	4.88	6.67	–	–	5.78	NA	No ESV
Mercury, Dissolved	mg/L	0 - 2	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	2 - 2	100%	0.00073	0.234	–	–	0.117	NA	No ESV
Nickel, Dissolved	mg/L	2 - 2	100%	0.00216	0.00351	–	–	0.0028	0.088	no
Selenium, Dissolved	mg/L	1 - 2	50%	0.00097	0.00097	0.00033	0.00033	0.00097	0.005	no
Silver, Dissolved	mg/L	0 - 2	0%	–	–	0.00033	0.00033	–	0.000012	–
Strontium, Dissolved	mg/L	2 - 2	100%	0.133	0.606	–	–	0.37	NA	No ESV
Thallium, Dissolved	mg/L	0 - 2	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	1 - 2	50%	0.0016	0.0016	0.001	0.001	0.0016	NA	No ESV
Zinc, Dissolved	mg/L	2 - 2	100%	0.0322	0.0346	–	–	0.033	0.059	no
Inorganic-cations/anions										
Chloride	mg/L	2 - 2	100%	5.4	5.71	–	–	5.56	NA	No ESV
Sulfate	mg/L	2 - 2	100%	2.37	3.07	–	–	2.72	NA	No ESV
Dissolved Inorganic-cations/anions										
Calcium, Dissolved	mg/L	2 - 2	100%	33.3	55.9	–	–	44.6	NA	No ESV
Iron, Dissolved	mg/L	2 - 2	100%	1.63	9.18	–	–	5.4	1	Yes
Magnesium, Dissolved	mg/L	2 - 2	100%	8.21	13	–	–	10.6	NA	No ESV
Potassium, Dissolved	mg/L	2 - 2	100%	2.38	3.43	–	–	2.91	NA	No ESV
Sodium, Dissolved	mg/L	2 - 2	100%	3.02	4.26	–	–	3.64	NA	No ESV

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Table 2-38. Sediment Porewater Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Speciation										
Selenate-speciation	mg/L	0 - 2	0%	– - –		0.00016 - 0.00016		–	NA	No ESV
Selenite-speciation	mg/L	0 - 2	0%	– - –		0.00029 - 0.00029		–	NA	No ESV
Dissolved Speciation										
Arsenate, Dissolved-speciation	mg/L	2 - 2	100%	0.00407 - 0.135		– - –		0.07	NA	No ESV
Arsenic, Dissolved-speciation	mg/L	2 - 2	100%	0.0146 - 0.543		– - –		0.279	NA	No ESV
Arsenite, Dissolved-speciation	mg/L	2 - 2	100%	0.00912 - 0.654		– - –		0.332	0.19	Yes
Inorganic Arsenic, Dissolved-speciation	mg/L	2 - 2	100%	0.0132 - 0.788		– - –		0.401	NA	No ESV
Inorganic Selenium, Dissolved-speciation	mg/L	0 - 2	0%	– - –		0.00029 - 0.00029		–	NA	No ESV
Organic Arsenic, Dissolved-speciation	mg/L	0 - 2	0%	– - –		0.0015 - 0.045		–	NA	No ESV
Organic Selenium, Dissolved-speciation	mg/L	1 - 2	50%	0.00086 - 0.00086		0.00039 - 0.00039		0.00086	NA	No ESV
Selenium, Dissolved-speciation	mg/L	1 - 2	50%	0.00086 - 0.00086		0.00039 - 0.00039		0.00086	0.005	no
Physical Properties										
Alkalinity	mg/L	2 - 2	100%	132 - 186		– - –		159	NA	No ESV
Dissolved Organic Carbon	mg/L	2 - 2	100%	13700 - 18400		– - –		16050	NA	No ESV
Hardness (As CaCO3)	mg/L	2 - 2	100%	117 - 193		– - –		155	NA	No ESV

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/L = Milligram per liter.

NA = Not available.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-39. Sediment Porewater Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics										
Aluminum, Dissolved	mg/L	2 - 2	100%	0.118	0.467	–	–	0.293	0.087	Yes
Antimony, Dissolved	mg/L	0 - 2	0%	–	–	0.00033	0.00033	–	0.16	–
Arsenic, Dissolved	mg/L	2 - 2	100%	0.00208	0.0115	–	–	0.0068	0.19	no
Barium, Dissolved	mg/L	2 - 2	100%	0.0421	0.0774	–	–	0.0598	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 2	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Dissolved	mg/L	2 - 2	100%	0.0209	0.0305	–	–	0.026	0.75	no
Cadmium, Dissolved	mg/L	0 - 2	0%	–	–	0.00033	0.00033	–	0.00066	–
Chromium, Dissolved	mg/L	2 - 2	100%	0.00082	0.00328	–	–	0.002	0.12	no
Cobalt, Dissolved	mg/L	2 - 2	100%	0.00287	0.00459	–	–	0.004	NA	No ESV
Copper, Dissolved	mg/L	2 - 2	100%	0.00089	0.00193	–	–	0.001	0.0065	no
Lead, Dissolved	mg/L	1 - 2	50%	0.00202	0.00202	0.00033	0.00033	0.002	0.0013	Yes
Manganese, Dissolved	mg/L	2 - 2	100%	0.699	3.98	–	–	2.34	NA	No ESV
Mercury, Dissolved	mg/L	0 - 2	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	1 - 2	50%	0.00101	0.00101	0.00033	0.00033	0.001	NA	No ESV
Nickel, Dissolved	mg/L	2 - 2	100%	0.00177	0.00277	–	–	0.0023	0.088	no
Selenium, Dissolved	mg/L	0 - 2	0%	–	–	0.00033	0.00033	–	0.005	–
Silver, Dissolved	mg/L	0 - 2	0%	–	–	0.00033	0.00033	–	0.000012	–
Strontium, Dissolved	mg/L	2 - 2	100%	0.0236	0.0721	–	–	0.0479	NA	No ESV
Thallium, Dissolved	mg/L	0 - 2	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	1 - 2	50%	0.00105	0.00105	0.001	0.001	0.0011	NA	No ESV
Zinc, Dissolved	mg/L	2 - 2	100%	0.00858	0.0245	–	–	0.0165	0.059	no
Inorganic-cations/anions										
Chloride	mg/L	2 - 2	100%	4.85	4.91	–	–	4.88	NA	No ESV
Sulfate	mg/L	2 - 2	100%	1.67	15.9	–	–	8.79	NA	No ESV
Dissolved Inorganic-cations/anions										
Calcium, Dissolved	mg/L	2 - 2	100%	6.44	18.3	–	–	12.4	NA	No ESV
Iron, Dissolved	mg/L	2 - 2	100%	2.58	3.94	–	–	3.26	1	Yes
Magnesium, Dissolved	mg/L	2 - 2	100%	1.39	4.36	–	–	2.88	NA	No ESV
Potassium, Dissolved	mg/L	2 - 2	100%	1.36	1.92	–	–	1.64	NA	No ESV
Sodium, Dissolved	mg/L	2 - 2	100%	1.67	3.06	–	–	2.37	NA	No ESV

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Table 2-39. Sediment Porewater Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Speciation										
Selenate-speciation	mg/L	0 - 1	0%	–	–	0.00016	0.00016	–	NA	No ESV
Selenite-speciation	mg/L	0 - 1	0%	–	–	0.00029	0.00029	–	NA	No ESV
Dissolved Speciation										
Arsenate, Dissolved-speciation	mg/L	1 - 1	100%	0.00541	0.00541	–	–	0.0054	NA	No ESV
Arsenic, Dissolved-speciation	mg/L	1 - 1	100%	0.0128	0.0128	–	–	0.0128	NA	No ESV
Arsenite, Dissolved-speciation	mg/L	1 - 1	100%	0.00781	0.00781	–	–	0.0078	0.19	no
Inorganic Arsenic, Dissolved-speciation	mg/L	1 - 1	100%	0.0132	0.0132	–	–	0.0132	NA	No ESV
Inorganic Selenium, Dissolved-speciation	mg/L	0 - 1	0%	–	–	0.00029	0.00029	–	NA	No ESV
Organic Arsenic, Dissolved-speciation	mg/L	0 - 1	0%	–	–	0.0015	0.0015	–	NA	No ESV
Organic Selenium, Dissolved-speciation	mg/L	0 - 1	0%	–	–	0.00039	0.00039	–	NA	No ESV
Selenium, Dissolved-speciation	mg/L	0 - 1	0%	–	–	0.00039	0.00039	–	0.005	–
Physical Properties										
Alkalinity	mg/L	1 - 2	50%	65.8	65.8	10	10	65.8	NA	No ESV
Dissolved Organic Carbon	mg/L	2 - 2	100%	9520	12000	–	–	10760	NA	No ESV
Hardness (As CaCO3)	mg/L	2 - 2	100%	21.8	63.8	–	–	42.8	NA	No ESV

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/L = Milligram per liter.

NA = Not available.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-40. Sediment Porewater Dataset: Clinch River - Reference (Above CRM 4.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics										
Aluminum, Dissolved	mg/L	0 - 1	0%	–	–	0.05	0.05	–	0.087	–
Antimony, Dissolved	mg/L	0 - 1	0%	–	–	0.00033	0.00033	–	0.16	–
Arsenic, Dissolved	mg/L	1 - 1	100%	0.00687	0.00687	–	–	0.00687	0.19	no
Barium, Dissolved	mg/L	1 - 1	100%	0.0925	0.0925	–	–	0.0925	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 1	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Dissolved	mg/L	1 - 1	100%	0.0208	0.0208	–	–	0.0208	0.75	no
Cadmium, Dissolved	mg/L	0 - 1	0%	–	–	0.00033	0.00033	–	0.00066	–
Chromium, Dissolved	mg/L	1 - 1	100%	0.00081	0.00081	–	–	0.00081	0.12	no
Cobalt, Dissolved	mg/L	1 - 1	100%	0.00214	0.00214	–	–	0.00214	NA	No ESV
Copper, Dissolved	mg/L	1 - 1	100%	0.00077	0.00077	–	–	0.00077	0.0065	no
Lead, Dissolved	mg/L	1 - 1	100%	0.00056	0.00056	–	–	0.00056	0.0013	no
Manganese, Dissolved	mg/L	1 - 1	100%	5.29	5.29	–	–	5.29	NA	No ESV
Mercury, Dissolved	mg/L	0 - 1	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	1 - 1	100%	0.00084	0.00084	–	–	0.00084	NA	No ESV
Nickel, Dissolved	mg/L	1 - 1	100%	0.00172	0.00172	–	–	0.0017	0.088	no
Selenium, Dissolved	mg/L	0 - 1	0%	–	–	0.00033	0.00033	–	0.005	–
Silver, Dissolved	mg/L	0 - 1	0%	–	–	0.00033	0.00033	–	0.000012	–
Strontium, Dissolved	mg/L	1 - 1	100%	0.127	0.127	–	–	0.127	NA	No ESV
Thallium, Dissolved	mg/L	0 - 1	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	0 1	0%	–	–	0.001	0.001	–	NA	No ESV
Zinc, Dissolved	mg/L	1 - 1	100%	0.0453	0.0453	–	–	0.0453	0.059	no
Inorganic-cations/anions										
Chloride	mg/L	1 - 1	100%	7.11	7.11	–	–	7.11	NA	No ESV
Sulfate	mg/L	1 - 1	100%	5.05	5.05	–	–	5.05	NA	No ESV
Dissolved Inorganic-cations/anions										
Calcium, Dissolved	mg/L	1 - 1	100%	50.4	50.4	–	–	50.4	NA	No ESV
Iron, Dissolved	mg/L	1 - 1	100%	2.6	2.6	–	–	2.6	1	Yes
Magnesium, Dissolved	mg/L	1 - 1	100%	16.8	16.8	–	–	16.8	NA	No ESV
Potassium, Dissolved	mg/L	1 - 1	100%	2.72	2.72	–	–	2.72	NA	No ESV
Sodium, Dissolved	mg/L	1 - 1	100%	6.12	6.12	–	–	6.12	NA	No ESV

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Table 2-40. Sediment Porewater Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Speciation										
Selenate-speciation	mg/L	0 - 1	0%	–	–	0.00016	0.00016	–	NA	No ESV
Selenite-speciation	mg/L	0 - 1	0%	–	–	0.00029	0.00029	–	NA	No ESV
Dissolved Speciation										
Arsenate, Dissolved-speciation	mg/L	1 - 1	100%	0.00119	0.00119	–	–	0.0012	NA	No ESV
Arsenic, Dissolved-speciation	mg/L	1 - 1	100%	0.00862	0.00862	–	–	0.0086	NA	No ESV
Arsenite, Dissolved-speciation	mg/L	1 - 1	100%	0.00584	0.00584	–	–	0.0058	0.19	no
Inorganic Arsenic, Dissolved-speciation	mg/L	1 - 1	100%	0.00703	0.00703	–	–	0.007	NA	No ESV
Inorganic Selenium, Dissolved-speciation	mg/L	0 - 1	0%	–	–	0.00029	0.00029	–	NA	No ESV
Organic Arsenic, Dissolved-speciation	mg/L	1 - 1	100%	0.00159	0.00159	–	–	0.0016	NA	No ESV
Organic Selenium, Dissolved-speciation	mg/L	1 - 1	100%	0.00043	0.00043	–	–	0.00043	NA	No ESV
Selenium, Dissolved-speciation	mg/L	1 - 1	100%	0.00043	0.00043	–	–	0.00043	0.005	no
Physical Properties										
Alkalinity	mg/L	1 - 1	100%	186	186	–	–	186	NA	No ESV
Dissolved Organic Carbon	mg/L	1 - 1	100%	10800	10800	–	–	10800	NA	No ESV
Hardness (As CaCO3)	mg/L	1 - 1	100%	195	195	–	–	195	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/L = Milligram per liter.
NA = Not available.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-41. Sediment Porewater Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics										
Aluminum, Dissolved	mg/L	1 - 4	25%	0.0539	0.0539	0.05	0.05	0.0539	0.087	no
Antimony, Dissolved	mg/L	4 - 4	100%	0.00034	0.00057	–	–	0.00045	0.16	no
Arsenic, Dissolved	mg/L	4 - 4	100%	0.00843	0.0573	–	–	0.0245	0.19	no
Barium, Dissolved	mg/L	4 - 4	100%	0.0836	0.152	–	–	0.12	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 4	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Dissolved	mg/L	4 - 4	100%	0.0367	0.0964	–	–	0.063	0.75	no
Cadmium, Dissolved	mg/L	0 - 4	0%	–	–	0.00033	0.00033	–	0.00066	–
Chromium, Dissolved	mg/L	1 - 4	25%	0.00151	0.00151	0.00033	0.00033	0.00151	0.12	no
Cobalt, Dissolved	mg/L	4 - 4	100%	0.00044	0.00093	–	–	0.00068	NA	No ESV
Copper, Dissolved	mg/L	4 - 4	100%	0.00195	0.00597	–	–	0.00412	0.0065	no
Lead, Dissolved	mg/L	2 - 4	50%	0.00185	0.00505	0.00033	0.00033	0.00345	0.0013	Yes
Manganese, Dissolved	mg/L	4 - 4	100%	1.44	3.8	–	–	2.74	NA	No ESV
Mercury, Dissolved	mg/L	0 - 4	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	4 - 4	100%	0.00095	0.00984	–	–	0.00566	NA	No ESV
Nickel, Dissolved	mg/L	4 - 4	100%	0.00101	0.00181	–	–	0.0014	0.088	no
Selenium, Dissolved	mg/L	3 - 4	75%	0.00049	0.00075	0.00033	0.00033	0.00058	0.005	no
Silver, Dissolved	mg/L	0 - 4	0%	–	–	0.00033	0.00033	–	0.000012	–
Strontium, Dissolved	mg/L	4 - 4	100%	0.148	0.29	–	–	0.22	NA	No ESV
Thallium, Dissolved	mg/L	0 - 4	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	4 - 4	100%	0.00133	0.00175	–	–	0.0015	NA	No ESV
Zinc, Dissolved	mg/L	3 - 4	75%	0.00986	0.0264	0.0083	0.0083	0.016	0.059	no
Inorganic-cations/anions										
Chloride	mg/L	4 - 4	100%	9.3	20.6	–	–	12.98	NA	No ESV
Dissolved Inorganic-cations/anions										
Calcium, Dissolved	mg/L	4 - 4	100%	38.3	63.8	–	–	48.9	NA	No ESV
Iron, Dissolved	mg/L	2 - 4	50%	0.0877	0.153	0.025	0.025	0.12	1	no
Magnesium, Dissolved	mg/L	4 - 4	100%	11.1	16.7	–	–	13.45	NA	No ESV
Potassium, Dissolved	mg/L	4 - 4	100%	1.98	3.71	–	–	2.79	NA	No ESV
Sodium, Dissolved	mg/L	4 - 4	100%	7.86	9	–	–	8.34	NA	No ESV

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Table 2-41. Sediment Porewater Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Speciation										
Selenite-speciation	mg/L	1 - 3	33%	0.00036	0.00036	0.00029	0.00029	0.00036	NA	No ESV
Selenium-speciation	mg/L	0 - 1	0%	–	–	0.00388	0.00388	–	0.005	–
Dissolved Speciation										
Arsenate, Dissolved-speciation	mg/L	4 - 4	100%	0.00354	0.0306	–	–	0.0125	NA	No ESV
Arsenic, Dissolved-speciation	mg/L	4 - 4	100%	0.011	0.0585	–	–	0.0274	0.19	no
Arsenite, Dissolved-speciation	mg/L	4 - 4	100%	0.00747	0.0129	–	–	0.0098	0.19	no
Inorganic Arsenic, Dissolved-speciation	mg/L	4 - 4	100%	0.011	0.0412	–	–	0.022	NA	No ESV
Inorganic Selenium, Dissolved-speciation	mg/L	2 - 4	50%	0.00036	0.00039	0.00029	0.00029	0.00037	NA	No ESV
Organic Arsenic, Dissolved-speciation	mg/L	3 - 4	75%	0.0014	0.0173	0.0009	0.0009	0.0069	NA	No ESV
Organic Selenium, Dissolved-speciation	mg/L	0 - 4	0%	–	–	0.00039	0.00194	–	NA	No ESV
Selenium, Dissolved-speciation	mg/L	2 - 4	50%	0.00055	0.00057	0.00039	0.00194	0.00056	0.005	no
Physical Properties										
Alkalinity	mg/L	4 - 4	100%	119	247	–	–	172	NA	No ESV
Dissolved Organic Carbon	mg/L	4 - 4	100%	7980	16200	–	–	11720	NA	No ESV
Hardness (As CaCO3)	mg/L	4 - 4	100%	141	219	–	–	175	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/L = Milligram per liter.
NA = Not available.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-42. Sediment Porewater Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics										
Aluminum, Dissolved	mg/L	0 - 4	0%	–	–	0.05	0.05	–	0.087	–
Antimony, Dissolved	mg/L	4 - 4	100%	0.00042	0.00075	–	–	0.00059	0.16	no
Arsenic, Dissolved	mg/L	4 - 4	100%	0.0122	0.0589	–	–	0.027	0.19	no
Barium, Dissolved	mg/L	4 - 4	100%	0.101	0.234	–	–	0.144	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 4	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Dissolved	mg/L	4 - 4	100%	0.0434	0.0769	–	–	0.055	0.75	no
Cadmium, Dissolved	mg/L	0 - 4	0%	–	–	0.00033	0.00033	–	0.00066	–
Chromium, Dissolved	mg/L	4 - 4	100%	0.00044	0.00319	–	–	0.0017	0.12	no
Cobalt, Dissolved	mg/L	4 - 4	100%	0.00072	0.0028	–	–	0.0013	NA	No ESV
Copper, Dissolved	mg/L	4 - 4	100%	0.00278	0.0079	–	–	0.0041	0.0065	Yes
Lead, Dissolved	mg/L	4 - 4	100%	0.0006	0.0105	–	–	0.0054	0.0013	Yes
Manganese, Dissolved	mg/L	4 - 4	100%	2.26	9.92	–	–	5.24	NA	No ESV
Mercury, Dissolved	mg/L	0 - 4	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	4 - 4	100%	0.00188	0.0152	–	–	0.0057	NA	No ESV
Nickel, Dissolved	mg/L	4 - 4	100%	0.00137	0.0029	–	–	0.0018	0.088	no
Selenium, Dissolved	mg/L	2 - 4	50%	0.00045	0.00049	0.00033	0.00033	0.00047	0.005	no
Silver, Dissolved	mg/L	0 - 4	0%	–	–	0.00033	0.00033	–	0.000012	–
Strontium, Dissolved	mg/L	4 - 4	100%	0.194	0.346	–	–	0.235	NA	No ESV
Thallium, Dissolved	mg/L	0 - 4	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	3 - 4	75%	0.0015	0.00233	0.001	0.001	0.0019	NA	No ESV
Zinc, Dissolved	mg/L	4 - 4	100%	0.0109	0.0157	–	–	0.013	0.059	no
Inorganic-cations/anions										
Chloride	mg/L	4 - 4	100%	19.2	489	–	–	142	NA	No ESV
Sulfate	mg/L	4 - 4	100%	30.5	92.1	–	–	48.6	NA	No ESV
Dissolved Inorganic-cations/anions										
Calcium, Dissolved	mg/L	4 - 4	100%	48.9	77	–	–	56.5	NA	No ESV
Iron, Dissolved	mg/L	4 - 4	100%	0.103	1.46	–	–	0.5	1	Yes
Magnesium, Dissolved	mg/L	4 - 4	100%	13.3	20.7	–	–	15.4	NA	No ESV
Potassium, Dissolved	mg/L	4 - 4	100%	2.44	3.87	–	–	2.9	NA	No ESV
Sodium, Dissolved	mg/L	4 - 4	100%	8.38	9.58	–	–	8.9	NA	No ESV

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Table 2-42. Sediment Porewater Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Speciation										
Selenate-speciation	mg/L	0 - 4	0%	–	–	0.00016	0.00016	–	NA	No ESV
Selenite-speciation	mg/L	0 - 4	0%	–	–	0.00029	0.00029	–	NA	No ESV
Dissolved Speciation										
Arsenate, Dissolved-speciation	mg/L	4 - 4	100%	0.00162	0.0119	–	–	0.0053	NA	No ESV
Arsenic, Dissolved-speciation	mg/L	4 - 4	100%	0.0158	0.0751	–	–	0.034	NA	No ESV
Arsenite, Dissolved-speciation	mg/L	4 - 4	100%	0.0118	0.0579	–	–	0.025	0.19	no
Inorganic Arsenic, Dissolved-speciation	mg/L	3 - 4	75%	0.0177	0.0693	0.0134	0.0134	0.036	NA	No ESV
Inorganic Selenium, Dissolved-speciation	mg/L	0 - 4	0%	–	–	0.00029	0.00029	–	NA	No ESV
Organic Arsenic, Dissolved-speciation	mg/L	4 - 4	100%	0.00155	0.00581	–	–	0.0038	NA	No ESV
Organic Selenium, Dissolved-speciation	mg/L	2 - 4	50%	0.00057	0.00057	0.00039	0.00039	0.00057	NA	No ESV
Selenium, Dissolved-speciation	mg/L	2 - 4	50%	0.00057	0.00057	0.00039	0.00039	0.00057	0.005	no
Physical Properties										
Alkalinity	mg/L	4 - 4	100%	120	289	–	–	176	NA	No ESV
Dissolved Organic Carbon	mg/L	4 - 4	100%	8400	17500	–	–	13675	NA	No ESV
Hardness (As CaCO3)	mg/L	4 - 4	100%	178	278	–	–	205	NA	No ESV

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/L = Milligram per liter.

NA = Not available.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-43. Residual Sediment Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Inorganic										
Aluminum	mg/kg	1 - 1	100%	12100	12100	–	–	12100	NA	No ESV
Antimony	mg/kg	0 - 1	0%	–	–	1.62	1.62	–	12	–
Arsenic	mg/kg	1 - 1	100%	4.05	4.05	–	–	4.05	7.24	no
Barium	mg/kg	1 - 1	100%	95	95	–	–	95	NA	No ESV
Beryllium	mg/kg	1 - 1	100%	0.973	0.973	–	–	0.97	NA	No ESV
Boron	mg/kg	0 - 1	0%	–	–	6.49	6.49	–	NA	No ESV
Cadmium	mg/kg	0 - 1	0%	–	–	0.162	0.162	–	1	–
Chromium	mg/kg	1 - 1	100%	12.4	12.4	–	–	12.4	52.3	no
Cobalt	mg/kg	1 - 1	100%	13.2	13.2	–	–	13.2	NA	No ESV
Copper	mg/kg	1 - 1	100%	10.4	10.4	–	–	10.4	18.7	no
Lead	mg/kg	1 - 1	100%	15.1	15.1	–	–	15.1	30.2	no
Manganese	mg/kg	1 - 1	100%	400	400	–	–	400	NA	No ESV
Mercury	mg/kg	1 - 1	100%	0.057	0.057	–	–	0.057	0.13	no
Molybdenum	mg/kg	0 - 1	0%	–	–	6.49	6.49	–	NA	No ESV
Nickel	mg/kg	1 - 1	100%	18.7	18.7	–	–	18.7	15.9	Yes
Selenium	mg/kg	0 - 1	0%	–	–	1.62	1.62	–	NA	No ESV
Silver	mg/kg	0 - 1	0%	–	–	0.811	0.811	–	2	–
Strontium	mg/kg	1 - 1	100%	12.1	12.1	–	–	12.1	NA	No ESV
Thallium	mg/kg	0 - 1	0%	–	–	1.62	1.62	–	NA	No ESV
Vanadium	mg/kg	1 - 1	100%	16.5	16.5	–	–	16.5	NA	No ESV
Zinc	mg/kg	1 - 1	100%	67.4	67.4	–	–	67.4	124	no
Inorganic-cation/anion										
Calcium	mg/kg	1 - 1	100%	1940	1940	–	–	1940	NA	No ESV
Iron	mg/kg	1 - 1	100%	15800	15800	–	–	15800	NA	No ESV
Magnesium	mg/kg	1 - 1	100%	1110	1110	–	–	1110	NA	No ESV
Potassium	mg/kg	1 - 1	100%	1030	1030	–	–	1030	NA	No ESV
Sodium	mg/kg	0 - 1	0%	–	–	162	162	–	NA	No ESV

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Table 2-43. Residual Sediment Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Speciation										
Arsenate-speciation	mg/kg	1 - 1	100%	2.26	2.26	–	–	2.26	NA	No ESV
Arsenic-speciation	mg/kg	1 - 1	100%	2.97	2.97	–	–	2.97	NA	No ESV
Arsenite-speciation	mg/kg	1 - 1	100%	0.512	0.512	–	–	0.51	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	1 - 1	100%	2.77	2.77	–	–	2.77	NA	No ESV
Inorganic Selenium-speciation	mg/kg	0 - 1	0%	–	–	0.453	0.453	–	NA	No ESV
Organic Arsenic-speciation	mg/kg	0 - 1	0%	–	–	0.315	0.315	–	NA	No ESV
Organic Selenium-speciation	mg/kg	1 - 1	100%	1.31	1.31	–	–	1.31	NA	No ESV
Selenate-speciation	mg/kg	0 - 1	0%	–	–	0.358	0.358	–	NA	No ESV
Selenite-speciation	mg/kg	0 - 1	0%	–	–	0.453	0.453	–	NA	No ESV
Selenium-speciation	mg/kg	1 - 1	100%	1.31	1.31	–	–	1.31	NA	No ESV
Physical Property										
% Ash	%	0 - 1	0%	–	–	1	1	–	NA	No ESV

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg = Milligram per kilogram.

NA = Not available.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-44. Residual Sediment Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Inorganic										
Aluminum	mg/kg	3 - 3	100%	12100	17500	–	–	14233	NA	No ESV
Antimony	mg/kg	0 - 3	0%	–	–	1.47	1.74	–	12	–
Arsenic	mg/kg	3 - 3	100%	24	38.9	–	–	31.2	7.24	Yes
Barium	mg/kg	3 - 3	100%	209	249	–	–	230	NA	No ESV
Beryllium	mg/kg	3 - 3	100%	1.81	2.06	–	–	1.9	NA	No ESV
Boron	mg/kg	3 - 3	100%	10.1	13	–	–	11.7	NA	No ESV
Cadmium	mg/kg	0 - 3	0%	–	–	0.147	0.174	–	1	–
Chromium	mg/kg	3 - 3	100%	18.6	23.8	–	–	20.5	52.3	no
Cobalt	mg/kg	3 - 3	100%	15.1	19.1	–	–	17	NA	No ESV
Copper	mg/kg	3 - 3	100%	25.2	29.1	–	–	27.1	18.7	Yes
Lead	mg/kg	3 - 3	100%	15.3	20.7	–	–	18.2	30.2	no
Manganese	mg/kg	3 - 3	100%	392	876	–	–	686	NA	No ESV
Mercury	mg/kg	3 - 3	100%	0.1	0.11	–	–	0.11	0.13	no
Molybdenum	mg/kg	0 - 3	0%	–	–	5.9	6.97	–	NA	No ESV
Nickel	mg/kg	3 - 3	100%	23.2	29.2	–	–	25.4	15.9	Yes
Selenium	mg/kg	3 - 3	100%	2.34	3.28	–	–	2.78	NA	No ESV
Silver	mg/kg	0 - 3	0%	–	–	0.737	0.871	–	2	–
Strontium	mg/kg	3 - 3	100%	100	131	–	–	117	NA	No ESV
Thallium	mg/kg	0 - 3	0%	–	–	1.47	1.74	–	NA	No ESV
Vanadium	mg/kg	3 - 3	100%	36.3	45.4	–	–	40.5	NA	No ESV
Zinc	mg/kg	3 - 3	100%	51.2	73.3	–	–	62.9	124	no
Inorganic-cation/anion										
Calcium	mg/kg	3 - 3	100%	3240	3660	–	–	3510	NA	No ESV
Iron	mg/kg	3 - 3	100%	23300	27900	–	–	25100	NA	No ESV
Magnesium	mg/kg	3 - 3	100%	1220	1640	–	–	1390	NA	No ESV
Potassium	mg/kg	3 - 3	100%	977	1530	–	–	1179	NA	No ESV
Sodium	mg/kg	0 - 3	0%	–	–	218	259	–	NA	No ESV

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Table 2-44. Residual Sediment Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Speciation								
Arsenate-speciation	mg/kg	3 - 3	100%	12.6 - 20.9	– - –	16.5	NA	No ESV
Arsenic-speciation	mg/kg	3 - 3	100%	20.9 - 28.9	– - –	24.9	NA	No ESV
Arsenite-speciation	mg/kg	3 - 3	100%	5.53 - 16.1	– - –	11.4	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	3 - 3	100%	26.4 - 32	– - –	28.7	NA	No ESV
Inorganic Selenium-speciation	mg/kg	3 - 3	100%	0.824 - 1.1	– - –	1	NA	No ESV
Organic Arsenic-speciation	mg/kg	0 - 3	0%	– - –	11 - 13.8	–	NA	No ESV
Organic Selenium-speciation	mg/kg	3 - 3	100%	2.24 - 3.04	– - –	2.5	NA	No ESV
Selenate-speciation	mg/kg	0 - 3	0%	– - –	0.274 - 0.498	–	NA	No ESV
Selenite-speciation	mg/kg	3 - 3	100%	0.824 - 1.1	– - –	1	NA	No ESV
Selenium-speciation	mg/kg	3 - 3	100%	3.06 - 3.34	– - –	3.16	NA	No ESV
Physical Property								
% Ash	%	3 - 3	100%	51 - 58	– - –	54	NA	No ESV

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg = Milligram per kilogram.

NA = Not available.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-45. Residual Sediment Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Inorganic										
Aluminum	mg/kg	2 - 2	100%	8930	16400	–	–	12665	NA	No ESV
Antimony	mg/kg	1 - 2	50%	2.43	2.43	1.53	1.53	2.43	12	no
Arsenic	mg/kg	2 - 2	100%	6.65	82.7	–	–	44.7	7.24	Yes
Barium	mg/kg	2 - 2	100%	91.4	365	–	–	228	NA	No ESV
Beryllium	mg/kg	2 - 2	100%	0.859	2.93	–	–	1.89	NA	No ESV
Boron	mg/kg	1 - 2	50%	41.4	41.4	6.13	6.13	41.4	NA	No ESV
Cadmium	mg/kg	0 - 2	0%	–	–	0.132	0.153	–	1	–
Chromium	mg/kg	2 - 2	100%	9.72	32.5	–	–	21.1	52.3	no
Cobalt	mg/kg	2 - 2	100%	11.2	14.5	–	–	12.9	NA	No ESV
Copper	mg/kg	2 - 2	100%	9.66	45.9	–	–	27.8	18.7	Yes
Lead	mg/kg	2 - 2	100%	11.7	22.5	–	–	17.1	30.2	no
Manganese	mg/kg	2 - 2	100%	184	508	–	–	346	NA	No ESV
Mercury	mg/kg	1 - 2	50%	0.12	0.12	0.05	0.05	0.12	0.13	no
Molybdenum	mg/kg	0 - 2	0%	–	–	5.27	6.13	–	NA	No ESV
Nickel	mg/kg	2 - 2	100%	14.6	28.2	–	–	21.4	15.9	Yes
Selenium	mg/kg	1 - 2	50%	5.11	5.11	1.53	1.53	5.11	NA	No ESV
Silver	mg/kg	0 - 2	0%	–	–	0.659	0.767	–	2	–
Strontium	mg/kg	2 - 2	100%	17.5	255	–	–	136	NA	No ESV
Thallium	mg/kg	0 - 2	0%	–	–	1.32	1.53	–	NA	No ESV
Vanadium	mg/kg	2 - 2	100%	14.3	77	–	–	45.7	NA	No ESV
Zinc	mg/kg	2 - 2	100%	41.5	50.4	–	–	46	124	no
Inorganic-cation/anion										
Calcium	mg/kg	2 - 2	100%	1360	4830	–	–	3095	NA	No ESV
Iron	mg/kg	2 - 2	100%	14100	22100	–	–	18100	NA	No ESV
Magnesium	mg/kg	2 - 2	100%	844	1350	–	–	1097	NA	No ESV
Potassium	mg/kg	2 - 2	100%	681	2040	–	–	1361	NA	No ESV
Sodium	mg/kg	0 - 2	0%	–	–	153	277	–	NA	No ESV

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Table 2-45. Residual Sediment Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Speciation										
Arsenate-speciation	mg/kg	2 - 2	100%	2.71	68.3	–	–	35.5	NA	No ESV
Arsenic-speciation	mg/kg	2 - 2	100%	5.82	75.6	–	–	40.7	NA	No ESV
Arsenite-speciation	mg/kg	2 - 2	100%	1.59	8.11	–	–	4.85	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	2 - 2	100%	4.3	76.4	–	–	40.4	NA	No ESV
Inorganic Selenium-speciation	mg/kg	1 - 2	50%	4.31	4.31	0.387	0.387	4.31	NA	No ESV
Organic Arsenic-speciation	mg/kg	0 - 2	0%	–	–	2.11	8.51	–	NA	No ESV
Organic Selenium-speciation	mg/kg	1 - 2	50%	1.12	1.12	0.683	0.683	1.12	NA	No ESV
Selenate-speciation	mg/kg	0 - 2	0%	–	–	0.229	0.306	–	NA	No ESV
Selenite-speciation	mg/kg	1 - 2	50%	4.31	4.31	0.387	0.387	4.31	NA	No ESV
Selenium-speciation	mg/kg	2 - 2	100%	1.12	4.62	–	–	2.87	NA	No ESV
Physical Property										
% Ash	%	2 - 2	100%	7	76	–	–	41.5	NA	No ESV

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg = Milligram per kilogram.

NA = Not available.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-46. Residual Sediment Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Inorganic										
Aluminum	mg/kg	2 - 2	100%	5260	20900	–	–	13080	NA	No ESV
Antimony	mg/kg	0 - 2	0%	–	–	1.16	2	–	12	–
Arsenic	mg/kg	2 - 2	100%	2	17.8	–	–	9.9	7.24	Yes
Barium	mg/kg	2 - 2	100%	41.8	178	–	–	110	NA	No ESV
Beryllium	mg/kg	1 - 2	50%	1.72	1.72	0.465	0.465	1.72	NA	No ESV
Boron	mg/kg	0 - 2	0%	–	–	4.65	7.99	–	NA	No ESV
Cadmium	mg/kg	0 - 2	0%	–	–	0.116	0.2	–	1	–
Chromium	mg/kg	2 - 2	100%	6.09	22.4	–	–	14.2	52.3	no
Cobalt	mg/kg	2 - 2	100%	3.63	21.4	–	–	12.5	NA	No ESV
Copper	mg/kg	1 - 1	100%	4.35	4.35	–	–	4.35	18.7	no
Lead	mg/kg	2 - 2	100%	8.26	25.3	–	–	16.8	30.2	no
Manganese	mg/kg	2 - 2	100%	76.9	1220	–	–	648	NA	No ESV
Mercury	mg/kg	1 - 2	50%	0.08	0.08	0.039	0.039	0.08	0.13	no
Molybdenum	mg/kg	0 - 2	0%	–	–	4.65	7.99	–	NA	No ESV
Nickel	mg/kg	2 - 2	100%	6.93	30.2	–	–	18.6	15.9	Yes
Selenium	mg/kg	1 - 2	50%	2.28	2.28	1.16	1.16	2.28	NA	No ESV
Silver	mg/kg	0 - 2	0%	–	–	0.581	0.999	–	2	–
Strontium	mg/kg	1 - 2	50%	38.5	38.5	4.65	4.65	38.5	NA	No ESV
Thallium	mg/kg	0 - 2	0%	–	–	1.16	2	–	NA	No ESV
Vanadium	mg/kg	2 - 2	100%	7.81	37.8	–	–	22.8	NA	No ESV
Zinc	mg/kg	2 - 2	100%	22.3	105	–	–	63.7	124	no
Inorganic-cation/anion										
Calcium	mg/kg	2 - 2	100%	350	2440	–	–	1395	NA	No ESV
Iron	mg/kg	2 - 2	100%	5460	31100	–	–	18280	NA	No ESV
Magnesium	mg/kg	2 - 2	100%	379	1930	–	–	1155	NA	No ESV
Potassium	mg/kg	2 - 2	100%	458	1740	–	–	1099	NA	No ESV
Sodium	mg/kg	0 - 2	0%	–	–	116	200	–	NA	No ESV

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Table 2-46. Residual Sediment Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Speciation										
Arsenate-speciation	mg/kg	1 - 2	50%	1.58	1.58	2.74	2.74	1.58	NA	No ESV
Arsenic-speciation	mg/kg	2 - 2	100%	1.65	9.76	–	–	5.71	NA	No ESV
Arsenite-speciation	mg/kg	2 - 2	100%	0.195	4.48	–	–	2.34	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	2 - 2	100%	1.78	5.48	–	–	3.63	NA	No ESV
Inorganic Selenium-speciation	mg/kg	0 - 2	0%	–	–	0.38	0.541	–	NA	No ESV
Organic Arsenic-speciation	mg/kg	1 - 2	50%	4.29	4.29	0.442	0.442	4.29	NA	No ESV
Organic Selenium-speciation	mg/kg	2 - 2	100%	0.651	1.83	–	–	1.24	NA	No ESV
Selenate-speciation	mg/kg	0 - 2	0%	–	–	0.301	0.428	–	NA	No ESV
Selenite-speciation	mg/kg	0 - 2	0%	–	–	0.38	0.541	–	NA	No ESV
Selenium-speciation	mg/kg	2 - 2	100%	0.651	1.83	–	–	1.24	NA	No ESV
Physical Property										
% Ash	%	1 - 2	50%	5	5	1	1	5	NA	No ESV

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg = Milligram per kilogram.

NA = Not available.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-47. Residual Sediment Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Inorganic										
Aluminum	mg/kg	1 - 1	100%	6910	6910	–	–	6910	NA	No ESV
Antimony	mg/kg	0 - 1	0%	–	–	1.13	1.13	–	12	–
Arsenic	mg/kg	1 - 1	100%	47.4	47.4	–	–	47.4	7.24	Yes
Barium	mg/kg	1 - 1	100%	33.1	33.1	–	–	33.1	NA	No ESV
Beryllium	mg/kg	0 - 1	0%	–	–	0.45	0.45	–	NA	No ESV
Boron	mg/kg	1 - 1	100%	6.37	6.37	–	–	6.37	NA	No ESV
Cadmium	mg/kg	0 - 1	0%	–	–	0.113	0.113	–	1	–
Chromium	mg/kg	1 - 1	100%	31.9	31.9	–	–	31.9	52.3	no
Cobalt	mg/kg	1 - 1	100%	8.04	8.04	–	–	8.04	NA	No ESV
Copper	mg/kg	1 - 1	100%	4.53	4.53	–	–	4.53	18.7	no
Lead	mg/kg	1 - 1	100%	20.6	20.6	–	–	20.6	30.2	no
Manganese	mg/kg	1 - 1	100%	691	691	–	–	691	NA	No ESV
Mercury	mg/kg	1 - 1	100%	0.59	0.59	–	–	0.59	0.13	Yes
Molybdenum	mg/kg	0 - 1	0%	–	–	4.5	4.5	–	NA	No ESV
Nickel	mg/kg	1 - 1	100%	4.57	4.57	–	–	4.57	15.9	no
Selenium	mg/kg	0 - 1	0%	–	–	1.13	1.13	–	NA	No ESV
Silver	mg/kg	0 - 1	0%	–	–	0.563	0.563	–	2	–
Strontium	mg/kg	0 - 1	0%	–	–	4.5	4.5	–	NA	No ESV
Thallium	mg/kg	0 - 1	0%	–	–	1.13	1.13	–	NA	No ESV
Vanadium	mg/kg	1 - 1	100%	40.9	40.9	–	–	40.9	NA	No ESV
Zinc	mg/kg	1 - 1	100%	47.7	47.7	–	–	47.7	124	no
Inorganic-cation/anion										
Calcium	mg/kg	1 - 1	100%	848	848	–	–	848	NA	No ESV
Iron	mg/kg	1 - 1	100%	35300	35300	–	–	35300	NA	No ESV
Magnesium	mg/kg	1 - 1	100%	675	675	–	–	675	NA	No ESV
Potassium	mg/kg	1 - 1	100%	710	710	–	–	710	NA	No ESV
Sodium	mg/kg	0 - 1	0%	–	–	113	113	–	NA	No ESV

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Table 2-47. Residual Sediment Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Speciation								
Arsenate-speciation	mg/kg	1 - 1	100%	17.4 - 17.4	– - –	17.4	NA	No ESV
Arsenic-speciation	mg/kg	1 - 1	100%	18.9 - 18.9	– - –	18.9	NA	No ESV
Arsenite-speciation	mg/kg	1 - 1	100%	7.19 - 7.19	– - –	7.19	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	1 - 1	100%	24.6 - 24.6	– - –	24.6	NA	No ESV
Inorganic Selenium-speciation	mg/kg	0 - 1	0%	– - –	0.392 - 0.392	–	NA	No ESV
Organic Arsenic-speciation	mg/kg	0 - 1	0%	– - –	2.59 - 2.59	–	NA	No ESV
Organic Selenium-speciation	mg/kg	0 - 1	0%	– - –	0.474 - 0.474	–	NA	No ESV
Selenate-speciation	mg/kg	0 - 1	0%	– - –	0.31 - 0.31	–	NA	No ESV
Selenite-speciation	mg/kg	0 - 1	0%	– - –	0.392 - 0.392	–	NA	No ESV
Selenium-speciation	mg/kg	0 - 1	0%	– - –	0.474 - 0.474	–	NA	No ESV
Physical Property								
% Ash	%	1 - 1	100%	1 - 1	– - –	1	NA	No ESV

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg = Milligram per kilogram.

NA = Not available.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-48. Residual Sediment Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Inorganic								
Aluminum	mg/kg	4 - 4	100%	23300 - 29000	– - –	27025	NA	No ESV
Antimony	mg/kg	2 - 4	50%	1.71 - 1.93	1.73 - 1.93	1.82	12	no
Arsenic	mg/kg	4 - 4	100%	15.3 - 33.1	– - –	25.7	7.24	Yes
Barium	mg/kg	4 - 4	100%	208 - 291	– - –	263	NA	No ESV
Beryllium	mg/kg	4 - 4	100%	1.76 - 2.51	– - –	2.26	NA	No ESV
Boron	mg/kg	4 - 4	100%	18.4 - 27.5	– - –	24.3	NA	No ESV
Cadmium	mg/kg	0 - 4	0%	– - –	0.146 - 0.193	–	1	–
Chromium	mg/kg	4 - 4	100%	32.7 - 37.7	– - –	34.95	52.3	no
Cobalt	mg/kg	4 - 4	100%	18.6 - 21.2	– - –	20.35	NA	No ESV
Copper	mg/kg	4 - 4	100%	35.2 - 55.5	– - –	41.88	18.7	Yes
Lead	mg/kg	4 - 4	100%	21.5 - 30.8	– - –	24.95	30.2	Yes
Manganese	mg/kg	4 - 4	100%	871 - 2010	– - –	1323	NA	No ESV
Mercury	mg/kg	4 - 4	100%	0.37 - 1.3	– - –	0.71	0.13	Yes
Molybdenum	mg/kg	0 - 4	0%	– - –	5.84 - 7.71	–	NA	No ESV
Nickel	mg/kg	4 - 4	100%	31.7 - 35.1	– - –	33.5	15.9	Yes
Selenium	mg/kg	4 - 4	100%	2.56 - 3.5	– - –	3.03	NA	No ESV
Silver	mg/kg	0 - 4	0%	– - –	0.73 - 0.964	–	2	–
Strontium	mg/kg	3 - 3	100%	54.3 - 166	– - –	121	NA	No ESV
Thallium	mg/kg	0 - 4	0%	– - –	1.46 - 1.93	–	NA	No ESV
Vanadium	mg/kg	4 - 4	100%	52.8 - 63.8	– - –	60.48	NA	No ESV
Zinc	mg/kg	4 - 4	100%	73.6 - 128	– - –	94.18	124	Yes
Inorganic-cation/anion								
Calcium	mg/kg	4 - 4	100%	3640 - 4150	– - –	3990	NA	No ESV
Iron	mg/kg	4 - 4	100%	26700 - 31700	– - –	30100	NA	No ESV
Magnesium	mg/kg	4 - 4	100%	2190 - 3240	– - –	2653	NA	No ESV
Potassium	mg/kg	4 - 4	100%	2960 - 4020	– - –	3540	NA	No ESV
Sodium	mg/kg	3 - 4	75%	246 - 267	173 - 173	258	NA	No ESV

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Table 2-48. Residual Sediment Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Speciation										
Arsenate-speciation	mg/kg	4 - 4	100%	7.82	21.3	–	–	12.1	NA	No ESV
Arsenic-speciation	mg/kg	4 - 4	100%	12.4	28.2	–	–	20.55	NA	No ESV
Arsenite-speciation	mg/kg	4 - 4	100%	2.74	14	–	–	7.66	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	4 - 4	100%	11.6	24.4	–	–	19.7	NA	No ESV
Inorganic Selenium-speciation	mg/kg	0 - 4	0%	–	–	0.616	1.17	–	NA	No ESV
Organic Arsenic-speciation	mg/kg	1 - 4	25%	3.77	3.77	1.71	3.33	3.77	NA	No ESV
Organic Selenium-speciation	mg/kg	3 - 4	75%	1.37	2.03	0.783	0.783	1.59	NA	No ESV
Selenate-speciation	mg/kg	0 - 4	0%	–	–	0.275	0.513	–	NA	No ESV
Selenite-speciation	mg/kg	0 - 4	0%	–	–	0.616	1.17	–	NA	No ESV
Selenium-speciation	mg/kg	4 - 4	100%	1.33	3.13	–	–	2.25	NA	No ESV
Physical Property										
% Ash	%	4 - 4	100%	33	50	–	–	42.75	NA	No ESV

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg = Milligram per kilogram.

NA = Not available.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-49. Residual Sediment Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Inorganic										
Aluminum	mg/kg	4 - 4	100%	24700	32500	–	–	28450	NA	No ESV
Antimony	mg/kg	3 - 4	75%	1.69	2.05	1.73	1.73	1.93	12	no
Arsenic	mg/kg	4 - 4	100%	26.2	31	–	–	28.6	7.24	Yes
Barium	mg/kg	4 - 4	100%	275	306	–	–	284	NA	No ESV
Beryllium	mg/kg	4 - 4	100%	2.44	2.53	–	–	2.49	NA	No ESV
Boron	mg/kg	4 - 4	100%	23.5	31.5	–	–	27.7	NA	No ESV
Cadmium	mg/kg	0 - 4	0%	–	–	0.162	0.173	–	1	–
Chromium	mg/kg	4 - 4	100%	32.8	41.2	–	–	36.2	52.3	no
Cobalt	mg/kg	4 - 4	100%	18.3	21.8	–	–	19.7	NA	No ESV
Copper	mg/kg	4 - 4	100%	31.9	41.6	–	–	37.4	18.7	Yes
Lead	mg/kg	4 - 4	100%	22.3	25	–	–	23.9	30.2	no
Manganese	mg/kg	4 - 4	100%	932	1580	–	–	1191	NA	No ESV
Mercury	mg/kg	4 - 4	100%	0.25	0.76	–	–	0.51	0.13	Yes
Molybdenum	mg/kg	0 - 4	0%	–	–	6.5	6.94	–	NA	No ESV
Nickel	mg/kg	4 - 4	100%	31.9	38.1	–	–	33.8	15.9	Yes
Selenium	mg/kg	4 - 4	100%	2.81	3.41	–	–	3.16	NA	No ESV
Silver	mg/kg	0 - 4	0%	–	–	0.812	0.867	–	2	–
Strontium	mg/kg	4 - 4	100%	136	162	–	–	149	NA	No ESV
Thallium	mg/kg	0 - 4	0%	–	–	1.62	1.73	–	NA	No ESV
Vanadium	mg/kg	4 - 4	100%	60.9	67.1	–	–	63.95	NA	No ESV
Zinc	mg/kg	4 - 4	100%	78.6	89.5	–	–	84.5	124	no
Inorganic-cation/anion										
Calcium	mg/kg	4 - 4	100%	4090	4420	–	–	4270	NA	No ESV
Iron	mg/kg	4 - 4	100%	26400	35300	–	–	29600	NA	No ESV
Magnesium	mg/kg	4 - 4	100%	2340	2910	–	–	2680	NA	No ESV
Potassium	mg/kg	4 - 4	100%	3090	4900	–	–	4098	NA	No ESV
Sodium	mg/kg	4 - 4	100%	247	340	–	–	288	NA	No ESV

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Table 2-49. Residual Sediment Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Speciation										
Arsenate-speciation	mg/kg	4 - 4	100%	8.86	16.1	–	–	12.04	NA	No ESV
Arsenic-speciation	mg/kg	4 - 4	100%	14	25.8	–	–	20	NA	No ESV
Arsenite-speciation	mg/kg	4 - 4	100%	5.59	14.6	–	–	10.16	NA	No ESV
Inorganic Arsenic-speciation	mg/kg	4 - 4	100%	14.4	26.6	–	–	21.2	NA	No ESV
Inorganic Selenium-speciation	mg/kg	0 - 4	0%	–	–	0.495	1.03	–	NA	No ESV
Organic Arsenic-speciation	mg/kg	0 - 4	0%	–	–	2.93	3.69	–	NA	No ESV
Organic Selenium-speciation	mg/kg	4 - 4	100%	1.34	2.07	–	–	1.69	NA	No ESV
Selenate-speciation	mg/kg	0 - 4	0%	–	–	0.294	0.41	–	NA	No ESV
Selenite-speciation	mg/kg	0 - 4	0%	–	–	0.495	1.03	–	NA	No ESV
Selenium-speciation	mg/kg	4 - 4	100%	1.83	3.01	–	–	2.53	NA	No ESV
Physical Property										
% Ash	%	4 - 4	100%	29	43	–	–	38.3	NA	No ESV

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg = Milligram per kilogram.

NA = Not available.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Region 4 Ecological Screening Value (ESV) for Sediment (2001).

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Table 2-50. Surface Water (Mid-Column) Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Total Inorganics										
Aluminum, Total	mg/L	0 - 8	0%	–	–	0.05	0.05	–	0.087	–
Antimony, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.16	–
Arsenic, Total	mg/L	8 - 8	100%	0.00038	0.0013	–	–	0.00071	0.19	no
Barium, Total	mg/L	8 - 8	100%	0.0454	0.0531	–	–	0.049	NA	No ESV
Beryllium, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Total	mg/L	8 - 8	100%	0.0172	0.0198	–	–	0.018	0.75	no
Cadmium, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Total	mg/L	8 - 8	100%	26.1	35.6	–	–	31.6	NA	No ESV
Chromium, Total	mg/L	1 - 8	13%	0.00041	0.00041	0.00033	0.00033	0.00041	0.11732	no
Cobalt, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	NA	No ESV
Copper, Total	mg/L	7 - 8	88%	0.00033	0.00067	0.00033	0.00033	0.00044	0.00654	no
Iron, Total	mg/L	8 - 8	100%	0.0554	0.133	–	–	0.091	1	no
Lead, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00132	–
Magnesium, Total	mg/L	8 - 8	100%	7.42	10.5	–	–	9.071	NA	No ESV
Manganese, Total	mg/L	8 - 8	100%	0.0262	0.196	–	–	0.094	NA	No ESV
Mercury, Total	mg/L	1 - 8	13%	0.00017	0.00017	0.00015	0.00015	0.00017	0.000012	Yes
Molybdenum, Total	mg/L	8 - 8	100%	0.00045	0.00091	–	–	0.0007	NA	No ESV
Nickel, Total	mg/L	7 - 8	88%	0.0004	0.00072	0.00033	0.00033	0.00055	0.08771	no
Potassium, Total	mg/L	8 - 8	100%	1.52	1.73	–	–	1.63	NA	No ESV
Selenium, Total	mg/L	1 - 8	13%	0.00038	0.00038	0.00033	0.00033	0.0004	0.005	no
Silver, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Total	mg/L	8 - 8	100%	5.44	6.21	–	–	6	NA	No ESV
Strontium, Total	mg/L	8 - 8	100%	0.0824	0.107	–	–	0.097	NA	No ESV
Thallium, Total	mg/L	0 - 8	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Total	mg/L	0 - 8	0%	–	–	0.001	0.001	–	NA	No ESV
Zinc, Total	mg/L	0 - 8	0%	–	–	0.0083	0.0083	–	0.05891	–
Dissolved Inorganics										
Aluminum, Dissolved	mg/L	0 - 8	0%	–	–	0.05	0.05	–	0.087	–
Antimony, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.16	–
Arsenic, Dissolved	mg/L	8 - 8	100%	0.00034	0.00104	–	–	0.00059	0.19	no
Barium, Dissolved	mg/L	8 - 8	100%	0.0423	0.0524	–	–	0.046	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Dissolved	mg/L	8 - 8	100%	0.0171	0.0234	–	–	0.019	0.75	no
Cadmium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Dissolved	mg/L	8 - 8	100%	25.3	35.5	–	–	31.8	NA	No ESV

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Table 2-50. Surface Water (Mid-Column) Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics (continued)										
Chromium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.11732	–
Cobalt, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	NA	No ESV
Copper, Dissolved	mg/L	1 - 8	13%	0.00041	0.00041	0.00033	0.00046	0.00041	0.00654	no
Iron, Dissolved	mg/L	0 - 8	0%	–	–	0.025	0.025	–	1	–
Lead, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00132	–
Magnesium, Dissolved	mg/L	8 - 8	100%	7.18	10.4	–	–	9.06	NA	No ESV
Manganese, Dissolved	mg/L	6 - 8	75%	0.00053	0.0373	0.00073	0.00214	0.0078	NA	No ESV
Mercury, Dissolved	mg/L	0 - 8	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	8 - 8	100%	0.00053	0.00086	–	–	0.00068	NA	No ESV
Nickel, Dissolved	mg/L	7 - 8	88%	0.00037	0.00063	0.00054	0.00054	0.00046	0.08771	no
Potassium, Dissolved	mg/L	8 - 8	100%	1.56	1.72	–	–	1.63	NA	No ESV
Selenium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.005	–
Silver, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Dissolved	mg/L	8 - 8	100%	5.35	6.24	–	–	6	NA	No ESV
Strontium, Dissolved	mg/L	8 - 8	100%	0.0808	0.107	–	–	0.097	NA	No ESV
Thallium, Dissolved	mg/L	0 - 8	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	0 - 8	0%	–	–	0.001	0.001	–	NA	No ESV
Zinc, Dissolved	mg/L	0 - 8	0%	–	–	0.0083	0.0083	–	0.05891	–
Speciation										
Arsenate, Dissolved	mg/L	2 - 2	100%	8.5E-05	0.00016	–	–	0.00012	NA	No ESV
Arsenic, Dissolved (from speciation lab)	mg/L	2 - 2	100%	0.00062	0.00062	–	–	0.00062	NA	No ESV
Arsenite, Dissolved	mg/L	2 - 2	100%	0.00017	0.00019	–	–	0.00018	0.19	no
Inorganic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00027	0.00032	–	–	0.0003	NA	No ESV
Inorganic Selenium, Dissolved	mg/L	0 - 2	0%	–	–	0.00029	0.00029	–	NA	No ESV
Organic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00029	0.00035	–	–	0.000322	NA	No ESV
Organic Selenium, Dissolved	mg/L	0 - 2	0%	–	–	0.00039	0.00039	–	NA	No ESV
Selenate, Dissolved	mg/L	0 - 2	0%	–	–	0.00016	0.00016	–	NA	No ESV
Selenite, Dissolved	mg/L	0 - 2	0%	–	–	0.00029	0.00029	–	NA	No ESV
Selenium, Dissolved (from speciation lab)	mg/L	0 - 2	0%	–	–	0.00039	0.00039	–	0.005	–
Radionuclides										
Actinium-228	pCi/L	0 - 2	0%	–	–	10.9	13	–	NA	No ESV
Americium-241	pCi/L	0 - 2	0%	–	–	11.7	12.1	–	NA	No ESV
Bismuth-214	pCi/L	0 - 2	0%	–	–	7.89	8.78	–	NA	No ESV
Cesium-137	pCi/L	0 - 2	0%	–	–	2.58	2.85	–	NA	No ESV
Cobalt-60	pCi/L	0 - 2	0%	–	–	2.8	3.09	–	NA	No ESV

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Table 2-50. Surface Water (Mid-Column) Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Radionuclides (continued)										
Lead-212	pCi/L	0 - 2	0%	–	–	5.84	6.8	–	NA	No ESV
Lead-214	pCi/L	0 - 2	0%	–	–	7.15	7.78	–	NA	No ESV
Potassium-40	pCi/L	0 - 2	0%	–	–	38.7	39.9	–	NA	No ESV
Radium-226	pCi/L	0 - 2	0%	–	–	0.261	0.62	–	NA	No ESV
Radium-228	pCi/L	0 - 2	0%	–	–	0.567	0.818	–	NA	No ESV
Thallium-208	pCi/L	0 - 2	0%	–	–	3.51	3.65	–	NA	No ESV
Thorium-228	pCi/L	0 - 2	0%	–	–	0.0943	0.102	–	NA	No ESV
Thorium-230	pCi/L	0 - 2	0%	–	–	0.0508	0.0568	–	NA	No ESV
Thorium-232	pCi/L	0 - 2	0%	–	–	0.0378	0.0507	–	NA	No ESV
Thorium-234	pCi/L	0 - 2	0%	–	–	127	172	–	NA	No ESV
Uranium-234	pCi/L	0 - 2	0%	–	–	0.081	0.128	–	NA	No ESV
Uranium-235	pCi/L	0 - 2	0%	–	–	0.0908	0.125	–	NA	No ESV
Uranium-238	pCi/L	1 - 2	50%	0.147	0.147	0.117	0.117	0.147	NA	No ESV
Physical Properties										
Dissolved Organic Carbon	mg/L	8 - 8	100%	1.78	2.35	–	–	2.04	NA	No ESV
Hardness (As CaCO3)	mg/L	8 - 8	100%	95.7	132	–	–	116	NA	No ESV
Total Dissolved Solids	mg/L	8 - 8	100%	117	156	–	–	141	NA	No ESV
Total Suspended Solids	mg/L	7 - 8	88%	2.5	6.2	2.4	2.4	3.56	NA	No ESV

Note: Surface water samples were collected once each week for 8 weeks (8/31/2010 – 10/19/2010).
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/L = Milligram per liter.
NA = Not available.
pCi/L = Picocuries per liter.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-51. Surface Water (Mid-Column) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Total Inorganics										
Aluminum, Total	mg/L	14 - 16	88%	0.0809	0.255	0.113	0.122	0.13	0.087	Yes
Antimony, Total	mg/L	1 - 16	6%	0.00042	0.00042	0.00033	0.00033	0.00042	0.16	no
Arsenic, Total	mg/L	16 - 16	100%	0.00053	0.00252	–	–	0.0013	0.19	no
Barium, Total	mg/L	16 - 16	100%	0.0344	0.0487	–	–	0.041	NA	No ESV
Beryllium, Total	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Total	mg/L	16 - 16	100%	0.0143	0.0298	–	–	0.02	0.75	no
Cadmium, Total	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Total	mg/L	16 - 16	100%	35.4	39.5	–	–	38.16	NA	No ESV
Chromium, Total	mg/L	8 - 16	50%	0.00037	0.00271	0.00033	0.00033	0.00073	0.11732	no
Cobalt, Total	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	NA	No ESV
Copper, Total	mg/L	16 - 16	100%	0.00058	0.00212	–	–	0.0014	0.00654	no
Iron, Total	mg/L	16 - 16	100%	0.0776	0.22	–	–	0.11	1	no
Lead, Total	mg/L	1 - 16	6%	0.00036	0.00036	0.00033	0.00033	0.00036	0.00132	no
Magnesium, Total	mg/L	16 - 16	100%	9.84	11.7	–	–	10.97	NA	No ESV
Manganese, Total	mg/L	16 - 16	100%	0.021	0.0393	–	–	0.03	NA	No ESV
Mercury, Total	mg/L	2 - 16	13%	0.00016	0.00019	0.00015	0.00015	0.00017	0.000012	Yes
Molybdenum, Total	mg/L	14 - 16	88%	0.00054	0.0015	0.0007	0.00077	0.001	NA	No ESV
Nickel, Total	mg/L	16 - 16	100%	0.00035	0.00072	–	–	0.00051	0.08771	no
Potassium, Total	mg/L	16 - 16	100%	1.49	1.63	–	–	1.58	NA	No ESV
Selenium, Total	mg/L	7 - 16	44%	0.00035	0.00093	0.00033	0.00033	0.0005	0.005	no
Silver, Total	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Total	mg/L	16 - 16	100%	6.5	7.09	–	–	6.76	NA	No ESV
Strontium, Total	mg/L	16 - 16	100%	0.109	0.126	–	–	0.12	NA	No ESV
Thallium, Total	mg/L	0 - 16	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Total	mg/L	10 - 16	63%	0.0011	0.00301	0.001	0.001	0.002	NA	No ESV
Zinc, Total	mg/L	2 - 16	13%	0.00993	0.0137	0.0083	0.0083	0.012	0.05891	no
Dissolved Inorganics										
Aluminum, Dissolved	mg/L	0 - 16	0%	–	–	0.05	0.05	–	0.087	–
Antimony, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.16	–
Arsenic, Dissolved	mg/L	16 - 16	100%	0.00047	0.00228	–	–	0.0011	0.19	no
Barium, Dissolved	mg/L	16 - 16	100%	0.0332	0.0443	–	–	0.0384	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Dissolved	mg/L	16 - 16	100%	0.0131	0.0274	–	–	0.0206	0.75	no

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Table 2-51. Surface Water (Mid-Column) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics (continued)										
Cadmium, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Dissolved	mg/L	16 - 16	100%	35	39.6	–	–	37.7	NA	No ESV
Chromium, Dissolved	mg/L	1 - 16	6%	0.00039	0.00039	0.00033	0.00033	0.00039	0.11732	no
Cobalt, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	NA	No ESV
Copper, Dissolved	mg/L	16 - 16	100%	0.00045	0.0014	–	–	0.00091	0.00654	no
Iron, Dissolved	mg/L	0 - 16	0%	–	–	0.025	0.025	–	1	–
Lead, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.00132	–
Magnesium, Dissolved	mg/L	16 - 16	100%	9.79	11.7	–	–	10.8	NA	No ESV
Manganese, Dissolved	mg/L	16 - 16	100%	0.00037	0.0137	–	–	0.0031	NA	No ESV
Mercury, Dissolved	mg/L	0 - 16	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	14 - 16	88%	0.00049	0.00145	0.00057	0.00068	0.001	NA	No ESV
Nickel, Dissolved	mg/L	8 - 16	50%	0.00033	0.00048	0.00033	0.00033	0.00038	0.08771	no
Potassium, Dissolved	mg/L	16 - 16	100%	1.47	1.59	–	–	1.54	NA	No ESV
Selenium, Dissolved	mg/L	8 - 16	50%	0.00033	0.00066	0.00033	0.00033	0.00043	0.005	no
Silver, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Dissolved	mg/L	16 - 16	100%	6.29	7.12	–	–	6.69	NA	No ESV
Strontium, Dissolved	mg/L	16 - 16	100%	0.106	0.124	–	–	0.115	NA	No ESV
Thallium, Dissolved	mg/L	0 - 16	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	8 - 16	50%	0.0012	0.00252	0.001	0.001	0.0018	NA	No ESV
Zinc, Dissolved	mg/L	1 - 16	6%	0.00851	0.00851	0.0083	0.0083	0.00851	0.05891	no
Speciation										
Arsenate, Dissolved	mg/L	4 - 4	100%	0.00033	0.00053	–	–	0.00042	NA	No ESV
Arsenic, Dissolved (from speciation lab)	mg/L	4 - 4	100%	0.0007	0.00143	–	–	0.001	NA	No ESV
Arsenite, Dissolved	mg/L	4 - 4	100%	9.7E-05	0.00033	–	–	0.00021	0.19	no
Inorganic Arsenic, Dissolved	mg/L	4 - 4	100%	0.00043	0.00082	–	–	0.000625	NA	No ESV
Inorganic Selenium, Dissolved	mg/L	1 - 4	25%	0.00048	0.00048	0.00029	0.00029	0.000483	NA	No ESV
Organic Arsenic, Dissolved	mg/L	4 - 4	100%	0.00028	0.00061	–	–	0.000443	NA	No ESV
Organic Selenium, Dissolved	mg/L	4 - 4	100%	0.00045	0.00056	–	–	0.000511	NA	No ESV
Selenate, Dissolved	mg/L	2 - 4	50%	0.00022	0.00048	0.00016	0.00016	0.000353	NA	No ESV
Selenite, Dissolved	mg/L	0 - 4	0%	–	–	0.00029	0.00029	–	NA	No ESV
Selenium, Dissolved (from speciation lab)	mg/L	4 - 4	100%	0.00045	0.00098	–	–	0.000688	0.005	no

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Table 2-51. Surface Water (Mid-Column) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)

Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Radionuclides										
Actinium-228	pCi/L	0 - 4	0%	–	–	12.6	17.4	–	NA	No ESV
Americium-241	pCi/L	0 - 4	0%	–	–	6.06	20.9	–	NA	No ESV
Bismuth-214	pCi/L	1 - 4	25%	34.6	34.6	7.43	10.4	34.6	NA	No ESV
Cesium-137	pCi/L	0 - 4	0%	–	–	3.1	4.25	–	NA	No ESV
Cobalt-60	pCi/L	0 - 4	0%	–	–	2.97	5.72	–	NA	No ESV
Lead-212	pCi/L	0 - 4	0%	–	–	7.05	7.68	–	NA	No ESV
Lead-214	pCi/L	0 - 4	0%	–	–	8.05	23.9	–	NA	No ESV
Potassium-40	pCi/L	0 - 4	0%	–	–	42.5	54.6	–	NA	No ESV
Radium-226	pCi/L	2 - 4	50%	0.592	0.88	0.44	0.623	0.736	NA	No ESV
Radium-228	pCi/L	0 - 4	0%	–	–	0.327	0.986	–	NA	No ESV
Thallium-208	pCi/L	0 - 4	0%	–	–	3.88	5.77	–	NA	No ESV
Thorium-228	pCi/L	0 - 4	0%	–	–	0.0766	0.104	–	NA	No ESV
Thorium-230	pCi/L	0 - 4	0%	–	–	0.0514	0.0968	–	NA	No ESV
Thorium-232	pCi/L	0 - 4	0%	–	–	0.0412	0.0933	–	NA	No ESV
Thorium-234	pCi/L	0 - 4	0%	–	–	75.4	194	–	NA	No ESV
Uranium-234	pCi/L	3 - 4	75%	0.157	0.265	0.13	0.13	0.199	NA	No ESV
Uranium-235	pCi/L	0 - 4	0%	–	–	0.0717	0.142	–	NA	No ESV
Uranium-238	pCi/L	3 - 4	75%	0.165	0.171	0.115	0.115	0.167	NA	No ESV
Physical Properties										
Dissolved Organic Carbon	mg/L	16 - 16	100%	1.51	1.97	–	–	1.73	NA	No ESV
Hardness (As CaCO3)	mg/L	16 - 16	100%	129	147	–	–	141	NA	No ESV
Total Dissolved Solids	mg/L	16 - 16	100%	139	181	–	–	164	NA	No ESV
Total Suspended Solids	mg/L	14 - 16	88%	3.1	8.7	6.1	7.8	5.48	NA	No ESV

Note: Surface water samples were collected once each week for 8 weeks (8/31/2010 – 10/19/2010).
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/L = Milligram per liter.
NA = Not available.
pCi/L = Picocuries per liter.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-52. Surface Water (Mid-Column) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Total Inorganics										
Aluminum, Total	mg/L	13 - 16	81%	0.124	0.319	0.05	0.215	0.217	0.087	Yes
Antimony, Total	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.16	–
Arsenic, Total	mg/L	16 - 16	100%	0.00134	0.00278	–	–	0.00198	0.19	no
Barium, Total	mg/L	16 - 16	100%	0.0374	0.054	–	–	0.0469	NA	No ESV
Beryllium, Total	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Total	mg/L	16 - 16	100%	0.0158	0.027	–	–	0.021	0.75	no
Cadmium, Total	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Total	mg/L	16 - 16	100%	34.2	38.8	–	–	36.36	NA	No ESV
Chromium, Total	mg/L	4 - 16	25%	0.00033	0.0005	0.00033	0.00033	0.000405	0.11732	no
Cobalt, Total	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	NA	No ESV
Copper, Total	mg/L	16 - 16	100%	0.00065	0.00173	–	–	0.0011	0.00654	no
Iron, Total	mg/L	15 - 16	94%	0.121	0.251	0.025	0.025	0.178	1	no
Lead, Total	mg/L	8 - 16	50%	0.00033	0.00044	0.00033	0.00033	0.00038	0.00132	no
Magnesium, Total	mg/L	16 - 16	100%	9.73	11.4	–	–	10.4	NA	No ESV
Manganese, Total	mg/L	16 - 16	100%	0.00825	0.101	–	–	0.058	NA	No ESV
Mercury, Total	mg/L	1 - 16	6%	0.00019	0.00019	0.00015	0.00015	0.00019	0.000012	Yes
Molybdenum, Total	mg/L	14 - 16	88%	0.00062	0.0013	0.00061	0.00112	0.00095	NA	No ESV
Nickel, Total	mg/L	16 - 16	100%	0.00044	0.00086	–	–	0.000583	0.08771	no
Potassium, Total	mg/L	16 - 16	100%	1.54	1.67	–	–	1.59	NA	No ESV
Selenium, Total	mg/L	8 - 16	50%	0.00033	0.00055	0.00033	0.00033	0.000411	0.005	no
Silver, Total	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Total	mg/L	16 - 16	100%	5.99	6.93	–	–	6.43	NA	No ESV
Strontium, Total	mg/L	16 - 16	100%	0.107	0.123	–	–	0.11	NA	No ESV
Thallium, Total	mg/L	0 - 16	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Total	mg/L	15 - 16	94%	0.00109	0.00217	0.001	0.001	0.00157	NA	No ESV
Zinc, Total	mg/L	0 - 16	0%	–	–	0.0083	0.0083	–	0.05891	–
Dissolved Inorganics										
Aluminum, Dissolved	mg/L	0 - 16	0%	–	–	0.05	0.05	–	0.087	–
Antimony, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.16	–
Arsenic, Dissolved	mg/L	16 - 16	100%	0.00091	0.00232	–	–	0.00147	0.19	no
Barium, Dissolved	mg/L	16 - 16	100%	0.0362	0.0475	–	–	0.042	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Dissolved	mg/L	15 - 16	94%	0.0152	0.0257	0.0125	0.0125	0.021	0.75	no

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Table 2-52. Surface Water (Mid-Column) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics (continued)										
Cadmium, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Dissolved	mg/L	16 - 16	100%	34.1	38.4	–	–	36.13	NA	No ESV
Chromium, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.11732	–
Cobalt, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	NA	No ESV
Copper, Dissolved	mg/L	16 - 16	100%	0.00043	0.00292	–	–	0.00081	0.00654	no
Iron, Dissolved	mg/L	2 - 16	13%	0.0251	0.0304	0.025	0.025	0.028	1	no
Lead, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.00132	–
Magnesium, Dissolved	mg/L	16 - 16	100%	9.63	11.1	–	–	10.35	NA	No ESV
Manganese, Dissolved	mg/L	16 - 16	100%	0.00051	0.0269	–	–	0.0072	NA	No ESV
Mercury, Dissolved	mg/L	0 - 16	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	14 - 16	88%	0.00066	0.00125	0.00062	0.00101	0.00093	NA	No ESV
Nickel, Dissolved	mg/L	2 - 16	13%	0.00043	0.00059	0.00033	0.00033	0.0005	0.08771	no
Potassium, Dissolved	mg/L	16 - 16	100%	1.49	1.64	–	–	1.56	NA	No ESV
Selenium, Dissolved	mg/L	7 - 16	44%	0.00033	0.00058	0.00033	0.00033	0.00044	0.005	no
Silver, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Dissolved	mg/L	16 - 16	100%	6.08	7.02	–	–	6.41	NA	No ESV
Strontium, Dissolved	mg/L	16 - 16	100%	0.107	0.125	–	–	0.113	NA	No ESV
Thallium, Dissolved	mg/L	0 - 16	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	6 - 16	38%	0.00102	0.00128	0.001	0.001	0.00114	NA	No ESV
Zinc, Dissolved	mg/L	0 - 16	0%	–	–	0.0083	0.0083	–	0.05891	–
Speciation										
Arsenate, Dissolved	mg/L	4 - 4	100%	0.00067	0.00082	–	–	0.000747	NA	No ESV
Arsenic, Dissolved (from speciation lab)	mg/L	4 - 4	100%	0.00151	0.00172	–	–	0.00165	NA	No ESV
Arsenite, Dissolved	mg/L	4 - 4	100%	0.00034	0.00041	–	–	0.000382	0.19	no
Inorganic Arsenic, Dissolved	mg/L	4 - 4	100%	0.00101	0.0012	–	–	0.0011	NA	No ESV
Inorganic Selenium, Dissolved	mg/L	1 - 4	25%	0.00054	0.00054	0.00029	0.00029	0.00054	NA	No ESV
Organic Arsenic, Dissolved	mg/L	4 - 4	100%	0.00036	0.00073	–	–	0.00059	NA	No ESV
Organic Selenium, Dissolved	mg/L	3 - 4	75%	0.00039	0.00049	0.00039	0.00039	0.00045	NA	No ESV
Selenate, Dissolved	mg/L	3 - 4	75%	0.00021	0.00054	0.00016	0.00016	0.000344	NA	No ESV
Selenite, Dissolved	mg/L	0 - 4	0%	–	–	0.00029	0.00029	–	NA	No ESV
Selenium, Dissolved (from speciation lab)	mg/L	4 - 4	100%	0.00049	0.00102	–	–	0.00069	0.005	no

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Table 2-52. Surface Water (Mid-Column) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Radionuclides										
Actinium-228	pCi/L	0 - 4	0%	–	–	13.9	14.9	–	NA	No ESV
Americium-241	pCi/L	0 - 4	0%	–	–	12.3	26.6	–	NA	No ESV
Bismuth-214	pCi/L	0 - 4	0%	–	–	7.47	8.82	–	NA	No ESV
Cesium-137	pCi/L	0 - 4	0%	–	–	3.42	4.16	–	NA	No ESV
Cobalt-60	pCi/L	0 - 4	0%	–	–	3.17	3.82	–	NA	No ESV
Lead-212	pCi/L	0 - 4	0%	–	–	6.43	11.2	–	NA	No ESV
Lead-214	pCi/L	0 - 4	0%	–	–	8.02	8.94	–	NA	No ESV
Potassium-40	pCi/L	0 - 4	0%	–	–	39.6	51.1	–	NA	No ESV
Radium-226	pCi/L	0 - 4	0%	–	–	0.498	1.64	–	NA	No ESV
Radium-228	pCi/L	0 - 4	0%	–	–	0.707	1.72	–	NA	No ESV
Thallium-208	pCi/L	0 - 4	0%	–	–	3.53	5.47	–	NA	No ESV
Thorium-228	pCi/L	0 - 4	0%	–	–	0.081	0.127	–	NA	No ESV
Thorium-230	pCi/L	1 - 4	25%	0.132	0.132	0.0443	0.102	0.132	NA	No ESV
Thorium-232	pCi/L	0 - 4	0%	–	–	0.0442	0.0618	–	NA	No ESV
Thorium-234	pCi/L	0 - 4	0%	–	–	128	266	–	NA	No ESV
Uranium-234	pCi/L	2 - 4	50%	0.142	0.173	0.138	0.174	0.158	NA	No ESV
Uranium-235	pCi/L	0 - 4	0%	–	–	0.0672	0.147	–	NA	No ESV
Uranium-238	pCi/L	3 - 4	75%	0.104	0.109	0.174	0.174	0.106	NA	No ESV
Physical Properties										
Dissolved Organic Carbon	mg/L	16 - 16	100%	1.61	2.24	–	–	1.87	NA	No ESV
Hardness (As CaCO3)	mg/L	16 - 16	100%	126	144	–	–	134	NA	No ESV
Total Dissolved Solids	mg/L	16 - 16	100%	143	177	–	–	157	NA	No ESV
Total Suspended Solids	mg/L	14 - 16	88%	3.9	11.9	10.1	11.1	8.06	NA	No ESV

Note: Surface water samples were collected once each week for 8 weeks (8/31/2010 – 10/19/2010).
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/L = Milligram per liter.
NA = Not available.
pCi/L = Picocuries per liter.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-53. Surface Water (Mid-Column) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Total Inorganics								
Aluminum, Total	mg/L	6 - 8	75%	0.0816 - 0.339	0.05 - 0.187	0.175	0.087	Yes
Antimony, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.16	–
Arsenic, Total	mg/L	8 - 8	100%	0.00109 - 0.00256	– - –	0.002	0.19	no
Barium, Total	mg/L	8 - 8	100%	0.0395 - 0.0544	– - –	0.051	NA	No ESV
Beryllium, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00053	–
Boron, Total	mg/L	8 - 8	100%	0.0166 - 0.0228	– - –	0.02	0.75	no
Cadmium, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00066	–
Calcium, Total	mg/L	8 - 8	100%	33 - 35.6	– - –	34.68	NA	No ESV
Chromium, Total	mg/L	1 - 8	13%	0.00047 - 0.00047	0.00033 - 0.00033	0.00047	0.11732	no
Cobalt, Total	mg/L	1 - 8	13%	0.00046 - 0.00046	0.00033 - 0.00033	0.00046	NA	No ESV
Copper, Total	mg/L	8 - 8	100%	0.00055 - 0.00098	– - –	0.00078	0.00654	no
Iron, Total	mg/L	8 - 8	100%	0.0971 - 0.316	– - –	0.179	1	no
Lead, Total	mg/L	1 - 8	13%	0.00058 - 0.00058	0.00033 - 0.00033	0.00058	0.00132	no
Magnesium, Total	mg/L	8 - 8	100%	9.52 - 10.2	– - –	9.91	NA	No ESV
Manganese, Total	mg/L	8 - 8	100%	0.06 - 0.225	– - –	0.13	NA	No ESV
Mercury, Total	mg/L	0 - 8	0%	– - –	0.00015 - 0.00015	–	0.000012	–
Molybdenum, Total	mg/L	7 - 8	88%	0.00082 - 0.00114	0.00078 - 0.00078	0.00093	NA	No ESV
Nickel, Total	mg/L	8 - 8	100%	0.0005 - 0.00083	– - –	0.00062	0.08771	no
Potassium, Total	mg/L	8 - 8	100%	1.54 - 1.66	– - –	1.6	NA	No ESV
Selenium, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.005	–
Silver, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.000012	–
Sodium, Total	mg/L	8 - 8	100%	5.85 - 6.41	– - –	6.15	NA	No ESV
Strontium, Total	mg/L	8 - 8	100%	0.0964 - 0.111	– - –	0.108	NA	No ESV
Thallium, Total	mg/L	0 - 8	0%	– - –	0.0005 - 0.0005	–	0.004	–
Vanadium, Total	mg/L	4 - 8	50%	0.00111 - 0.00153	0.001 - 0.001	0.0013	NA	No ESV
Zinc, Total	mg/L	0 - 8	0%	– - –	0.0083 - 0.0083	–	0.05891	–
Dissolved Inorganics								
Aluminum, Dissolved	mg/L	0 - 8	0%	– - –	0.05 - 0.05	–	0.087	–
Antimony, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.16	–
Arsenic, Dissolved	mg/L	8 - 8	100%	0.00098 - 0.00174	– - –	0.00145	0.19	no
Barium, Dissolved	mg/L	8 - 8	100%	0.0366 - 0.0474	– - –	0.0446	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00053	–
Boron, Dissolved	mg/L	8 - 8	100%	0.017 - 0.0222	– - –	0.0193	0.75	no

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Table 2-53. Surface Water (Mid-Column) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics (continued)										
Cadmium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Dissolved	mg/L	8 - 8	100%	32.6	35.1	–	–	34.2	NA	No ESV
Chromium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.11732	–
Cobalt, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	NA	No ESV
Copper, Dissolved	mg/L	7 - 8	88%	0.00034	0.00212	0.00033	0.00033	0.00077	0.00654	no
Iron, Dissolved	mg/L	0 - 8	0%	–	–	0.025	0.025	–	1	–
Lead, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00132	–
Magnesium, Dissolved	mg/L	8 - 8	100%	9.39	10	–	–	9.76	NA	No ESV
Manganese, Dissolved	mg/L	7 - 8	88%	0.00103	0.15	0.00169	0.00169	0.050	NA	No ESV
Mercury, Dissolved	mg/L	0 - 8	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	7 - 8	88%	0.00083	0.00117	0.00082	0.00082	0.00094	NA	No ESV
Nickel, Dissolved	mg/L	5 - 8	63%	0.00036	0.00054	0.00033	0.00033	0.00044	0.08771	no
Potassium, Dissolved	mg/L	8 - 8	100%	1.52	1.58	–	–	1.55	NA	No ESV
Selenium, Dissolved	mg/L	2 - 8	25%	0.00037	0.0004	0.00033	0.00033	0.00039	0.005	no
Silver, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Dissolved	mg/L	8 - 8	100%	5.84	6.41	–	–	6.07	NA	No ESV
Strontium, Dissolved	mg/L	8 - 8	100%	0.0975	0.11	–	–	0.106	NA	No ESV
Thallium, Dissolved	mg/L	0 - 8	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	0 - 8	0%	–	–	0.001	0.001	–	NA	No ESV
Zinc, Dissolved	mg/L	0 - 8	0%	–	–	0.0083	0.0083	–	0.05891	–
Speciation										
Arsenate, Dissolved	mg/L	2 - 2	100%	0.00068	0.0008	–	–	0.00074	NA	No ESV
Arsenic, Dissolved (from speciation lab)	mg/L	2 - 2	100%	0.00132	0.00179	–	–	0.0016	NA	No ESV
Arsenite, Dissolved	mg/L	2 - 2	100%	0.00033	0.00033	–	–	0.00033	0.19	no
Inorganic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00101	0.00113	–	–	0.00107	NA	No ESV
Inorganic Selenium, Dissolved	mg/L	0 - 2	0%	–	–	0.00029	0.00029	–	NA	No ESV
Organic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00031	0.00066	–	–	0.00049	NA	No ESV
Organic Selenium, Dissolved	mg/L	0 - 2	0%	–	–	0.00039	0.00039	–	NA	No ESV
Selenate, Dissolved	mg/L	1 - 2	50%	0.00027	0.00027	0.00016	0.00016	0.00027	NA	No ESV
Selenite, Dissolved	mg/L	0 - 2	0%	–	–	0.00029	0.00029	–	NA	No ESV
Selenium, Dissolved (from speciation lab)	mg/L	1 - 2	50%	0.00043	0.00043	0.00039	0.00039	0.00043	0.005	no

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Table 2-53. Surface Water (Mid-Column) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Radionuclides										
Actinium-228	pCi/L	0 - 2	0%	–	–	12.9	14.2	–	NA	No ESV
Americium-241	pCi/L	0 - 2	0%	–	–	12.9	17.1	–	NA	No ESV
Bismuth-214	pCi/L	0 - 2	0%	–	–	7.72	8.59	–	NA	No ESV
Cesium-137	pCi/L	0 - 2	0%	–	–	3.14	3.36	–	NA	No ESV
Cobalt-60	pCi/L	0 - 2	0%	–	–	3.1	3.59	–	NA	No ESV
Lead-212	pCi/L	0 - 2	0%	–	–	5.81	6.56	–	NA	No ESV
Lead-214	pCi/L	0 - 2	0%	–	–	7.42	8.35	–	NA	No ESV
Potassium-40	pCi/L	0 - 2	0%	–	–	45.4	50	–	NA	No ESV
Radium-226	pCi/L	0 - 2	0%	–	–	0.492	0.565	–	NA	No ESV
Radium-228	pCi/L	1 - 2	50%	3.77	3.77	1	1	3.77	NA	No ESV
Thallium-208	pCi/L	0 - 2	0%	–	–	3.29	3.93	–	NA	No ESV
Thorium-228	pCi/L	0 - 2	0%	–	–	0.0609	0.109	–	NA	No ESV
Thorium-230	pCi/L	0 - 2	0%	–	–	0.0204	0.0743	–	NA	No ESV
Thorium-232	pCi/L	0 - 2	0%	–	–	0.0126	0.0463	–	NA	No ESV
Thorium-234	pCi/L	0 - 2	0%	–	–	146	172	–	NA	No ESV
Uranium-234	pCi/L	1 - 2	50%	0.251	0.251	0.137	0.137	0.251	NA	No ESV
Uranium-235	pCi/L	0 - 2	0%	–	–	0.0779	0.133	–	NA	No ESV
Uranium-238	pCi/L	2 - 2	100%	0.135	0.252	–	–	0.194	NA	No ESV
Physical Properties										
Dissolved Organic Carbon	mg/L	8 - 8	100%	1.75	2.61	–	–	1.98	NA	No ESV
Hardness (As CaCO3)	mg/L	8 - 8	100%	122	130	–	–	127	NA	No ESV
Total Dissolved Solids	mg/L	8 - 8	100%	141	167	–	–	152	NA	No ESV
Total Suspended Solids	mg/L	7 - 8	88%	3.9	9.1	4.7	4.7	6.93	NA	No ESV

Note: Surface water samples were collected once each week for 8 weeks (8/31/2010 – 10/19/2010).
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/L = Milligram per liter.
NA = Not available.
pCi/L = Picocuries per liter.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-54. Surface Water (Mid-Column) Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Total Inorganics								
Aluminum, Total	mg/L	7 - 8	88%	0.0618 - 0.107	0.1 - 0.1	0.082	0.087	Yes
Antimony, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.16	–
Arsenic, Total	mg/L	8 - 8	100%	0.00036 - 0.00061	– - –	0.00048	0.19	no
Barium, Total	mg/L	8 - 8	100%	0.0339 - 0.0375	– - –	0.0354	NA	No ESV
Beryllium, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00053	–
Boron, Total	mg/L	8 - 8	100%	0.0131 - 0.0192	– - –	0.015	0.75	no
Cadmium, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00066	–
Calcium, Total	mg/L	8 - 8	100%	37.4 - 39.6	– - –	38.3	NA	No ESV
Chromium, Total	mg/L	2 - 8	25%	0.00035 - 0.00051	0.00033 - 0.00033	0.00043	0.11732	no
Cobalt, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	NA	No ESV
Copper, Total	mg/L	8 - 8	100%	0.00044 - 0.00158	– - –	0.000725	0.00654	no
Iron, Total	mg/L	8 - 8	100%	0.077 - 0.126	– - –	0.092	1	no
Lead, Total	mg/L	1 - 8	13%	0.00034 - 0.00034	0.00033 - 0.0004	0.00034	0.00132	no
Magnesium, Total	mg/L	8 - 8	100%	10.9 - 11.7	– - –	11.2	NA	No ESV
Manganese, Total	mg/L	8 - 8	100%	0.0245 - 0.0351	– - –	0.029	NA	No ESV
Mercury, Total	mg/L	0 - 8	0%	– - –	0.00015 - 0.00015	–	0.000012	–
Molybdenum, Total	mg/L	8 - 8	100%	0.00035 - 0.00094	– - –	0.00065	NA	No ESV
Nickel, Total	mg/L	6 - 8	75%	0.00033 - 0.00065	0.00033 - 0.00033	0.00048	0.08771	no
Potassium, Total	mg/L	8 - 8	100%	1.52 - 1.58	– - –	1.54	NA	No ESV
Selenium, Total	mg/L	1 - 8	13%	0.00043 - 0.00043	0.00033 - 0.00033	0.00043	0.005	no
Silver, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.000012	–
Sodium, Total	mg/L	8 - 8	100%	6.32 - 6.95	– - –	6.67	NA	No ESV
Strontium, Total	mg/L	8 - 8	100%	0.108 - 0.116	– - –	0.11	NA	No ESV
Thallium, Total	mg/L	0 - 8	0%	– - –	0.0005 - 0.0005	–	0.004	–
Vanadium, Total	mg/L	0 - 8	0%	– - –	0.001 - 0.001	–	NA	No ESV
Zinc, Total	mg/L	0 - 8	0%	– - –	0.0083 - 0.0083	–	0.05891	–
Dissolved Inorganics								
Aluminum, Dissolved	mg/L	0 - 8	0%	– - –	0.05 - 0.05	–	0.087	–
Antimony, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.16	–
Arsenic, Dissolved	mg/L	6 - 8	75%	0.00033 - 0.00052	0.00033 - 0.00033	0.00046	0.19	no
Barium, Dissolved	mg/L	8 - 8	100%	0.0327 - 0.0359	– - –	0.035	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00053	–
Boron, Dissolved	mg/L	8 - 8	100%	0.0137 - 0.0183	– - –	0.016	0.75	no

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Table 2-54. Surface Water (Mid-Column) Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Dissolved Inorganics (continued)										
Cadmium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Dissolved	mg/L	8 - 8	100%	36.5	39	–	–	38.1	NA	No ESV
Chromium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.11732	–
Cobalt, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	NA	No ESV
Copper, Dissolved	mg/L	6 - 8	75%	0.00033	0.00069	0.00054	0.00086	0.00046	0.00654	no
Hex. Chromium, Dissolved	mg/L	1 - 1	100%	0.002	0.002	–	–	0.002	0.011	no
Iron, Dissolved	mg/L	1 - 8	13%	0.0777	0.0777	0.025	0.025	0.078	1	no
Lead, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00132	–
Magnesium, Dissolved	mg/L	8 - 8	100%	10.6	11.3	–	–	11	NA	No ESV
Manganese, Dissolved	mg/L	8 - 8	100%	0.00068	0.00625	–	–	0.0046	NA	No ESV
Mercury, Dissolved	mg/L	1 - 8	13%	0.0002	0.0002	0.00015	0.00015	0.0002	0.000012	Yes
Molybdenum, Dissolved	mg/L	8 - 8	100%	0.00046	0.00082	–	–	0.000661	NA	No ESV
Nickel, Dissolved	mg/L	3 - 8	38%	0.00034	0.00052	0.00033	0.00065	0.00041	0.08771	no
Potassium, Dissolved	mg/L	8 - 8	100%	1.46	1.57	–	–	1.52	NA	No ESV
Selenium, Dissolved	mg/L	1 - 8	13%	0.00036	0.00036	0.00033	0.00033	0.00036	0.005	no
Silver, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Dissolved	mg/L	8 - 8	100%	6.24	6.96	–	–	6.65	NA	No ESV
Strontium, Dissolved	mg/L	8 - 8	100%	0.106	0.114	–	–	0.111	NA	No ESV
Thallium, Dissolved	mg/L	0 - 8	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	0 - 8	0%	–	–	0.001	0.001	–	NA	No ESV
Zinc, Dissolved	mg/L	0 - 8	0%	–	–	0.0083	0.0083	–	0.05891	–
Speciation										
Arsenate, Dissolved	mg/L	2 - 2	100%	0.00025	0.00029	–	–	0.00027	NA	No ESV
Arsenic, Dissolved (from speciation lab)	mg/L	2 - 2	100%	0.00051	0.00052	–	–	0.00052	NA	No ESV
Arsenite, Dissolved	mg/L	2 - 2	100%	5.4E-05	5.5E-05	–	–	0.00005	0.19	no
Inorganic Arsenic, Dissolved	mg/L	2 - 2	100%	0.0003	0.00035	–	–	0.00032	NA	No ESV
Inorganic Selenium, Dissolved	mg/L	0 - 2	0%	–	–	0.00029	0.00029	–	NA	No ESV
Organic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00017	0.00028	–	–	0.00023	NA	No ESV
Organic Selenium, Dissolved	mg/L	2 - 2	100%	0.00041	0.00046	–	–	0.00043	NA	No ESV
Selenate, Dissolved	mg/L	0 - 2	0%	–	–	0.00016	0.00016	–	NA	No ESV
Selenite, Dissolved	mg/L	0 - 2	0%	–	–	0.00029	0.00029	–	NA	No ESV
Selenium, Dissolved (from speciation lab)	mg/L	2 - 2	100%	0.00041	0.00046	–	–	0.00043	0.005	no

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Table 2-54. Surface Water (Mid-Column) Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Radionuclides								
Actinium-228	pCi/L	0 - 2	0%	– - –	14.5 - 16	–	NA	No ESV
Americium-241	pCi/L	0 - 2	0%	– - –	12 - 22.2	–	NA	No ESV
Bismuth-214	pCi/L	0 - 2	0%	– - –	8.42 - 8.75	–	NA	No ESV
Cesium-137	pCi/L	0 - 2	0%	– - –	3.27 - 3.6	–	NA	No ESV
Cobalt-60	pCi/L	0 - 2	0%	– - –	3.49 - 3.68	–	NA	No ESV
Lead-212	pCi/L	0 - 2	0%	– - –	7.28 - 8.29	–	NA	No ESV
Lead-214	pCi/L	0 - 2	0%	– - –	8.24 - 9.1	–	NA	No ESV
Potassium-40	pCi/L	0 - 2	0%	– - –	43.1 - 48.8	–	NA	No ESV
Radium-226	pCi/L	0 - 2	0%	– - –	0.465 - 0.496	–	NA	No ESV
Radium-228	pCi/L	0 - 2	0%	– - –	0.54 - 0.929	–	NA	No ESV
Thallium-208	pCi/L	0 - 2	0%	– - –	3.66 - 4.15	–	NA	No ESV
Thorium-228	pCi/L	0 - 2	0%	– - –	0.0925 - 0.124	–	NA	No ESV
Thorium-230	pCi/L	0 - 2	0%	– - –	0.0671 - 0.0723	–	NA	No ESV
Thorium-232	pCi/L	0 - 2	0%	– - –	0.0669 - 0.0918	–	NA	No ESV
Thorium-234	pCi/L	0 - 2	0%	– - –	120 - 222	–	NA	No ESV
Uranium-234	pCi/L	2 - 2	100%	0.24 - 0.268	– - –	0.254	NA	No ESV
Uranium-235	pCi/L	0 - 2	0%	– - –	0.153 - 0.256	–	NA	No ESV
Uranium-238	pCi/L	1 - 2	50%	0.129 - 0.129	0.264 - 0.264	0.129	NA	No ESV
Physical Properties								
Dissolved Organic Carbon	mg/L	7 - 8	88%	1.5 - 1.79	1.74 - 1.74	1.7	NA	No ESV
Hardness (As CaCO3)	mg/L	8 - 8	100%	138 - 147	– - –	142	NA	No ESV
Total Dissolved Solids	mg/L	8 - 8	100%	155 - 179	– - –	163	NA	No ESV
Total Suspended Solids	mg/L	8 - 8	100%	3.4 - 5.7	– - –	4.29	NA	No ESV

Note: Surface water samples were collected once each week for 8 weeks (8/31/2010 – 10/19/2010).
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/L = Milligram per liter.
NA = Not available.
pCi/L = Picocuries per liter.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-55. Surface Water (Mid-Column) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Total Inorganics								
Aluminum, Total	mg/L	7 - 8	88%	0.0656 - 0.214	0.135 - 0.135	0.128	0.087	Yes
Antimony, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.16	–
Arsenic, Total	mg/L	8 - 8	100%	0.00084 - 0.00153	– - –	0.0011	0.19	no
Barium, Total	mg/L	8 - 8	100%	0.0356 - 0.0442	– - –	0.0395	NA	No ESV
Beryllium, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00053	–
Boron, Total	mg/L	8 - 8	100%	0.0149 - 0.0267	– - –	0.02	0.75	no
Cadmium, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00066	–
Calcium, Total	mg/L	8 - 8	100%	36.9 - 39.6	– - –	38	NA	No ESV
Chromium, Total	mg/L	2 - 8	25%	0.00036 - 0.00046	0.00033 - 0.00033	0.00041	0.11732	no
Cobalt, Total	mg/L	1 - 8	13%	0.00033 - 0.00033	0.00033 - 0.00033	0.00033	NA	No ESV
Copper, Total	mg/L	8 - 8	100%	0.00092 - 0.00195	– - –	0.0014	0.00654	no
Iron, Total	mg/L	8 - 8	100%	0.0678 - 0.15	– - –	0.1	1	no
Lead, Total	mg/L	1 - 8	13%	0.00037 - 0.00037	0.00033 - 0.00033	0.0004	0.00132	no
Magnesium, Total	mg/L	8 - 8	100%	10.7 - 11.7	– - –	11	NA	No ESV
Manganese, Total	mg/L	8 - 8	100%	0.025 - 0.0326	– - –	0.029	NA	No ESV
Mercury, Total	mg/L	1 - 8	13%	0.00023 - 0.00023	0.00015 - 0.00015	0.00023	0.000012	Yes
Molybdenum, Total	mg/L	8 - 8	100%	0.00053 - 0.00104	– - –	0.00077	NA	No ESV
Nickel, Total	mg/L	7 - 8	88%	0.00035 - 0.00076	0.00033 - 0.00033	0.00051	0.08771	no
Potassium, Total	mg/L	8 - 8	100%	1.55 - 1.61	– - –	1.57	NA	No ESV
Selenium, Total	mg/L	3 - 8	38%	0.00036 - 0.00076	0.00033 - 0.00033	0.0005	0.005	no
Silver, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.000012	–
Sodium, Total	mg/L	8 - 8	100%	6.28 - 6.97	– - –	6.7	NA	No ESV
Strontium, Total	mg/L	8 - 8	100%	0.108 - 0.123	– - –	0.12	NA	No ESV
Thallium, Total	mg/L	0 - 8	0%	– - –	0.0005 - 0.0005	–	0.004	–
Vanadium, Total	mg/L	8 - 8	100%	0.00102 - 0.00197	– - –	0.0014	NA	No ESV
Zinc, Total	mg/L	0 - 8	0%	– - –	0.0083 - 0.0083	–	0.05891	–
Dissolved Inorganics								
Aluminum, Dissolved	mg/L	0 - 8	0%	– - –	0.05 - 0.05	–	0.087	–
Antimony, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.16	–
Arsenic, Dissolved	mg/L	8 - 8	100%	0.00056 - 0.00136	– - –	0.00085	0.19	no
Barium, Dissolved	mg/L	8 - 8	100%	0.0338 - 0.0416	– - –	0.0374	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00053	–
Boron, Dissolved	mg/L	8 - 8	100%	0.0172 - 0.0265	– - –	0.019	0.75	no

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Table 2-55. Surface Water (Mid-Column) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics (continued)										
Cadmium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Dissolved	mg/L	8 - 8	100%	36.5	38.9	–	–	37.5	NA	No ESV
Chromium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.11732	–
Cobalt, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	NA	No ESV
Copper, Dissolved	mg/L	7 - 8	88%	0.00068	0.00265	0.00068	0.00068	0.0012	0.00654	no
Hex. Chromium, Dissolved	mg/L	1 - 1	100%	0.0021	0.0021	–	–	0.0021	0.011	no
Iron, Dissolved	mg/L	0 - 8	0%	–	–	0.025	0.025	–	1	–
Lead, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00132	–
Magnesium, Dissolved	mg/L	8 - 8	100%	10.5	11.4	–	–	10.8	NA	No ESV
Manganese, Dissolved	mg/L	7 - 8	88%	0.00037	0.00893	0.00256	0.00256	0.0025	NA	No ESV
Mercury, Dissolved	mg/L	0 - 8	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	8 - 8	100%	0.00065	0.00111	–	–	0.00084	NA	No ESV
Nickel, Dissolved	mg/L	3 - 8	38%	0.00035	0.00039	0.00033	0.00055	0.00037	0.08771	no
Potassium, Dissolved	mg/L	8 - 8	100%	1.46	1.57	–	–	1.52	NA	No ESV
Selenium, Dissolved	mg/L	4 - 8	50%	0.00035	0.0007	0.00033	0.00033	0.00045	0.005	no
Silver, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Dissolved	mg/L	8 - 8	100%	6.28	7.01	–	–	6.6	NA	No ESV
Strontium, Dissolved	mg/L	8 - 8	100%	0.106	0.123	–	–	0.11	NA	
Thallium, Dissolved	mg/L	0 - 8	0%	–	–	0.0005	0.0005	–	0.004	
Vanadium, Dissolved	mg/L	3 - 8	38%	0.00106	0.00151	0.001	0.001	0.0013	NA	
Zinc, Dissolved	mg/L	0 - 8	0%	–	–	0.0083	0.0083	–	0.05891	
Speciation										
Arsenate, Dissolved	mg/L	2 - 2	100%	0.0003	0.00065	–	–	0.00048	NA	No ESV
Arsenic, Dissolved (from speciation lab)	mg/L	2 - 2	100%	0.00079	0.00146	–	–	0.0011	NA	No ESV
Arsenite, Dissolved	mg/L	2 - 2	100%	0.00011	0.00024	–	–	0.00018	0.19	no
Inorganic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00041	0.00089	–	–	0.00065	NA	No ESV
Inorganic Selenium, Dissolved	mg/L	1 - 2	50%	0.0004	0.0004	0.00029	0.00029	0.00040	NA	No ESV
Organic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00038	0.00056	–	–	0.00047	NA	No ESV
Organic Selenium, Dissolved	mg/L	1 - 2	50%	0.00056	0.00056	0.00039	0.00039	0.00056	NA	No ESV
Selenate, Dissolved	mg/L	2 - 2	100%	0.00017	0.0004	–	–	0.00028	NA	No ESV
Selenite, Dissolved	mg/L	0 - 2	0%	–	–	0.00029	0.00029	–	NA	No ESV
Selenium, Dissolved (from speciation lab)	mg/L	2 - 2	100%	0.00052	0.00096	–	–	0.00074	0.005	no

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Table 2-55. Surface Water (Mid-Column) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Radionuclides										
Actinium-228	pCi/L	0 - 2	0%	–	–	12.1	13.9	–	NA	No ESV
Americium-241	pCi/L	0 - 2	0%	–	–	23.7	24.4	–	NA	No ESV
Bismuth-214	pCi/L	0 - 2	0%	–	–	8.22	11.4	–	NA	No ESV
Cesium-137	pCi/L	0 - 2	0%	–	–	3.17	3.73	–	NA	No ESV
Cobalt-60	pCi/L	0 - 2	0%	–	–	3.34	3.47	–	NA	No ESV
Lead-212	pCi/L	0 - 2	0%	–	–	6.2	8.38	–	NA	No ESV
Lead-214	pCi/L	0 - 2	0%	–	–	8.58	9.92	–	NA	No ESV
Potassium-40	pCi/L	0 - 2	0%	–	–	40.6	53.8	–	NA	No ESV
Radium-226	pCi/L	0 - 2	0%	–	–	0.416	0.61	–	NA	No ESV
Radium-228	pCi/L	0 - 2	0%	–	–	0.783	0.906	–	NA	No ESV
Thallium-208	pCi/L	0 - 2	0%	–	–	3.72	4.26	–	NA	No ESV
Thorium-228	pCi/L	0 - 2	0%	–	–	0.0738	0.141	–	NA	No ESV
Thorium-230	pCi/L	0 - 2	0%	–	–	0.0459	0.0962	–	NA	No ESV
Thorium-232	pCi/L	0 - 2	0%	–	–	0.06	0.0732	–	NA	No ESV
Thorium-234	pCi/L	0 - 2	0%	–	–	207	208	–	NA	No ESV
Uranium-234	pCi/L	1 - 2	50%	0.155	0.155	0.264	0.264	0.155	NA	No ESV
Uranium-235	pCi/L	0 - 2	0%	–	–	0.0846	0.149	–	NA	No ESV
Uranium-238	pCi/L	0 - 2	0%	–	–	0.109	0.192	–	NA	No ESV
Physical Properties										
Dissolved Organic Carbon	mg/L	7 - 8	88%	1.59	1.96	2.03	2.03	1.78	NA	No ESV
Hardness (As CaCO3)	mg/L	8 - 8	100%	136	147	–	–	140	NA	No ESV
Total Dissolved Solids	mg/L	8 - 8	100%	148	190	–	–	166	NA	No ESV
Total Suspended Solids	mg/L	8 - 8	100%	3.9	7.2	–	–	5.53	NA	No ESV

Note: Surface water samples were collected once each week for 8 weeks (8/31/2010 – 10/19/2010).
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/L = Milligram per liter.
NA = Not available.
pCi/L = Picocuries per liter.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-56. Surface Water (Mid-Column) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Total Inorganics										
Aluminum, Total	mg/L	7 - 8	88%	0.0794	0.139	0.144	0.144	0.11	0.087	Yes
Antimony, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.16	–
Arsenic, Total	mg/L	8 - 8	100%	0.00054	0.00195	–	–	0.00089	0.19	no
Barium, Total	mg/L	8 - 8	100%	0.0352	0.0415	–	–	0.038	NA	No ESV
Beryllium, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Total	mg/L	7 - 8	88%	0.0142	0.024	0.0125	0.0125	0.018	0.75	no
Cadmium, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Total	mg/L	8 - 8	100%	37.3	38.7	–	–	38	NA	No ESV
Chromium, Total	mg/L	1 - 8	13%	0.00039	0.00039	0.00033	0.00033	0.00039	0.11732	no
Cobalt, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	NA	No ESV
Copper, Total	mg/L	8 - 8	100%	0.00077	0.00256	–	–	0.0013	0.00654	no
Iron, Total	mg/L	8 - 8	100%	0.0696	0.133	–	–	0.1	1	no
Lead, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00132	–
Magnesium, Total	mg/L	8 - 8	100%	10.7	11.5	–	–	11.01	NA	No ESV
Manganese, Total	mg/L	8 - 8	100%	0.0259	0.0391	–	–	0.0317	NA	No ESV
Mercury, Total	mg/L	0 - 8	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Total	mg/L	8 - 8	100%	0.00056	0.00104	–	–	0.00081	NA	No ESV
Nickel, Total	mg/L	7 - 8	88%	0.00042	0.00059	0.00033	0.00033	0.00051	0.08771	no
Potassium, Total	mg/L	8 - 8	100%	1.52	1.6	–	–	1.56	NA	No ESV
Selenium, Total	mg/L	4 - 8	50%	0.00034	0.00038	0.00033	0.00033	0.00036	0.005	no
Silver, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Total	mg/L	8 - 8	100%	6.32	6.87	–	–	6.66	NA	No ESV
Strontium, Total	mg/L	8 - 8	100%	0.109	0.116	–	–	0.113	NA	No ESV
Thallium, Total	mg/L	0 - 8	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Total	mg/L	5 - 8	63%	0.00107	0.00221	0.001	0.001	0.00144	NA	No ESV
Zinc, Total	mg/L	0 - 8	0%	–	–	0.0083	0.0083	–	0.05891	–
Dissolved Inorganics										
Aluminum, Dissolved	mg/L	1 - 8	13%	0.142	0.142	0.05	0.05	0.142	0.087	Yes
Antimony, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.16	–
Arsenic, Dissolved	mg/L	8 - 8	100%	0.00047	0.00158	–	–	0.00079	0.19	no
Barium, Dissolved	mg/L	8 - 8	100%	0.034	0.0386	–	–	0.037	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Dissolved	mg/L	8 - 8	100%	0.0132	0.0222	–	–	0.018	0.75	no

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Table 2-56. Surface Water (Mid-Column) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Dissolved Inorganics (continued)								
Cadmium, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00066	–
Calcium, Dissolved	mg/L	8 - 8	100%	37 - 39.5	– - –	38.2	NA	No ESV
Chromium, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.11732	–
Cobalt, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	NA	No ESV
Copper, Dissolved	mg/L	7 - 8	88%	0.00058 - 0.00237	0.00051 - 0.00051	0.00098	0.00654	no
Hex. Chromium, Dissolved	mg/L	1 - 1	100%	0.0021 - 0.0021	– - –	0.0021	0.011	no
Iron, Dissolved	mg/L	1 - 8	13%	0.129 - 0.129	0.025 - 0.025	0.129	1	no
Lead, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00132	–
Magnesium, Dissolved	mg/L	8 - 8	100%	10.6 - 11.5	– - –	11	NA	No ESV
Manganese, Dissolved	mg/L	8 - 8	100%	0.00047 - 0.00772	– - –	0.0028	NA	No ESV
Mercury, Dissolved	mg/L	0 - 8	0%	– - –	0.00015 - 0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	8 - 8	100%	0.00048 - 0.00102	– - –	0.00076	NA	No ESV
Nickel, Dissolved	mg/L	3 - 8	38%	0.00034 - 0.00042	0.00033 - 0.00049	0.0004	0.08771	no
Potassium, Dissolved	mg/L	8 - 8	100%	1.51 - 1.59	– - –	1.54	NA	No ESV
Selenium, Dissolved	mg/L	3 - 8	38%	0.00033 - 0.00037	0.00033 - 0.00033	0.00035	0.005	no
Silver, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.000012	–
Sodium, Dissolved	mg/L	8 - 8	100%	6.33 - 7.03	– - –	6.68	NA	No ESV
Strontium, Dissolved	mg/L	8 - 8	100%	0.108 - 0.119	– - –	0.113	NA	No ESV
Thallium, Dissolved	mg/L	0 - 8	0%	– - –	0.0005 - 0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	3 - 8	38%	0.00102 - 0.002	0.001 - 0.001	0.0014	NA	No ESV
Zinc, Dissolved	mg/L	0 - 8	0%	– - –	0.0083 - 0.0083	–	0.05891	–
Speciation								
Arsenate, Dissolved	mg/L	2 - 2	100%	0.00031 - 0.00033	– - –	0.000322	NA	No ESV
Arsenic, Dissolved (from speciation lab)	mg/L	2 - 2	100%	0.00069 - 0.00084	– - –	0.000765	NA	No ESV
Arsenite, Dissolved	mg/L	2 - 2	100%	8.9E-05 - 0.00014	– - –	0.000115	0.19	no
Inorganic Arsenic, Dissolved	mg/L	2 - 2	100%	0.0004 - 0.00047	– - –	0.000437	NA	No ESV
Inorganic Selenium, Dissolved	mg/L	0 - 2	0%	– - –	0.00029 - 0.00029	–	NA	No ESV
Organic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00029 - 0.00037	– - –	0.000328	NA	No ESV
Organic Selenium, Dissolved	mg/L	2 - 2	100%	0.00049 - 0.00051	– - –	0.0005	NA	No ESV
Selenate, Dissolved	mg/L	1 - 2	50%	0.00025 - 0.00025	0.00016 - 0.00016	0.000246	NA	No ESV
Selenite, Dissolved	mg/L	0 - 2	0%	– - –	0.00029 - 0.00029	–	NA	No ESV
Selenium, Dissolved (from speciation lab)	mg/L	2 - 2	100%	0.00049 - 0.00075	– - –	0.000623	0.005	no

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Table 2-56. Surface Water (Mid-Column) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)

Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Radionuclides										
Actinium-228	pCi/L	0 - 2	0%	– - –		13.2 - 15.6		–	NA	No ESV
Americium-241	pCi/L	0 - 2	0%	– - –		19.9 - 25.4		–	NA	No ESV
Bismuth-214	pCi/L	0 - 2	0%	– - –		7.34 - 15.3		–	NA	No ESV
Cesium-137	pCi/L	0 - 2	0%	– - –		3.35 - 3.39		–	NA	No ESV
Cobalt-60	pCi/L	0 - 2	0%	– - –		3.26 - 3.75		–	NA	No ESV
Lead-212	pCi/L	0 - 2	0%	– - –		7.01 - 7.15		–	NA	No ESV
Lead-214	pCi/L	0 - 2	0%	– - –		8.81 - 10		–	NA	No ESV
Potassium-40	pCi/L	0 - 2	0%	– - –		40.5 - 49.7		–	NA	No ESV
Radium-226	pCi/L	2 - 2	100%	0.408 - 0.499		– - –		0.454	NA	No ESV
Radium-228	pCi/L	0 - 2	0%	– - –		0.486 - 0.871		–	NA	No ESV
Thallium-208	pCi/L	0 - 2	0%	– - –		3.39 - 4.76		–	NA	No ESV
Thorium-228	pCi/L	0 - 2	0%	– - –		0.11 - 0.111		–	NA	No ESV
Thorium-230	pCi/L	0 - 2	0%	– - –		0.0414 - 0.0594		–	NA	No ESV
Thorium-232	pCi/L	0 - 2	0%	– - –		0.0413 - 0.0592		–	NA	No ESV
Thorium-234	pCi/L	0 - 2	0%	– - –		179 - 241		–	NA	No ESV
Uranium-234	pCi/L	1 - 2	50%	0.156 - 0.156		0.24 - 0.24		0.156	NA	No ESV
Uranium-235	pCi/L	0 - 2	0%	– - –		0.17 - 0.257		–	NA	No ESV
Uranium-238	pCi/L	1 - 2	50%	0.172 - 0.172		0.208 - 0.208		0.172	NA	No ESV
Physical Properties										
Dissolved Organic Carbon	mg/L	6 - 8	75%	1.48 - 1.84		1.9 - 2.15		1.72	NA	No ESV
Hardness (As CaCO3)	mg/L	8 - 8	100%	138 - 143		– - –		140	NA	No ESV
Total Dissolved Solids	mg/L	8 - 8	100%	153 - 183		– - –		164	NA	No ESV
Total Suspended Solids	mg/L	8 - 8	100%	4.8 - 8		– - –		5.86	NA	No ESV

Note: Surface water samples were collected once each week for 8 weeks (8/31/2010 – 10/19/2010).
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/L = Milligram per liter.
NA = Not available.
pCi/L = Picocuries per liter.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-57. Surface Water (Mid-Column) Dataset: Tennessee River - Reference Reach (Above TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Total Inorganics								
Aluminum, Total	mg/L	8 - 8	100%	0.0781 - 0.206	– - –	0.13	0.087	Yes
Antimony, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.16	–
Arsenic, Total	mg/L	8 - 8	100%	0.00036 - 0.00117	– - –	0.000695	0.19	no
Barium, Total	mg/L	8 - 8	100%	0.0248 - 0.0371	– - –	0.0298	NA	No ESV
Beryllium, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00053	–
Boron, Total	mg/L	5 - 8	63%	0.014 - 0.017	0.0125 - 0.0125	0.0161	0.75	no
Cadmium, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00066	–
Calcium, Total	mg/L	8 - 8	100%	18.8 - 35.1	– - –	25.5	NA	No ESV
Chromium, Total	mg/L	1 - 8	13%	0.00038 - 0.00038	0.00033 - 0.00033	0.00038	0.11732	no
Cobalt, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	NA	No ESV
Copper, Total	mg/L	8 - 8	100%	0.0005 - 0.00129	– - –	0.00078	0.00654	no
Iron, Total	mg/L	8 - 8	100%	0.116 - 0.199	– - –	0.146	1	no
Lead, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00132	–
Magnesium, Total	mg/L	8 - 8	100%	4.65 - 10.2	– - –	6.82	NA	No ESV
Manganese, Total	mg/L	8 - 8	100%	0.0494 - 0.0766	– - –	0.060	NA	No ESV
Mercury, Total	mg/L	0 - 8	0%	– - –	0.00015 - 0.00015	–	0.000012	–
Molybdenum, Total	mg/L	5 - 8	63%	0.00039 - 0.00073	0.00033 - 0.00033	0.000528	NA	No ESV
Nickel, Total	mg/L	5 - 8	63%	0.00035 - 0.0006	0.00033 - 0.00033	0.000452	0.08771	no
Potassium, Total	mg/L	8 - 8	100%	1.5 - 1.63	– - –	1.57	NA	No ESV
Selenium, Total	mg/L	2 - 8	25%	0.00033 - 0.00045	0.00033 - 0.00033	0.00039	0.005	no
Silver, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.000012	–
Sodium, Total	mg/L	8 - 8	100%	7.19 - 8.3	– - –	7.7	NA	No ESV
Strontium, Total	mg/L	8 - 8	100%	0.0671 - 0.109	– - –	0.084	NA	No ESV
Thallium, Total	mg/L	0 - 8	0%	– - –	0.0005 - 0.0005	–	0.004	–
Vanadium, Total	mg/L	2 - 8	25%	0.001 - 0.00122	0.001 - 0.001	0.001	NA	No ESV
Zinc, Total	mg/L	0 - 8	0%	– - –	0.0083 - 0.0083	–	0.05891	–
Dissolved Inorganics								
Aluminum, Dissolved	mg/L	0 - 8	0%	– - –	0.05 - 0.05	–	0.087	–
Antimony, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.16	–
Arsenic, Dissolved	mg/L	8 - 8	100%	0.00044 - 0.00097	– - –	0.00061	0.19	no
Barium, Dissolved	mg/L	8 - 8	100%	0.022 - 0.0337	– - –	0.027	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00053	–
Boron, Dissolved	mg/L	6 - 8	75%	0.0128 - 0.0169	0.0125 - 0.0125	0.015	0.75	no

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Table 2-57. Surface Water (Mid-Column) Dataset: Tennessee River - Reference Reach (Above TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Dissolved Inorganics (continued)								
Cadmium, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00066	–
Calcium, Dissolved	mg/L	8 - 8	100%	18.7 - 34.2	– - –	25	NA	No ESV
Chromium, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.11732	–
Cobalt, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	NA	No ESV
Copper, Dissolved	mg/L	7 - 8	88%	0.00033 - 0.00205	0.00058 - 0.00058	0.000726	0.00654	no
Hex. Chromium, Dissolved	mg/L	1 - 1	100%	0.0017 - 0.0017	– - –	0.0017	0.011	no
Iron, Dissolved	mg/L	0 - 8	0%	– - –	0.025 - 0.025	–	1	–
Lead, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00132	–
Magnesium, Dissolved	mg/L	8 - 8	100%	4.62 - 9.74	– - –	6.63	NA	No ESV
Manganese, Dissolved	mg/L	7 - 8	88%	0.00038 - 0.00567	0.00036 - 0.00036	0.0021	NA	No ESV
Mercury, Dissolved	mg/L	0 - 8	0%	– - –	0.00015 - 0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	5 - 8	63%	0.00041 - 0.00063	0.00033 - 0.00033	0.00053	NA	No ESV
Nickel, Dissolved	mg/L	1 - 8	13%	0.00034 - 0.00034	0.00033 - 0.00033	0.00034	0.08771	no
Potassium, Dissolved	mg/L	8 - 8	100%	1.49 - 1.63	– - –	1.55	NA	No ESV
Selenium, Dissolved	mg/L	1 - 8	13%	0.00039 - 0.00039	0.00033 - 0.00033	0.00039	0.005	no
Silver, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.000012	–
Sodium, Dissolved	mg/L	8 - 8	100%	7.01 - 8.22	– - –	7.68	NA	No ESV
Strontium, Dissolved	mg/L	8 - 8	100%	0.066 - 0.106	– - –	0.082	NA	No ESV
Thallium, Dissolved	mg/L	0 - 8	0%	– - –	0.0005 - 0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	0 - 8	0%	– - –	0.001 - 0.001	–	NA	No ESV
Zinc, Dissolved	mg/L	0 - 8	0%	– - –	0.0083 - 0.0083	–	0.05891	–
Speciation								
Arsenate, Dissolved	mg/L	2 - 2	100%	0.0002 - 0.00033	– - –	0.00026	NA	No ESV
Arsenic, Dissolved (from speciation lab)	mg/L	2 - 2	100%	0.00046 - 0.00053	– - –	0.000496	NA	No ESV
Arsenite, Dissolved	mg/L	2 - 2	100%	3.6E-05 - 0.00005	– - –	0.000043	0.19	no
Inorganic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00023 - 0.00038	– - –	0.000307	NA	No ESV
Inorganic Selenium, Dissolved	mg/L	0 - 2	0%	– - –	0.00029 - 0.00029	–	NA	No ESV
Organic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00015 - 0.00023	– - –	0.000189	NA	No ESV
Organic Selenium, Dissolved	mg/L	0 - 2	0%	– - –	0.00039 - 0.00039	–	NA	No ESV
Selenate, Dissolved	mg/L	0 - 2	0%	– - –	0.00016 - 0.00016	–	NA	No ESV
Selenite, Dissolved	mg/L	0 - 2	0%	– - –	0.00029 - 0.00029	–	NA	No ESV
Selenium, Dissolved (from speciation lab)	mg/L	0 - 2	0%	– - –	0.00039 - 0.00039	–	0.005	–

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Table 2-57. Surface Water (Mid-Column) Dataset: Tennessee River - Reference Reach (Above TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Radionuclides										
Actinium-228	pCi/L	0 - 2	0%	–	–	12.5	14.6	–	NA	No ESV
Americium-241	pCi/L	0 - 2	0%	–	–	11.2	24.2	–	NA	No ESV
Bismuth-214	pCi/L	0 - 2	0%	–	–	7.63	7.69	–	NA	No ESV
Cesium-137	pCi/L	0 - 2	0%	–	–	3.17	3.21	–	NA	No ESV
Cobalt-60	pCi/L	0 - 2	0%	–	–	3.15	3.49	–	NA	No ESV
Lead-212	pCi/L	0 - 2	0%	–	–	7.06	7.4	–	NA	No ESV
Lead-214	pCi/L	0 - 2	0%	–	–	7.41	7.75	–	NA	No ESV
Potassium-40	pCi/L	0 - 2	0%	–	–	41.3	45.4	–	NA	No ESV
Radium-226	pCi/L	0 - 2	0%	–	–	0.398	0.536	–	NA	No ESV
Radium-228	pCi/L	0 - 2	0%	–	–	0.384	0.8	–	NA	No ESV
Thallium-208	pCi/L	0 - 2	0%	–	–	3.42	3.7	–	NA	No ESV
Thorium-228	pCi/L	0 - 2	0%	–	–	0.0912	0.139	–	NA	No ESV
Thorium-230	pCi/L	0 - 2	0%	–	–	0.0641	0.0751	–	NA	No ESV
Thorium-232	pCi/L	0 - 2	0%	–	–	0.0838	0.12	–	NA	No ESV
Thorium-234	pCi/L	0 - 2	0%	–	–	128	238	–	NA	No ESV
Uranium-234	pCi/L	1 - 2	50%	0.16	0.16	0.193	0.193	0.16	NA	No ESV
Uranium-235	pCi/L	0 - 2	0%	–	–	0.146	0.15	–	NA	No ESV
Uranium-238	pCi/L	0 - 2	0%	–	–	0.118	0.193	–	NA	No ESV
Physical Properties										
Dissolved Organic Carbon	mg/L	7 - 8	88%	1.7	2	1.9	1.9	1.86	NA	No ESV
Hardness (As CaCO3)	mg/L	8 - 8	100%	66.2	129	–	–	91.8	NA	No ESV
Total Dissolved Solids	mg/L	8 - 8	100%	90	154	–	–	118	NA	No ESV
Total Suspended Solids	mg/L	8 - 8	100%	5	8.5	–	–	6.7	NA	No ESV

Note: Surface water samples were collected once each week for 8 weeks (8/31/2010 – 10/19/2010).
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/L = Milligram per liter.
NA = Not available.
pCi/L = Picocuries per liter.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-58. Surface Water (Mid-Column) Dataset: Tennessee River - Reach B (TRM 566.0 to TRM 568.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Total Inorganics										
Aluminum, Total	mg/L	6 - 8	75%	0.0676	0.263	0.05	0.122	0.14	0.087	Yes
Antimony, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.16	–
Arsenic, Total	mg/L	8 - 8	100%	0.0005	0.00131	–	–	0.00081	0.19	no
Barium, Total	mg/L	8 - 8	100%	0.0264	0.0396	–	–	0.03	NA	No ESV
Beryllium, Total	mg/L	1 - 8	13%	0.00048	0.00048	0.00033	0.00033	0.00048	0.00053	no
Boron, Total	mg/L	8 - 8	100%	0.0126	0.0182	–	–	0.0151	0.75	no
Cadmium, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Total	mg/L	8 - 8	100%	20.9	35.6	–	–	25.3	NA	No ESV
Chromium, Total	mg/L	1 - 8	13%	0.00043	0.00043	0.00033	0.00033	0.00043	0.11732	no
Cobalt, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	NA	No ESV
Copper, Total	mg/L	8 - 8	100%	0.00056	0.00219	–	–	0.00096	0.00654	no
Iron, Total	mg/L	7 - 8	88%	0.0805	0.236	0.025	0.025	0.135	1	no
Lead, Total	mg/L	1 - 8	13%	0.00047	0.00047	0.00033	0.00033	0.00047	0.00132	no
Magnesium, Total	mg/L	8 - 8	100%	5.38	10.5	–	–	6.8	NA	No ESV
Manganese, Total	mg/L	7 - 8	88%	0.0386	0.0943	0.00033	0.00033	0.058	NA	No ESV
Mercury, Total	mg/L	0 - 8	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Total	mg/L	6 - 8	75%	0.00041	0.0006	0.00033	0.00033	0.00051	NA	No ESV
Nickel, Total	mg/L	4 - 8	50%	0.00035	0.00113	0.00033	0.00033	0.00067	0.08771	no
Potassium, Total	mg/L	8 - 8	100%	1.52	1.65	–	–	1.58	NA	No ESV
Selenium, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.005	–
Silver, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Total	mg/L	8 - 8	100%	6.86	7.98	–	–	7.46	NA	No ESV
Strontium, Total	mg/L	8 - 8	100%	0.0738	0.107	–	–	0.084	NA	No ESV
Thallium, Total	mg/L	0 - 8	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Total	mg/L	2 - 8	25%	0.00102	0.00153	0.001	0.001	0.00128	NA	No ESV
Zinc, Total	mg/L	0 - 8	0%	–	–	0.0083	0.0083	–	0.05891	–
Dissolved Inorganics										
Aluminum, Dissolved	mg/L	1 - 8	13%	0.065	0.065	0.05	0.05	0.065	0.087	no
Antimony, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.16	–
Arsenic, Dissolved	mg/L	8 - 8	100%	0.00052	0.00098	–	–	0.00071	0.19	no
Barium, Dissolved	mg/L	8 - 8	100%	0.0248	0.0349	–	–	0.028	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Dissolved	mg/L	7 - 8	88%	0.0137	0.0169	0.0125	0.0125	0.015	0.75	no

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Table 2-58. Surface Water (Mid-Column) Dataset: Tennessee River - Reach B (TRM 566.0 to TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics (continued)										
Cadmium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Dissolved	mg/L	8 - 8	100%	20.6	35.2	–	–	25.1	NA	No ESV
Chromium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.11732	–
Cobalt, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	NA	No ESV
Copper, Dissolved	mg/L	7 - 8	88%	0.00047	0.00318	0.00041	0.00041	0.0011	0.00654	no
Hex. Chromium, Dissolved	mg/L	1 - 1	100%	0.0016	0.0016	–	–	0.0016	0.011	no
Iron, Dissolved	mg/L	1 - 8	13%	0.0839	0.0839	0.025	0.025	0.0839	1	no
Lead, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00132	–
Magnesium, Dissolved	mg/L	8 - 8	100%	5.26	10.2	–	–	6.68	NA	No ESV
Manganese, Dissolved	mg/L	6 - 8	75%	0.00035	0.0387	0.00033	0.00058	0.011	NA	No ESV
Mercury, Dissolved	mg/L	0 - 8	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	7 - 8	88%	0.00035	0.00072	0.00033	0.00033	0.00053	NA	No ESV
Nickel, Dissolved	mg/L	1 - 8	13%	0.0004	0.0004	0.00033	0.00051	0.0004	0.08771	no
Potassium, Dissolved	mg/L	8 - 8	100%	1.48	1.62	–	–	1.55	NA	No ESV
Selenium, Dissolved	mg/L	1 - 8	13%	0.0004	0.0004	0.00033	0.00033	0.0004	0.005	no
Silver, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Dissolved	mg/L	8 - 8	100%	6.88	7.98	–	–	7.45	NA	No ESV
Strontium, Dissolved	mg/L	8 - 8	100%	0.0748	0.104	–	–	0.083	NA	No ESV
Thallium, Dissolved	mg/L	0 - 8	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	1 - 8	13%	0.001	0.001	0.001	0.001	0.001	NA	No ESV
Zinc, Dissolved	mg/L	0 - 8	0%	–	–	0.0083	0.0083	–	0.05891	–
Speciation										
Arsenate, Dissolved	mg/L	2 - 2	100%	0.0003	0.0004	–	–	0.000347	NA	No ESV
Arsenic, Dissolved (from speciation lab)	mg/L	2 - 2	100%	0.00062	0.00064	–	–	0.00063	NA	No ESV
Arsenite, Dissolved	mg/L	2 - 2	100%	5.4E-05	8.5E-05	–	–	0.0000695	0.19	no
Inorganic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00035	0.00048	–	–	0.000417	NA	No ESV
Inorganic Selenium, Dissolved	mg/L	0 - 2	0%	–	–	0.00029	0.00029	–	NA	No ESV
Organic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00016	0.00027	–	–	0.000214	NA	No ESV
Organic Selenium, Dissolved	mg/L	0 - 2	0%	–	–	0.00039	0.00039	–	NA	No ESV
Selenate, Dissolved	mg/L	0 - 2	0%	–	–	0.00016	0.00016	–	NA	No ESV
Selenite, Dissolved	mg/L	0 - 2	0%	–	–	0.00029	0.00029	–	NA	No ESV
Selenium, Dissolved (from speciation lab)	mg/L	0 - 2	0%	–	–	0.00039	0.00039	–	0.005	–

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Table 2-58. Surface Water (Mid-Column) Dataset: Tennessee River - Reach B (TRM 566.0 to TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Radionuclides										
Actinium-228	pCi/L	0 - 2	0%	–	–	12.7	12.9	–	NA	No ESV
Americium-241	pCi/L	0 - 2	0%	–	–	16	24.3	–	NA	No ESV
Bismuth-214	pCi/L	0 - 2	0%	–	–	7.66	8.43	–	NA	No ESV
Cesium-137	pCi/L	0 - 2	0%	–	–	3.77	4.03	–	NA	No ESV
Cobalt-60	pCi/L	0 - 2	0%	–	–	3.17	3.2	–	NA	No ESV
Lead-212	pCi/L	0 - 2	0%	–	–	6.57	7.11	–	NA	No ESV
Lead-214	pCi/L	0 - 2	0%	–	–	7.99	11.3	–	NA	No ESV
Potassium-40	pCi/L	0 - 2	0%	–	–	36	48.1	–	NA	No ESV
Radium-226	pCi/L	1 - 2	50%	0.609	0.609	0.393	0.393	0.609	NA	No ESV
Radium-228	pCi/L	0 - 2	0%	–	–	0.54	0.98	–	NA	No ESV
Thallium-208	pCi/L	0 - 2	0%	–	–	3.33	3.89	–	NA	No ESV
Thorium-228	pCi/L	0 - 2	0%	–	–	0.104	0.11	–	NA	No ESV
Thorium-230	pCi/L	1 - 2	50%	0.235	0.235	0.0652	0.0652	0.235	NA	No ESV
Thorium-232	pCi/L	0 - 2	0%	–	–	0.0407	0.125	–	NA	No ESV
Thorium-234	pCi/L	0 - 2	0%	–	–	156	203	–	NA	No ESV
Uranium-234	pCi/L	0 - 2	0%	–	–	0.108	0.232	–	NA	No ESV
Uranium-235	pCi/L	0 - 2	0%	–	–	0.0723	0.18	–	NA	No ESV
Uranium-238	pCi/L	0 - 2	0%	–	–	0.108	0.145	–	NA	No ESV
Physical Properties										
Dissolved Organic Carbon	mg/L	7 - 8	88%	1.84	2.16	1.87	1.87	1.99	NA	No ESV
Hardness (As CaCO3)	mg/L	8 - 8	100%	74.5	132	–	–	91	NA	No ESV
Total Dissolved Solids	mg/L	8 - 8	100%	84	155	–	–	110	NA	No ESV
Total Suspended Solids	mg/L	8 - 8	100%	4.4	14	–	–	6.73	NA	No ESV

Note: Surface water samples were collected once each week for 8 weeks (8/31/2010 – 10/19/2010).
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/L = Milligram per liter.
NA = Not available.
pCi/L = Picocuries per liter.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-59. Surface Water (Epi-Benthic) Dataset: Emory River - Reference (Above ERM 6.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Total Inorganics										
Aluminum, Total	mg/L	8 - 8	100%	0.0551	0.256	–	–	0.12	0.087	Yes
Antimony, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.16	–
Arsenic, Total	mg/L	8 - 8	100%	0.0004	0.00139	–	–	0.00082	0.19	no
Barium, Total	mg/L	8 - 8	100%	0.0507	0.0586	–	–	0.055	NA	No ESV
Beryllium, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Total	mg/L	8 - 8	100%	0.0129	0.0211	–	–	0.018	0.75	no
Cadmium, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Total	mg/L	8 - 8	100%	29.9	35.1	–	–	33.21	NA	No ESV
Chromium, Total	mg/L	1 - 8	13%	0.00033	0.00033	0.00033	0.00033	0.00033	0.11732	no
Cobalt, Total	mg/L	3 - 8	38%	0.00039	0.00051	0.00033	0.00033	0.00045	NA	No ESV
Copper, Total	mg/L	6 - 8	75%	0.00041	0.00077	0.00033	0.00033	0.00054	0.00654	no
Iron, Total	mg/L	8 - 8	100%	0.0932	0.51	–	–	0.27	1	no
Lead, Total	mg/L	2 - 8	25%	0.00043	0.00046	0.00033	0.00033	0.0004	0.00132	no
Magnesium, Total	mg/L	8 - 8	100%	8.43	10.2	–	–	9.5	NA	No ESV
Manganese, Total	mg/L	8 - 8	100%	0.0648	0.794	–	–	0.345	NA	No ESV
Mercury, Total	mg/L	1 - 8	13%	0.00015	0.00015	0.00015	0.00015	0.00015	0.000012	Yes
Molybdenum, Total	mg/L	8 - 8	100%	0.00053	0.00072	–	–	0.00063	NA	No ESV
Nickel, Total	mg/L	8 - 8	100%	0.00046	0.00093	–	–	0.000609	0.08771	no
Potassium, Total	mg/L	8 - 8	100%	1.56	1.7	–	–	1.63	NA	No ESV
Selenium, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.005	–
Silver, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Total	mg/L	8 - 8	100%	5.79	6.27	–	–	6.04	NA	No ESV
Strontium, Total	mg/L	8 - 8	100%	0.0929	0.104	–	–	0.1	NA	No ESV
Thallium, Total	mg/L	0 - 8	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Total	mg/L	0 - 8	0%	–	–	0.001	0.001	–	NA	No ESV
Zinc, Total	mg/L	0 - 8	0%	–	–	0.0083	0.0083	–	0.05891	–
Dissolved Inorganics										
Aluminum, Dissolved	mg/L	0 - 8	0%	–	–	0.05	0.05	–	0.087	–
Antimony, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.16	–
Arsenic, Dissolved	mg/L	8 - 8	100%	0.00034	0.00077	–	–	0.000528	0.19	no
Barium, Dissolved	mg/L	8 - 8	100%	0.0417	0.055	–	–	0.0481	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Dissolved	mg/L	8 - 8	100%	0.0163	0.0221	–	–	0.0185	0.75	no
Cadmium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Dissolved	mg/L	8 - 8	100%	30	34.9	–	–	32.94	NA	No ESV

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Table 2-59. Surface Water (Epi-Benthic) Dataset: Emory River - Reference (Above ERM 6.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics (continued)										
Chromium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.11732	–
Cobalt, Dissolved	mg/L	1 - 8	13%	0.00036	0.00036	0.00033	0.00033	0.00036	NA	No ESV
Copper, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00051	–	0.00654	–
Iron, Dissolved	mg/L	1 - 8	13%	0.198	0.198	0.025	0.025	0.2	1	no
Lead, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00132	–
Magnesium, Dissolved	mg/L	8 - 8	100%	8.37	10.1	–	–	9.36	NA	No ESV
Manganese, Dissolved	mg/L	8 - 8	100%	0.00308	0.811	–	–	0.241	NA	No ESV
Mercury, Dissolved	mg/L	0 - 8	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	8 - 8	100%	0.00045	0.00076	–	–	0.000646	NA	No ESV
Nickel, Dissolved	mg/L	7 - 8	88%	0.00034	0.00055	0.00043	0.00043	0.00042	0.08771	no
Potassium, Dissolved	mg/L	8 - 8	100%	1.53	1.68	–	–	1.59	NA	No ESV
Selenium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.005	–
Silver, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Dissolved	mg/L	8 - 8	100%	5.66	6.18	–	–	5.96	NA	No ESV
Strontium, Dissolved	mg/L	8 - 8	100%	0.0915	0.103	–	–	0.098	NA	No ESV
Thallium, Dissolved	mg/L	0 - 8	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	0 - 8	0%	–	–	0.001	0.001	–	NA	No ESV
Zinc, Dissolved	mg/L	0 - 8	0%	–	–	0.0083	0.0083	–	0.05891	–
Speciation										
Arsenate, Dissolved	mg/L	2 - 2	100%	8.5E-05	8.6E-05	–	–	0.000086	NA	No ESV
Arsenic, Dissolved (from speciation lab)	mg/L	2 - 2	100%	0.0006	0.00062	–	–	0.00061	NA	No ESV
Arsenite, Dissolved	mg/L	2 - 2	100%	0.00018	0.00023	–	–	0.0002	0.19	no
Inorganic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00027	0.00031	–	–	0.0003	NA	No ESV
Inorganic Selenium, Dissolved	mg/L	0 - 2	0%	–	–	0.00029	0.00029	–	NA	No ESV
Organic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00028	0.00035	–	–	0.00032	NA	No ESV
Organic Selenium, Dissolved	mg/L	0 - 2	0%	–	–	0.00039	0.00039	–	NA	No ESV
Selenate, Dissolved	mg/L	0 - 2	0%	–	–	0.00016	0.00016	–	NA	No ESV
Selenite, Dissolved	mg/L	0 - 2	0%	–	–	0.00029	0.00029	–	NA	No ESV
Selenium, Dissolved (from speciation lab)	mg/L	0 - 2	0%	–	–	0.00039	0.00039	–	0.005	–
Radionuclides										
Actinium-228	pCi/L	0 - 2	0%	–	–	11.7	17.5	–	NA	No ESV
Americium-241	pCi/L	0 - 2	0%	–	–	10.9	24.4	–	NA	No ESV
Bismuth-214	pCi/L	0 - 2	0%	–	–	7.23	9.47	–	NA	No ESV
Cesium-137	pCi/L	0 - 2	0%	–	–	2.81	4.08	–	NA	No ESV
Cobalt-60	pCi/L	0 - 2	0%	–	–	2.54	4.18	–	NA	No ESV

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Table 2-59. Surface Water (Epi-Benthic) Dataset: Emory River - Reference (Above ERM 6.0)

Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Radionuclides (continued)										
Lead-212	pCi/L	0 - 2	0%	–	–	5.59	8.44	–	NA	No ESV
Lead-214	pCi/L	0 - 2	0%	–	–	7.12	10.1	–	NA	No ESV
Potassium-40	pCi/L	0 - 2	0%	–	–	41.5	54.8	–	NA	No ESV
Radium-226	pCi/L	0 - 2	0%	–	–	0.349	0.475	–	NA	No ESV
Radium-228	pCi/L	0 - 2	0%	–	–	0.54	0.799	–	NA	No ESV
Thallium-208	pCi/L	0 - 2	0%	–	–	3.54	4.29	–	NA	No ESV
Thorium-228	pCi/L	0 - 2	0%	–	–	0.107	0.144	–	NA	No ESV
Thorium-230	pCi/L	0 - 2	0%	–	–	0.0771	0.0976	–	NA	No ESV
Thorium-232	pCi/L	0 - 2	0%	–	–	0.0888	0.0973	–	NA	No ESV
Thorium-234	pCi/L	0 - 2	0%	–	–	111	248	–	NA	No ESV
Uranium-234	pCi/L	1 - 2	50%	0.206	0.206	0.138	0.138	0.206	NA	No ESV
Uranium-235	pCi/L	0 - 2	0%	–	–	0.0826	0.134	–	NA	No ESV
Uranium-238	pCi/L	1 - 2	50%	0.13	0.13	0.123	0.123	0.13	NA	No ESV
Physical Properties										
Dissolved Organic Carbon	mg/L	8 - 8	100%	1.74	3.01	–	–	2.11	NA	No ESV
Hardness (As CaCO3)	mg/L	8 - 8	100%	109	130	–	–	122	NA	No ESV
Total Dissolved Solids	mg/L	8 - 8	100%	138	157	–	–	146	NA	No ESV
Total Suspended Solids	mg/L	7 - 8	88%	3.6	11.8	6.3	6.3	7.56	NA	No ESV

Note: Surface water samples were collected once each week for 8 weeks (8/31/2010 – 10/19/2010).

– = Not detected/ not analyzed/ not applicable

% = Percent.

ERM = Emory River mile.

mg/L = Milligram per liter.

NA = Not available.

pCi/L = Picocuries per liter.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

For duplicate samples, the highest detect

For constituents analyzed in two methods,

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-60. Surface Water (Epi-Benthic) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Total Inorganics										
Aluminum, Total	mg/L	14 - 16	88%	0.121	0.463	0.198	0.208	0.208	0.087	Yes
Antimony, Total	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.16	–
Arsenic, Total	mg/L	16 - 16	100%	0.00065	0.00184	–	–	0.0011	0.19	no
Barium, Total	mg/L	16 - 16	100%	0.036	0.0443	–	–	0.039	NA	No ESV
Beryllium, Total	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Total	mg/L	16 - 16	100%	0.0126	0.0225	–	–	0.017	0.75	no
Cadmium, Total	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Total	mg/L	16 - 16	100%	37.2	40.3	–	–	38.7	NA	No ESV
Chromium, Total	mg/L	4 - 16	25%	0.00036	0.00055	0.00033	0.00033	0.00044	0.11732	no
Cobalt, Total	mg/L	2 - 16	13%	0.00038	0.00053	0.00033	0.00033	0.00046	NA	No ESV
Copper, Total	mg/L	16 - 16	100%	0.00075	0.00246	–	–	0.0011	0.00654	no
Iron, Total	mg/L	16 - 16	100%	0.11	0.372	–	–	0.192	1	no
Lead, Total	mg/L	9 - 16	56%	0.00034	0.00069	0.00033	0.00033	0.00041	0.00132	no
Magnesium, Total	mg/L	16 - 16	100%	10.8	11.9	–	–	11.19	NA	No ESV
Manganese, Total	mg/L	16 - 16	100%	0.0359	0.0834	–	–	0.0504	NA	No ESV
Mercury, Total	mg/L	1 - 16	6%	0.00023	0.00023	0.00015	0.00015	0.000233	0.000012	Yes
Molybdenum, Total	mg/L	14 - 16	88%	0.0005	0.00091	0.00064	0.00091	0.000689	NA	No ESV
Nickel, Total	mg/L	16 - 16	100%	0.00044	0.00096	–	–	0.000631	0.08771	no
Potassium, Total	mg/L	16 - 16	100%	1.53	1.71	–	–	1.59	NA	No ESV
Selenium, Total	mg/L	6 - 16	38%	0.00033	0.00049	0.00033	0.00033	0.000392	0.005	no
Silver, Total	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Total	mg/L	16 - 16	100%	6.37	7.13	–	–	6.77	NA	No ESV
Strontium, Total	mg/L	16 - 16	100%	0.109	0.121	–	–	0.115	NA	No ESV
Thallium, Total	mg/L	0 - 16	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Total	mg/L	11 - 16	69%	0.00109	0.00204	0.001	0.001	0.00128	NA	No ESV
Zinc, Total	mg/L	0 - 16	0%	–	–	0.0083	0.0083	–	0.05891	–
Dissolved Inorganics										
Aluminum, Dissolved	mg/L	0 - 16	0%	–	–	0.05	0.05	–	0.087	–
Antimony, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.16	–
Arsenic, Dissolved	mg/L	16 - 16	100%	0.00043	0.0012	–	–	0.00072	0.19	no
Barium, Dissolved	mg/L	16 - 16	100%	0.033	0.039	–	–	0.036	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Dissolved	mg/L	14 - 16	88%	0.0128	0.0215	0.0125	0.0125	0.016	0.75	no
Cadmium, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Dissolved	mg/L	16 - 16	100%	36.7	39.1	–	–	38.1	NA	No ESV

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Table 2-60. Surface Water (Epi-Benthic) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics (continued)										
Chromium, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.11732	–
Cobalt, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	NA	No ESV
Copper, Dissolved	mg/L	16 - 16	100%	0.00038	0.00082	–	–	0.00052	0.00654	no
Iron, Dissolved	mg/L	1 - 16	6%	0.122	0.122	0.025	0.025	0.122	1	no
Lead, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.00132	–
Magnesium, Dissolved	mg/L	16 - 16	100%	10.7	11.5	–	–	11	NA	No ESV
Manganese, Dissolved	mg/L	16 - 16	100%	0.00594	0.0423	–	–	0.016	NA	No ESV
Mercury, Dissolved	mg/L	0 - 16	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	14 - 16	88%	0.00037	0.001	0.00066	0.00106	0.00069	NA	No ESV
Nickel, Dissolved	mg/L	7 - 16	44%	0.00033	0.00065	0.00033	0.00033	0.00041	0.08771	no
Potassium, Dissolved	mg/L	16 - 16	100%	1.47	1.56	–	–	1.53	NA	No ESV
Selenium, Dissolved	mg/L	3 - 16	19%	0.00033	0.00061	0.00033	0.00033	0.00048	0.005	no
Silver, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Dissolved	mg/L	16 - 16	100%	6.35	7.01	–	–	6.66	NA	No ESV
Strontium, Dissolved	mg/L	16 - 16	100%	0.107	0.118	–	–	0.112	NA	No ESV
Thallium, Dissolved	mg/L	0 - 16	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	1 - 16	6%	0.00104	0.00104	0.001	0.001	0.00104	NA	No ESV
Zinc, Dissolved	mg/L	0 - 16	0%	–	–	0.0083	0.0083	–	0.05891	–
Speciation										
Arsenate, Dissolved	mg/L	4 - 4	100%	0.00037	0.00046	–	–	0.0004	NA	No ESV
Arsenic, Dissolved (from speciation lab)	mg/L	4 - 4	100%	0.00072	0.00101	–	–	0.00083	NA	No ESV
Arsenite, Dissolved	mg/L	4 - 4	100%	0.00011	0.00025	–	–	0.00019	0.19	no
Inorganic Arsenic, Dissolved	mg/L	4 - 4	100%	0.00051	0.0007	–	–	0.00059	NA	No ESV
Inorganic Selenium, Dissolved	mg/L	0 - 4	0%	–	–	0.00029	0.00029	–	NA	No ESV
Organic Arsenic, Dissolved	mg/L	4 - 4	100%	0.0002	0.00031	–	–	0.00024	NA	No ESV
Organic Selenium, Dissolved	mg/L	2 - 4	50%	0.00044	0.00051	0.00039	0.00039	0.00048	NA	No ESV
Selenate, Dissolved	mg/L	3 - 4	75%	0.00018	0.0002	0.00016	0.00016	0.00019	NA	No ESV
Selenite, Dissolved	mg/L	0 - 4	0%	–	–	0.00029	0.00029	–	NA	No ESV
Selenium, Dissolved (from speciation lab)	mg/L	4 - 4	100%	0.00045	0.00062	–	–	0.00052	0.005	no
Radionuclides										
Actinium-228	pCi/L	0 - 4	0%	–	–	10.1	14.7	–	NA	No ESV
Americium-241	pCi/L	0 - 4	0%	–	–	10.4	11.8	–	NA	No ESV
Bismuth-214	pCi/L	1 - 4	25%	27	27	5.94	10.9	27	NA	No ESV
Cesium-137	pCi/L	0 - 4	0%	–	–	2.63	3.55	–	NA	No ESV
Cobalt-60	pCi/L	0 - 4	0%	–	–	2.84	3.68	–	NA	No ESV

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Table 2-60. Surface Water (Epi-Benthic) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Radionuclides (continued)										
Lead-212	pCi/L	0 - 4	0%	–	–	5.35	7.28	–	NA	No ESV
Lead-214	pCi/L	1 - 4	25%	9.73	9.73	6.24	9.78	9.73	NA	No ESV
Potassium-40	pCi/L	0 - 4	0%	–	–	33.2	48.3	–	NA	No ESV
Radium-226	pCi/L	1 - 4	25%	0.425	0.425	0.45	0.756	0.425	NA	No ESV
Radium-228	pCi/L	0 - 4	0%	–	–	0.709	2.08	–	NA	No ESV
Thallium-208	pCi/L	0 - 4	0%	–	–	2.95	4.1	–	NA	No ESV
Thorium-228	pCi/L	0 - 4	0%	–	–	0.097	0.124	–	NA	No ESV
Thorium-230	pCi/L	0 - 4	0%	–	–	0.0439	0.171	–	NA	No ESV
Thorium-232	pCi/L	0 - 4	0%	–	–	0.0577	0.0933	–	NA	No ESV
Thorium-234	pCi/L	0 - 4	0%	–	–	122	139	–	NA	No ESV
Uranium-234	pCi/L	4 - 4	100%	0.128	0.241	–	–	0.19	NA	No ESV
Uranium-235	pCi/L	0 - 4	0%	–	–	0.0751	0.153	–	NA	No ESV
Uranium-238	pCi/L	4 - 4	100%	0.117	0.172	–	–	0.15	NA	No ESV
Physical Properties										
Dissolved Organic Carbon	mg/L	16 - 16	100%	1.5	1.96	–	–	1.7	NA	No ESV
Hardness (As CaCO3)	mg/L	16 - 16	100%	138	149	–	–	143	NA	No ESV
Total Dissolved Solids	mg/L	16 - 16	100%	159	183	–	–	168	NA	No ESV
Total Suspended Solids	mg/L	14 - 16	88%	6.1	17.7	11.7	16.2	10.72	NA	No ESV

Note: Surface water samples were collected once each week for 8 weeks (8/31/2010 – 10/19/2010).

– = Not detected/ not analyzed/ not applicable

% = Percent.

ERM = Emory River mile.

mg/L = Milligram per liter.

NA = Not available.

pCi/L = Picocuries per liter.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

For duplicate samples, the highest detect

For constituents analyzed in two methods,

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-61. Surface Water (Epi-Benthic) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Total Inorganics										
Aluminum, Total	mg/L	15 - 16	94%	0.264	1.22	0.374	0.374	0.73	0.087	Yes
Antimony, Total	mg/L	1 - 16	6%	0.00043	0.00043	0.00033	0.00033	0.00043	0.16	no
Arsenic, Total	mg/L	16 - 16	100%	0.00134	0.00638	–	–	0.00365	0.19	no
Barium, Total	mg/L	16 - 16	100%	0.04	0.0862	–	–	0.0578	NA	No ESV
Beryllium, Total	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Total	mg/L	16 - 16	100%	0.0134	0.0264	–	–	0.021	0.75	no
Cadmium, Total	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Total	mg/L	16 - 16	100%	34.4	39.3	–	–	37.15	NA	No ESV
Chromium, Total	mg/L	15 - 16	94%	0.0004	0.00108	0.00033	0.00033	0.000711	0.11732	no
Cobalt, Total	mg/L	14 - 16	88%	0.00033	0.00105	0.00033	0.00033	0.0007	NA	No ESV
Copper, Total	mg/L	16 - 16	100%	0.0011	0.00311	–	–	0.00209	0.00654	no
Iron, Total	mg/L	16 - 16	100%	0.19	0.779	–	–	0.459	1	no
Lead, Total	mg/L	16 - 16	100%	0.00036	0.00167	–	–	0.000966	0.00132	Yes
Magnesium, Total	mg/L	16 - 16	100%	9.64	11.6	–	–	10.7	NA	No ESV
Manganese, Total	mg/L	16 - 16	100%	0.0426	0.686	–	–	0.187	NA	No ESV
Mercury, Total	mg/L	0 - 16	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Total	mg/L	14 - 16	88%	0.00061	0.00125	0.00062	0.00122	0.000934	NA	No ESV
Nickel, Total	mg/L	16 - 16	100%	0.00059	0.00202	–	–	0.00130	0.08771	no
Potassium, Total	mg/L	16 - 16	100%	1.56	1.72	–	–	1.65	NA	No ESV
Selenium, Total	mg/L	9 - 16	56%	0.00037	0.0007	0.00033	0.00033	0.000449	0.005	no
Silver, Total	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Total	mg/L	16 - 16	100%	5.96	7.08	–	–	6.48	NA	No ESV
Strontium, Total	mg/L	16 - 16	100%	0.109	0.128	–	–	0.12	NA	No ESV
Thallium, Total	mg/L	0 - 16	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Total	mg/L	16 - 16	100%	0.00143	0.00467	–	–	0.003	NA	No ESV
Zinc, Total	mg/L	1 - 16	6%	0.0122	0.0122	0.0083	0.0083	0.01	0.05891	no
Dissolved Inorganics										
Aluminum, Dissolved	mg/L	0 - 16	0%	–	–	0.05	0.05	–	0.087	–
Antimony, Dissolved	mg/L	1 - 16	6%	0.00039	0.00039	0.00033	0.00033	0.00039	0.16	no
Arsenic, Dissolved	mg/L	16 - 16	100%	0.00072	0.00304	–	–	0.0019	0.19	no
Barium, Dissolved	mg/L	16 - 16	100%	0.0352	0.0551	–	–	0.043	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Dissolved	mg/L	16 - 16	100%	0.013	0.0231	–	–	0.019	0.75	no
Cadmium, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Dissolved	mg/L	16 - 16	100%	33.3	39	–	–	36.8	NA	No ESV

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Table 2-61. Surface Water (Epi-Benthic) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics (continued)										
Chromium, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.11732	–
Cobalt, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	NA	No ESV
Copper, Dissolved	mg/L	15 - 16	94%	0.00041	0.00081	0.00033	0.00033	0.00055	0.00654	no
Iron, Dissolved	mg/L	2 - 16	13%	0.0522	0.164	0.025	0.025	0.108	1	no
Lead, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.00132	–
Magnesium, Dissolved	mg/L	16 - 16	100%	9.39	11.4	–	–	10.5	NA	No ESV
Manganese, Dissolved	mg/L	16 - 16	100%	0.00754	0.586	–	–	0.107	NA	No ESV
Mercury, Dissolved	mg/L	0 - 16	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	14 - 16	88%	0.00057	0.00117	0.00079	0.00098	0.00091	NA	No ESV
Nickel, Dissolved	mg/L	5 - 16	31%	0.00038	0.00083	0.00033	0.00033	0.00049	0.08771	no
Potassium, Dissolved	mg/L	16 - 16	100%	1.46	1.61	–	–	1.53	NA	No ESV
Selenium, Dissolved	mg/L	4 - 16	25%	0.0004	0.00056	0.00033	0.00033	0.00047	0.005	no
Silver, Dissolved	mg/L	0 - 16	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Dissolved	mg/L	16 - 16	100%	6.04	7.02	–	–	6.425	NA	No ESV
Strontium, Dissolved	mg/L	16 - 16	100%	0.107	0.121	–	–	0.114	NA	No ESV
Thallium, Dissolved	mg/L	0 - 16	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	6 - 16	38%	0.00101	0.00128	0.001	0.001	0.0011	NA	No ESV
Zinc, Dissolved	mg/L	0 - 16	0%	–	–	0.0083	0.0083	–	0.05891	–
Speciation										
Arsenate, Dissolved	mg/L	4 - 4	100%	0.00049	0.00147	–	–	0.001	NA	No ESV
Arsenic, Dissolved (from speciation lab)	mg/L	4 - 4	100%	0.00118	0.00363	–	–	0.0023	NA	No ESV
Arsenite, Dissolved	mg/L	4 - 4	100%	0.00024	0.00084	–	–	0.00054	0.19	no
Inorganic Arsenic, Dissolved	mg/L	4 - 4	100%	0.00073	0.00231	–	–	0.0016	NA	No ESV
Inorganic Selenium, Dissolved	mg/L	2 - 4	50%	0.00029	0.00034	0.00029	0.00029	0.00032	NA	No ESV
Organic Arsenic, Dissolved	mg/L	4 - 4	100%	0.00042	0.00132	–	–	0.00071	NA	No ESV
Organic Selenium, Dissolved	mg/L	3 - 4	75%	0.00047	0.00064	0.00039	0.00039	0.00056	NA	No ESV
Selenate, Dissolved	mg/L	2 - 4	50%	0.00029	0.00034	0.00016	0.00016	0.00032	NA	No ESV
Selenite, Dissolved	mg/L	0 - 4	0%	–	–	0.00029	0.00029	–	NA	No ESV
Selenium, Dissolved (from speciation lab)	mg/L	4 - 4	100%	0.00047	0.00098	–	–	0.000661	0.005	no
Radionuclides										
Actinium-228	pCi/L	0 - 4	0%	–	–	12.8	15.6	–	NA	No ESV
Americium-241	pCi/L	0 - 4	0%	–	–	16.6	24.2	–	NA	No ESV
Bismuth-214	pCi/L	0 - 4	0%	–	–	7.75	9.8	–	NA	No ESV
Cesium-137	pCi/L	0 - 4	0%	–	–	3.31	3.6	–	NA	No ESV
Cobalt-60	pCi/L	0 - 4	0%	–	–	3.09	3.92	–	NA	No ESV

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Table 2-61. Surface Water (Epi-Benthic) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)

Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Radionuclides (continued)										
Lead-212	pCi/L	0 - 4	0%	–	–	6.55	7.81	–	NA	No ESV
Lead-214	pCi/L	0 - 4	0%	–	–	8.18	9.2	–	NA	No ESV
Potassium-40	pCi/L	0 - 4	0%	–	–	42.6	51.1	–	NA	No ESV
Radium-226	pCi/L	0 - 4	0%	–	–	0.503	0.734	–	NA	No ESV
Radium-228	pCi/L	1 - 4	25%	3.27	3.27	0.603	0.884	3.27	NA	No ESV
Thallium-208	pCi/L	0 - 4	0%	–	–	3.39	4.51	–	NA	No ESV
Thorium-228	pCi/L	0 - 4	0%	–	–	0.0548	0.115	–	NA	No ESV
Thorium-230	pCi/L	0 - 4	0%	–	–	0.0544	0.173	–	NA	No ESV
Thorium-232	pCi/L	1 - 4	25%	0.0569	0.0569	0.0421	0.0945	0.0569	NA	No ESV
Thorium-234	pCi/L	0 - 4	0%	–	–	183	233	–	NA	No ESV
Uranium-234	pCi/L	3 - 4	75%	0.131	0.142	0.123	0.123	0.137	NA	No ESV
Uranium-235	pCi/L	0 - 4	0%	–	–	0.0754	0.152	–	NA	No ESV
Uranium-238	pCi/L	4 - 4	100%	0.103	0.3	–	–	0.174	NA	No ESV
Physical Properties										
Dissolved Organic Carbon	mg/L	16 - 16	100%	1.59	2.21	–	–	1.81	NA	No ESV
Hardness (As CaCO3)	mg/L	16 - 16	100%	126	145	–	–	137	NA	No ESV
Total Dissolved Solids	mg/L	16 - 16	100%	145	184	–	–	161	NA	No ESV
Total Suspended Solids	mg/L	14 - 16	88%	11.6	37.3	13.2	24.4	23.7	NA	No ESV

Note: Surface water samples were collected once each week for 8 weeks (8/31/2010 – 10/19/2010).

– = Not detected/ not analyzed/ not applicable

% = Percent.

ERM = Emory River mile.

mg/L = Milligram per liter.

NA = Not available.

pCi/L = Picocuries per liter.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

For duplicate samples, the highest detect

For constituents analyzed in two methods,

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-62. Surface Water (Epi-Benthic) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Total Inorganics										
Aluminum, Total	mg/L	8 - 8	100%	0.244	0.825	–	–	0.442	0.087	Yes
Antimony, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.16	–
Arsenic, Total	mg/L	8 - 8	100%	0.00199	0.00422	–	–	0.00304	0.19	no
Barium, Total	mg/L	8 - 8	100%	0.051	0.0701	–	–	0.059	NA	No ESV
Beryllium, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Total	mg/L	8 - 8	100%	0.0174	0.0253	–	–	0.022	0.75	no
Cadmium, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Total	mg/L	8 - 8	100%	33.7	37.8	–	–	36.1	NA	No ESV
Chromium, Total	mg/L	5 - 8	63%	0.00038	0.00076	0.00033	0.00033	0.000598	0.11732	no
Cobalt, Total	mg/L	7 - 8	88%	0.00036	0.00088	0.00033	0.00033	0.00054	NA	No ESV
Copper, Total	mg/L	8 - 8	100%	0.00077	0.00203	–	–	0.0013	0.00654	no
Iron, Total	mg/L	8 - 8	100%	0.241	0.734	–	–	0.39	1	no
Lead, Total	mg/L	8 - 8	100%	0.00039	0.00118	–	–	0.00071	0.00132	no
Magnesium, Total	mg/L	8 - 8	100%	9.49	11.1	–	–	10.37	NA	No ESV
Manganese, Total	mg/L	8 - 8	100%	0.0953	0.866	–	–	0.311	NA	No ESV
Mercury, Total	mg/L	0 - 8	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Total	mg/L	7 - 8	88%	0.00085	0.00113	0.00078	0.00078	0.00099	NA	No ESV
Nickel, Total	mg/L	8 - 8	100%	0.00069	0.00136	–	–	0.00097	0.08771	no
Potassium, Total	mg/L	8 - 8	100%	1.59	1.67	–	–	1.62	NA	No ESV
Selenium, Total	mg/L	4 - 8	50%	0.00034	0.00048	0.00033	0.00033	0.000405	0.005	no
Silver, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Total	mg/L	8 - 8	100%	5.86	6.7	–	–	6.32	NA	No ESV
Strontium, Total	mg/L	8 - 8	100%	0.108	0.12	–	–	0.115	NA	No ESV
Thallium, Total	mg/L	0 - 8	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Total	mg/L	7 - 8	88%	0.00131	0.0028	0.001	0.001	0.0021	NA	No ESV
Zinc, Total	mg/L	0 - 8	0%	–	–	0.0083	0.0083	–	0.05891	–
Dissolved Inorganics										
Aluminum, Dissolved	mg/L	0 - 8	0%	–	–	0.05	0.05	–	0.087	–
Antimony, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.16	–
Arsenic, Dissolved	mg/L	8 - 8	100%	0.00129	0.00267	–	–	0.002	0.19	no
Barium, Dissolved	mg/L	8 - 8	100%	0.0366	0.0576	–	–	0.047	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Dissolved	mg/L	8 - 8	100%	0.0166	0.0228	–	–	0.0198	0.75	no
Cadmium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Dissolved	mg/L	8 - 8	100%	34	37.6	–	–	35.7	NA	No ESV

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Table 2-62. Surface Water (Epi-Benthic) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics (continued)										
Chromium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.11732	–
Cobalt, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	NA	No ESV
Copper, Dissolved	mg/L	7 - 8	88%	0.00033	0.00204	0.00033	0.00033	0.00068	0.00654	no
Iron, Dissolved	mg/L	1 - 8	13%	0.0578	0.0578	0.025	0.025	0.058	1	no
Lead, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00132	–
Magnesium, Dissolved	mg/L	8 - 8	100%	9.56	10.8	–	–	10.18	NA	No ESV
Manganese, Dissolved	mg/L	8 - 8	100%	0.0135	0.822	–	–	0.23	NA	No ESV
Mercury, Dissolved	mg/L	0 - 8	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	7 - 8	88%	0.00088	0.00109	0.00087	0.00087	0.001	NA	No ESV
Nickel, Dissolved	mg/L	7 - 8	88%	0.00036	0.00055	0.00033	0.00033	0.00041	0.08771	no
Potassium, Dissolved	mg/L	8 - 8	100%	1.51	1.62	–	–	1.56	NA	No ESV
Selenium, Dissolved	mg/L	4 - 8	50%	0.00035	0.00052	0.00033	0.00033	0.0004	0.005	no
Silver, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Dissolved	mg/L	8 - 8	100%	5.84	6.76	–	–	6.24	NA	No ESV
Strontium, Dissolved	mg/L	8 - 8	100%	0.102	0.117	–	–	0.111	NA	No ESV
Thallium, Dissolved	mg/L	0 - 8	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	2 - 8	25%	0.00102	0.00108	0.001	0.001	0.00105	NA	No ESV
Zinc, Dissolved	mg/L	0 - 8	0%	–	–	0.0083	0.0083	–	0.05891	–
Speciation										
Arsenate, Dissolved	mg/L	2 - 2	100%	0.0011	0.00129	–	–	0.0012	NA	No ESV
Arsenic, Dissolved (from speciation lab)	mg/L	2 - 2	100%	0.00211	0.00264	–	–	0.0024	NA	No ESV
Arsenite, Dissolved	mg/L	2 - 2	100%	0.00051	0.00087	–	–	0.00069	0.19	no
Inorganic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00178	0.00197	–	–	0.0019	NA	No ESV
Inorganic Selenium, Dissolved	mg/L	1 - 2	50%	0.00035	0.00035	0.00029	0.00029	0.00035	NA	No ESV
Organic Arsenic, Dissolved	mg/L	2 - 2	100%	0.0005	0.00067	–	–	0.00059	NA	No ESV
Organic Selenium, Dissolved	mg/L	2 - 2	100%	0.00047	0.0005	–	–	0.00048	NA	No ESV
Selenate, Dissolved	mg/L	1 - 2	50%	0.00035	0.00035	0.00016	0.00016	0.00035	NA	No ESV
Selenite, Dissolved	mg/L	0 - 2	0%	–	–	0.00029	0.00029	–	NA	No ESV
Selenium, Dissolved (from speciation lab)	mg/L	2 - 2	100%	0.0005	0.00077	–	–	0.00063	0.005	no
Radionuclides										
Actinium-228	pCi/L	0 - 2	0%	–	–	10.6	16.8	–	NA	No ESV
Americium-241	pCi/L	0 - 2	0%	–	–	10.9	27.3	–	NA	No ESV
Bismuth-214	pCi/L	0 - 2	0%	–	–	8.14	9.9	–	NA	No ESV
Cesium-137	pCi/L	0 - 2	0%	–	–	2.89	3.73	–	NA	No ESV
Cobalt-60	pCi/L	0 - 2	0%	–	–	2.65	2.94	–	NA	No ESV

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Table 2-62. Surface Water (Epi-Benthic) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Radionuclides (continued)										
Lead-212	pCi/L	0 - 2	0%	–	–	5.51	7.47	–	NA	No ESV
Lead-214	pCi/L	0 - 2	0%	–	–	6.84	9.34	–	NA	No ESV
Potassium-40	pCi/L	0 - 2	0%	–	–	41.1	46.1	–	NA	No ESV
Radium-226	pCi/L	1 - 2	50%	0.369	0.369	1.01	1.01	0.369	NA	No ESV
Radium-228	pCi/L	0 - 2	0%	–	–	0.672	0.79	–	NA	No ESV
Thallium-208	pCi/L	0 - 2	0%	–	–	3.23	3.9	–	NA	No ESV
Thorium-228	pCi/L	0 - 2	0%	–	–	0.0841	0.091	–	NA	No ESV
Thorium-230	pCi/L	0 - 2	0%	–	–	0.0437	0.0659	–	NA	No ESV
Thorium-232	pCi/L	0 - 2	0%	–	–	0.0131	0.0411	–	NA	No ESV
Thorium-234	pCi/L	0 - 2	0%	–	–	114	248	–	NA	No ESV
Uranium-234	pCi/L	2 - 2	100%	0.105	0.273	–	–	0.189	NA	No ESV
Uranium-235	pCi/L	0 - 2	0%	–	–	0.0694	0.0784	–	NA	No ESV
Uranium-238	pCi/L	1 - 2	50%	0.126	0.126	0.101	0.101	0.13	NA	No ESV
Physical Properties										
Dissolved Organic Carbon	mg/L	8 - 8	100%	1.67	2.21	–	–	1.879	NA	No ESV
Hardness (As CaCO3)	mg/L	8 - 8	100%	123	140	–	–	133	NA	No ESV
Total Dissolved Solids	mg/L	8 - 8	100%	145	174	–	–	156	NA	No ESV
Total Suspended Solids	mg/L	7 - 8	88%	7.6	29.1	11	11	18.11	NA	No ESV

Note: Surface water samples were collected once each week for 8 weeks (8/31/2010 – 10/19/2010).

– = Not detected/ not analyzed/ not applicable

% = Percent.

ERM = Emory River mile.

mg/L = Milligram per liter.

NA = Not available.

pCi/L = Picocuries per liter.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

For duplicate samples, the highest detect

For constituents analyzed in two methods,

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-63. Surface Water (Epi-Benthic) Dataset: Clinch River - Reference (Above CRM 4.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations	Detection Limits	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min - Max	Min - Max			
Total Inorganics								
Aluminum, Total	mg/L	7 - 8	88%	0.0751 - 0.113	0.0936 - 0.0936	0.093	0.087	Yes
Antimony, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.16	–
Arsenic, Total	mg/L	8 - 8	100%	0.0004 - 0.0005	– - –	0.00045	0.19	no
Barium, Total	mg/L	8 - 8	100%	0.0339 - 0.037	– - –	0.035	NA	No ESV
Beryllium, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00053	–
Boron, Total	mg/L	8 - 8	100%	0.014 - 0.0196	– - –	0.016	0.75	no
Cadmium, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00066	–
Calcium, Total	mg/L	8 - 8	100%	37.2 - 40.2	– - –	38.49	NA	No ESV
Chromium, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.11732	–
Cobalt, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	NA	No ESV
Copper, Total	mg/L	8 - 8	100%	0.00048 - 0.0008	– - –	0.00058	0.00654	no
Iron, Total	mg/L	8 - 8	100%	0.0813 - 0.14	– - –	0.102	1	no
Lead, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00132	–
Magnesium, Total	mg/L	8 - 8	100%	10.9 - 11.8	– - –	11.18	NA	No ESV
Manganese, Total	mg/L	8 - 8	100%	0.0269 - 0.0456	– - –	0.034	NA	No ESV
Mercury, Total	mg/L	0 - 8	0%	– - –	0.00015 - 0.00015	–	0.000012	–
Molybdenum, Total	mg/L	7 - 8	88%	0.00043 - 0.00099	0.00033 - 0.00033	0.00064	NA	No ESV
Nickel, Total	mg/L	7 - 8	88%	0.00037 - 0.00067	0.00033 - 0.00033	0.00047	0.08771	no
Potassium, Total	mg/L	8 - 8	100%	1.5 - 1.6	– - –	1.55	NA	No ESV
Selenium, Total	mg/L	1 - 8	13%	0.00033 - 0.00033	0.00033 - 0.00033	0.0003	0.005	no
Silver, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.000012	–
Sodium, Total	mg/L	8 - 8	100%	6.34 - 6.98	– - –	6.68	NA	No ESV
Strontium, Total	mg/L	8 - 8	100%	0.108 - 0.115	– - –	0.1115	NA	No ESV
Thallium, Total	mg/L	0 - 8	0%	– - –	0.0005 - 0.0005	–	0.004	–
Vanadium, Total	mg/L	0 - 8	0%	– - –	0.001 - 0.001	–	NA	No ESV
Zinc, Total	mg/L	0 - 8	0%	– - –	0.0083 - 0.0083	–	0.05891	–
Dissolved Inorganics								
Aluminum, Dissolved	mg/L	0 - 8	0%	– - –	0.05 - 0.05	–	0.087	–
Antimony, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.16	–
Arsenic, Dissolved	mg/L	8 - 8	100%	0.00038 - 0.0006	– - –	0.00045	0.19	no
Barium, Dissolved	mg/L	8 - 8	100%	0.0326 - 0.0358	– - –	0.034	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00053	–
Boron, Dissolved	mg/L	8 - 8	100%	0.0128 - 0.0183	– - –	0.015	0.75	no
Cadmium, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00066	–
Calcium, Dissolved	mg/L	8 - 8	100%	37.1 - 39.9	– - –	38.39	NA	No ESV

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Table 2-63. Surface Water (Epi-Benthic) Dataset: Clinch River - Reference (Above CRM 4.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics (continued)										
Chromium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.11732	–
Cobalt, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	NA	No ESV
Copper, Dissolved	mg/L	6 - 8	75%	0.00034	0.00165	0.00036	0.00056	0.00065	0.00654	no
Hex. Chromium, Dissolved	mg/L	1 - 1	100%	0.0021	0.0021	–	–	0.0021	0.011	no
Iron, Dissolved	mg/L	0 - 8	0%	–	–	0.025	0.025	–	1	–
Lead, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00132	–
Magnesium, Dissolved	mg/L	8 - 8	100%	10.7	11.7	–	–	11.075	NA	No ESV
Manganese, Dissolved	mg/L	8 - 8	100%	0.00281	0.00763	–	–	0.0052275	NA	No ESV
Mercury, Dissolved	mg/L	0 - 8	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	7 - 8	88%	0.00047	0.00099	0.00033	0.00033	0.00068	NA	No ESV
Nickel, Dissolved	mg/L	3 - 8	38%	0.00034	0.00039	0.00033	0.00049	0.0004	0.08771	no
Potassium, Dissolved	mg/L	8 - 8	100%	1.48	1.55	–	–	1.52	NA	No ESV
Selenium, Dissolved	mg/L	2 - 8	25%	0.00033	0.00034	0.00033	0.00033	0.000335	0.005	no
Silver, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Dissolved	mg/L	8 - 8	100%	6.31	7.07	–	–	6.68	NA	No ESV
Strontium, Dissolved	mg/L	8 - 8	100%	0.105	0.116	–	–	0.11	NA	No ESV
Thallium, Dissolved	mg/L	0 - 8	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	0 - 8	0%	–	–	0.001	0.001	–	NA	No ESV
Zinc, Dissolved	mg/L	0 - 8	0%	–	–	0.0083	0.0083	–	0.05891	–
Speciation										
Arsenate, Dissolved	mg/L	2 - 2	100%	0.00026	0.00028	–	–	0.000271	NA	No ESV
Arsenic, Dissolved (from speciation lab)	mg/L	2 - 2	100%	0.00053	0.00055	–	–	0.00054	NA	No ESV
Arsenite, Dissolved	mg/L	2 - 2	100%	4.5E-05	4.9E-05	–	–	0.000047	0.19	no
Inorganic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00031	0.00032	–	–	0.000318	NA	No ESV
Inorganic Selenium, Dissolved	mg/L	0 - 2	0%	–	–	0.00029	0.00029	–	NA	No ESV
Organic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00022	0.00022	–	–	0.00022	NA	No ESV
Organic Selenium, Dissolved	mg/L	1 - 2	50%	0.00052	0.00052	0.00039	0.00039	0.00052	NA	No ESV
Selenate, Dissolved	mg/L	0 - 2	0%	–	–	0.00016	0.00016	–	NA	No ESV
Selenite, Dissolved	mg/L	0 - 2	0%	–	–	0.00029	0.00029	–	NA	No ESV
Selenium, Dissolved (from speciation lab)	mg/L	1 - 2	50%	0.00052	0.00052	0.00039	0.00039	0.00052	0.005	no
Radionuclides										
Actinium-228	pCi/L	0 - 2	0%	–	–	13.5	14.6	–	NA	No ESV
Americium-241	pCi/L	0 - 2	0%	–	–	6.1	18.4	–	NA	No ESV
Bismuth-214	pCi/L	0 - 2	0%	–	–	7.94	9.46	–	NA	No ESV
Cesium-137	pCi/L	0 - 2	0%	–	–	3.36	3.62	–	NA	No ESV
Cobalt-60	pCi/L	0 - 2	0%	–	–	3.78	3.79	–	NA	No ESV

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Table 2-63. Surface Water (Epi-Benthic) Dataset: Clinch River - Reference (Above CRM 4.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Radionuclides (continued)										
Lead-212	pCi/L	0 - 2	0%	–	–	6.4	7.04	–	NA	No ESV
Lead-214	pCi/L	0 - 2	0%	–	–	8.45	9.34	–	NA	No ESV
Potassium-40	pCi/L	0 - 2	0%	–	–	44.7	45	–	NA	No ESV
Radium-226	pCi/L	0 - 2	0%	–	–	0.369	0.448	–	NA	No ESV
Radium-228	pCi/L	0 - 2	0%	–	–	0.523	0.784	–	NA	No ESV
Thallium-208	pCi/L	0 - 2	0%	–	–	3.49	3.51	–	NA	No ESV
Thorium-228	pCi/L	0 - 2	0%	–	–	0.072	0.0951	–	NA	No ESV
Thorium-230	pCi/L	0 - 2	0%	–	–	0.0626	0.0947	–	NA	No ESV
Thorium-232	pCi/L	0 - 2	0%	–	–	0.0391	0.0944	–	NA	No ESV
Thorium-234	pCi/L	0 - 2	0%	–	–	78.5	185	–	NA	No ESV
Uranium-234	pCi/L	2 - 2	100%	0.269	0.365	–	–	0.317	NA	No ESV
Uranium-235	pCi/L	0 - 2	0%	–	–	0.0832	0.27	–	NA	No ESV
Uranium-238	pCi/L	1 - 2	50%	0.143	0.143	0.218	0.218	0.143	NA	No ESV
Physical Properties										
Dissolved Organic Carbon	mg/L	7 - 8	88%	1.53	1.9	1.97	1.97	1.71	NA	No ESV
Hardness (As CaCO3)	mg/L	8 - 8	100%	138	149	–	–	142	NA	No ESV
Total Dissolved Solids	mg/L	8 - 8	100%	158	175	–	–	166	NA	No ESV
Total Suspended Solids	mg/L	8 - 8	100%	3.9	12.9	–	–	6.79	NA	No ESV

Note: Surface water samples were collected once each week for 8 weeks (8/31/2010 – 10/19/2010).

– = Not detected/ not analyzed/ not applicable

% = Percent.

CRM = Clinch River mile.

mg/L = Milligram per liter.

NA = Not available.

pCi/L = Picocuries per liter.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

For duplicate samples, the highest detect

For constituents analyzed in two methods,

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-64. Surface Water (Epi-Benthic) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations	Detection Limits	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min Max	Min Max			
Total Inorganics								
Aluminum, Total	mg/L	7 - 8	88%	0.173 - 0.642	0.345 - 0.345	0.29	0.087	Yes
Antimony, Total	mg/L	1 - 8	13%	0.00043 - 0.00043	0.00033 - 0.00033	0.00043	0.16	no
Arsenic, Total	mg/L	8 - 8	100%	0.0008 - 0.00198	– - –	0.0012	0.19	no
Barium, Total	mg/L	8 - 8	100%	0.0375 - 0.0496	– - –	0.041	NA	No ESV
Beryllium, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00053	–
Boron, Total	mg/L	8 - 8	100%	0.0133 - 0.0222	– - –	0.017	0.75	no
Cadmium, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00066	–
Calcium, Total	mg/L	8 - 8	100%	36.9 - 39.4	– - –	38.3	NA	No ESV
Chromium, Total	mg/L	5 - 8	63%	0.00039 - 0.00073	0.00033 - 0.00033	0.00048	0.11732	no
Cobalt, Total	mg/L	4 - 8	50%	0.00034 - 0.00088	0.00033 - 0.00033	0.00048	NA	No ESV
Copper, Total	mg/L	8 - 8	100%	0.00098 - 0.00318	– - –	0.0018	0.00654	no
Iron, Total	mg/L	8 - 8	100%	0.167 - 0.586	– - –	0.276	1	no
Lead, Total	mg/L	6 - 8	75%	0.00034 - 0.00145	0.00033 - 0.00053	0.00061	0.00132	Yes
Magnesium, Total	mg/L	8 - 8	100%	10.9 - 11.7	– - –	11.1	NA	No ESV
Manganese, Total	mg/L	8 - 8	100%	0.0422 - 0.129	– - –	0.068	NA	No ESV
Mercury, Total	mg/L	0 - 8	0%	– - –	0.00015 - 0.00015	–	0.000012	–
Molybdenum, Total	mg/L	8 - 8	100%	0.00042 - 0.00086	– - –	0.00063	NA	No ESV
Nickel, Total	mg/L	8 - 8	100%	0.00041 - 0.00142	– - –	0.00074	0.08771	no
Potassium, Total	mg/L	8 - 8	100%	1.52 - 1.61	– - –	1.6	NA	No ESV
Selenium, Total	mg/L	3 - 8	38%	0.00034 - 0.00043	0.00033 - 0.00033	0.00038	0.005	no
Silver, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.000012	–
Sodium, Total	mg/L	8 - 8	100%	6.39 - 6.96	– - –	6.64	NA	No ESV
Strontium, Total	mg/L	8 - 8	100%	0.11 - 0.118	– - –	0.115	NA	No ESV
Thallium, Total	mg/L	0 - 8	0%	– - –	0.0005 - 0.0005	–	0.004	–
Vanadium, Total	mg/L	7 - 8	88%	0.00104 - 0.00296	0.001 - 0.001	0.0016	NA	No ESV
Zinc, Total	mg/L	0 - 8	0%	– - –	0.0083 - 0.0083	–	0.05891	–
Dissolved Inorganics								
Aluminum, Dissolved	mg/L	0 - 8	0%	– - –	0.05 - 0.05	–	0.087	–
Antimony, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.16	–
Arsenic, Dissolved	mg/L	8 - 8	100%	0.00049 - 0.00112	– - –	0.00073	0.19	no
Barium, Dissolved	mg/L	8 - 8	100%	0.0332 - 0.0382	– - –	0.036	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00053	–
Boron, Dissolved	mg/L	7 - 8	88%	0.0144 - 0.0197	0.0125 - 0.0125	0.017	0.75	no
Cadmium, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00066	–
Calcium, Dissolved	mg/L	8 - 8	100%	36.9 - 39.4	– - –	38.1	NA	No ESV

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Table 2-64. Surface Water (Epi-Benthic) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics (continued)										
Chromium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.11732	–
Cobalt, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	NA	No ESV
Copper, Dissolved	mg/L	6 - 8	75%	0.00039	0.00104	0.00045	0.00052	0.00071	0.00654	no
Hex. Chromium, Dissolved	mg/L	1 - 1	100%	0.0019	0.0019	–	–	0.002	0.011	no
Iron, Dissolved	mg/L	1 - 8	13%	0.122	0.122	0.025	0.025	0.12	1	no
Lead, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00132	–
Magnesium, Dissolved	mg/L	8 - 8	100%	10.6	11.5	–	–	10.98	NA	No ESV
Manganese, Dissolved	mg/L	8 - 8	100%	0.00719	0.016	–	–	0.011	NA	No ESV
Mercury, Dissolved	mg/L	0 - 8	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	8 - 8	100%	0.00038	0.00097	–	–	0.00067	NA	No ESV
Nickel, Dissolved	mg/L	5 - 8	63%	0.00035	0.00049	0.00033	0.00036	0.0004	0.08771	no
Potassium, Dissolved	mg/L	8 - 8	100%	1.48	1.6	–	–	1.53	NA	No ESV
Selenium, Dissolved	mg/L	2 - 8	25%	0.00035	0.00044	0.00033	0.00033	0.0004	0.005	no
Silver, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Dissolved	mg/L	8 - 8	100%	6.31	6.93	–	–	6.6	NA	No ESV
Strontium, Dissolved	mg/L	8 - 8	100%	0.108	0.117	–	–	0.11	NA	No ESV
Thallium, Dissolved	mg/L	0 - 8	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	2 - 8	25%	0.00102	0.00111	0.001	0.001	0.00107	NA	No ESV
Zinc, Dissolved	mg/L	0 - 8	0%	–	–	0.0083	0.0083	–	0.05891	–
Speciation										
Arsenate, Dissolved	mg/L	2 - 2	100%	0.00045	0.00045	–	–	0.00045	NA	No ESV
Arsenic, Dissolved (from speciation lab)	mg/L	2 - 2	100%	0.00072	0.00089	–	–	0.0008	NA	No ESV
Arsenite, Dissolved	mg/L	2 - 2	100%	0.00011	0.00015	–	–	0.00013	0.19	no
Inorganic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00056	0.0006	–	–	0.00058	NA	No ESV
Inorganic Selenium, Dissolved	mg/L	0 - 2	0%	–	–	0.00029	0.00029	–	NA	No ESV
Organic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00016	0.00029	–	–	0.00023	NA	No ESV
Organic Selenium, Dissolved	mg/L	0 - 2	0%	–	–	0.00039	0.00039	–	NA	No ESV
Selenate, Dissolved	mg/L	2 - 2	100%	0.00016	0.00024	–	–	0.0002	NA	No ESV
Selenite, Dissolved	mg/L	0 - 2	0%	–	–	0.00029	0.00029	–	NA	No ESV
Selenium, Dissolved (from speciation lab)	mg/L	2 - 2	100%	0.0005	0.00053	–	–	0.00051	0.005	no
Radionuclides										
Actinium-228	pCi/L	0 - 2	0%	–	–	13.4	18.5	–	NA	No ESV
Americium-241	pCi/L	0 - 2	0%	–	–	6.3	18.1	–	NA	No ESV
Bismuth-214	pCi/L	0 - 2	0%	–	–	8.81	9.86	–	NA	No ESV
Cesium-137	pCi/L	0 - 2	0%	–	–	3.28	3.7	–	NA	No ESV
Cobalt-60	pCi/L	0 - 2	0%	–	–	3.18	4.03	–	NA	No ESV

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Table 2-64. Surface Water (Epi-Benthic) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)

Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Radionuclides (continued)										
Lead-212	pCi/L	0 - 2	0%	–	–	6.39	7.54	–	NA	No ESV
Lead-214	pCi/L	0 - 2	0%	–	–	8.98	11.9	–	NA	No ESV
Potassium-40	pCi/L	0 - 2	0%	–	–	32.3	51.7	–	NA	No ESV
Radium-226	pCi/L	0 - 2	0%	–	–	0.516	0.577	–	NA	No ESV
Radium-228	pCi/L	0 - 2	0%	–	–	0.524	0.951	–	NA	No ESV
Thallium-208	pCi/L	0 - 2	0%	–	–	3.68	4.63	–	NA	No ESV
Thorium-228	pCi/L	0 - 2	0%	–	–	0.106	0.133	–	NA	No ESV
Thorium-230	pCi/L	0 - 2	0%	–	–	0.0833	0.0964	–	NA	No ESV
Thorium-232	pCi/L	0 - 2	0%	–	–	0.0601	0.0719	–	NA	No ESV
Thorium-234	pCi/L	0 - 2	0%	–	–	75.6	298	–	NA	No ESV
Uranium-234	pCi/L	1 - 2	50%	0.206	0.206	0.248	0.248	0.21	NA	No ESV
Uranium-235	pCi/L	0 - 2	0%	–	–	0.136	0.151	–	NA	No ESV
Uranium-238	pCi/L	1 - 2	50%	0.0915	0.0915	0.122	0.122	0.092	NA	No ESV
Physical Properties										
Dissolved Organic Carbon	mg/L	7 - 8	88%	1.62	1.9	1.88	1.88	1.76	NA	No ESV
Hardness (As CaCO3)	mg/L	8 - 8	100%	137	147	–	–	142	NA	No ESV
Total Dissolved Solids	mg/L	8 - 8	100%	148	186	–	–	163	NA	No ESV
Total Suspended Solids	mg/L	8 - 8	100%	11.3	22.6	–	–	14.7	NA	No ESV

Note: Surface water samples were collected once each week for 8 weeks (8/31/2010 – 10/19/2010).

– = Not detected/ not analyzed/ not applicable

% = Percent.

CRM = Clinch River mile.

mg/L = Milligram per liter.

NA = Not available.

pCi/L = Picocuries per liter.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

For duplicate samples, the highest detect

For constituents analyzed in two methods,

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-65. Surface Water (Epi-Benthic) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations	Detection Limits	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min - Max	Min - Max			
Total Inorganics								
Aluminum, Total	mg/L	7 - 8	88%	0.112 - 0.2	0.182 - 0.182	0.15	0.087	Yes
Antimony, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.16	–
Arsenic, Total	mg/L	8 - 8	100%	0.0006 - 0.00108	– - –	0.00079	0.19	no
Barium, Total	mg/L	8 - 8	100%	0.0351 - 0.04	– - –	0.038	NA	No ESV
Beryllium, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00053	–
Boron, Total	mg/L	8 - 8	100%	0.0131 - 0.0215	– - –	0.016	0.75	no
Cadmium, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00066	–
Calcium, Total	mg/L	8 - 8	100%	36.5 - 39.5	– - –	38.4	NA	No ESV
Chromium, Total	mg/L	1 - 8	13%	0.00049 - 0.00049	0.00033 - 0.00033	0.00049	0.11732	no
Cobalt, Total	mg/L	1 - 8	13%	0.0004 - 0.0004	0.00033 - 0.00033	0.0004	NA	No ESV
Copper, Total	mg/L	8 - 8	100%	0.00071 - 0.00139	– - –	0.00096	0.00654	no
Iron, Total	mg/L	8 - 8	100%	0.103 - 0.201	– - –	0.16	1	no
Lead, Total	mg/L	3 - 8	38%	0.00035 - 0.00038	0.00033 - 0.00033	0.00036	0.00132	no
Magnesium, Total	mg/L	8 - 8	100%	10.8 - 11.8	– - –	11.2	NA	No ESV
Manganese, Total	mg/L	8 - 8	100%	0.0313 - 0.058	– - –	0.045	NA	No ESV
Mercury, Total	mg/L	0 - 8	0%	– - –	0.00015 - 0.00015	–	0.000012	–
Molybdenum, Total	mg/L	8 - 8	100%	0.00036 - 0.00083	– - –	0.00066	NA	No ESV
Nickel, Total	mg/L	7 - 8	88%	0.00047 - 0.00087	0.00033 - 0.00033	0.0006	0.08771	no
Potassium, Total	mg/L	8 - 8	100%	1.5 - 1.63	– - –	1.56	NA	No ESV
Selenium, Total	mg/L	3 - 8	38%	0.00036 - 0.00054	0.00033 - 0.00033	0.00043	0.005	no
Silver, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.000012	–
Sodium, Total	mg/L	8 - 8	100%	6.38 - 7.01	– - –	6.68	NA	No ESV
Strontium, Total	mg/L	8 - 8	100%	0.11 - 0.118	– - –	0.114	NA	No ESV
Thallium, Total	mg/L	0 - 8	0%	– - –	0.0005 - 0.0005	–	0.004	–
Vanadium, Total	mg/L	5 - 8	63%	0.001 - 0.00142	0.001 - 0.001	0.00114	NA	No ESV
Zinc, Total	mg/L	0 - 8	0%	– - –	0.0083 - 0.0083	–	0.05891	–
Dissolved Inorganics								
Aluminum, Dissolved	mg/L	0 - 8	0%	– - –	0.05 - 0.05	–	0.087	–
Antimony, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.16	–
Arsenic, Dissolved	mg/L	8 - 8	100%	0.00041 - 0.00091	– - –	0.00064	0.19	no
Barium, Dissolved	mg/L	8 - 8	100%	0.0334 - 0.037	– - –	0.036	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00053	–
Boron, Dissolved	mg/L	7 - 8	88%	0.0128 - 0.0224	0.0125 - 0.0125	0.017	0.75	no
Cadmium, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00066	–
Calcium, Dissolved	mg/L	8 - 8	100%	36.9 - 38.7	– - –	38.04	NA	No ESV

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Table 2-65. Surface Water (Epi-Benthic) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics (continued)										
Chromium, Dissolved	mg/L	1 - 8	13%	0.00039	0.00039	0.00033	0.00033	0.0004	0.11732	no
Cobalt, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	NA	No ESV
Copper, Dissolved	mg/L	6 - 8	75%	0.00047	0.00085	0.00045	0.00155	0.0006	0.00654	no
Hex. Chromium, Dissolved	mg/L	1 - 1	100%	0.0021	0.0021	–	–	0.0021	0.011	no
Iron, Dissolved	mg/L	1 - 8	13%	0.111	0.111	0.025	0.025	0.11	1	no
Lead, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00132	–
Magnesium, Dissolved	mg/L	8 - 8	100%	10.6	11.3	–	–	10.94	NA	No ESV
Manganese, Dissolved	mg/L	8 - 8	100%	0.0009	0.0117	–	–	0.0062	NA	No ESV
Mercury, Dissolved	mg/L	0 - 8	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	8 - 8	100%	0.00039	0.00093	–	–	0.0007	NA	No ESV
Nickel, Dissolved	mg/L	4 - 8	50%	0.00034	0.00047	0.00033	0.00038	0.00039	0.08771	no
Potassium, Dissolved	mg/L	8 - 8	100%	1.48	1.57	–	–	1.52	NA	No ESV
Selenium, Dissolved	mg/L	2 - 8	25%	0.00036	0.0004	0.00033	0.00033	0.00038	0.005	no
Silver, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Dissolved	mg/L	8 - 8	100%	6.34	6.91	–	–	6.61	NA	No ESV
Strontium, Dissolved	mg/L	8 - 8	100%	0.106	0.116	–	–	0.11	NA	No ESV
Thallium, Dissolved	mg/L	0 - 8	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	0 - 8	0%	–	–	0.001	0.001	–	NA	No ESV
Zinc, Dissolved	mg/L	0 - 8	0%	–	–	0.0083	0.0083	–	0.05891	–
Speciation										
Arsenate, Dissolved	mg/L	2 - 2	100%	0.00038	0.00041	–	–	0.0004	NA	No ESV
Arsenic, Dissolved (from speciation lab)	mg/L	2 - 2	100%	0.00065	0.00081	–	–	0.00073	NA	No ESV
Arsenite, Dissolved	mg/L	2 - 2	100%	8.5E-05	0.00011	–	–	0.0001	0.19	no
Inorganic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00047	0.00052	–	–	0.0005	NA	No ESV
Inorganic Selenium, Dissolved	mg/L	0 - 2	0%	–	–	0.00029	0.00029	–	NA	No ESV
Organic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00018	0.0003	–	–	0.00024	NA	No ESV
Organic Selenium, Dissolved	mg/L	2 - 2	100%	0.0004	0.00043	–	–	0.00042	NA	No ESV
Selenate, Dissolved	mg/L	1 - 2	50%	0.00017	0.00017	0.00016	0.00016	0.00017	NA	No ESV
Selenite, Dissolved	mg/L	0 - 2	0%	–	–	0.00029	0.00029	–	NA	No ESV
Selenium, Dissolved (from speciation lab)	mg/L	2 - 2	100%	0.0004	0.00059	–	–	0.0005	0.005	no
Radionuclides										
Actinium-228	pCi/L	0 - 2	0%	–	–	13.5	13.8	–	NA	No ESV
Americium-241	pCi/L	0 - 2	0%	–	–	23.1	25.3	–	NA	No ESV
Bismuth-214	pCi/L	0 - 2	0%	–	–	12.5	12.8	–	NA	No ESV
Cesium-137	pCi/L	0 - 2	0%	–	–	3.03	3.75	–	NA	No ESV
Cobalt-60	pCi/L	0 - 2	0%	–	–	2.82	3.5	–	NA	No ESV

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Table 2-65. Surface Water (Epi-Benthic) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Radionuclides (continued)										
Lead-212	pCi/L	0 - 2	0%	–	–	8.23	10	–	NA	No ESV
Lead-214	pCi/L	0 - 2	0%	–	–	8.32	10	–	NA	No ESV
Potassium-40	pCi/L	0 - 2	0%	–	–	44.5	51.4	–	NA	No ESV
Radium-226	pCi/L	0 - 2	0%	–	–	0.341	0.477	–	NA	No ESV
Radium-228	pCi/L	0 - 2	0%	–	–	0.676	0.943	–	NA	No ESV
Thallium-208	pCi/L	0 - 2	0%	–	–	4.53	4.97	–	NA	No ESV
Thorium-228	pCi/L	0 - 2	0%	–	–	0.0717	0.138	–	NA	No ESV
Thorium-230	pCi/L	0 - 2	0%	–	–	0.0618	0.0626	–	NA	No ESV
Thorium-232	pCi/L	0 - 2	0%	–	–	0.0385	0.0624	–	NA	No ESV
Thorium-234	pCi/L	0 - 2	0%	–	–	216	238	–	NA	No ESV
Uranium-234	pCi/L	1 - 2	50%	0.159	0.159	0.128	0.128	0.159	NA	No ESV
Uranium-235	pCi/L	0 - 2	0%	–	–	0.165	0.291	–	NA	No ESV
Uranium-238	pCi/L	0 - 2	0%	–	–	0.116	0.236	–	NA	No ESV
Physical Properties										
Dissolved Organic Carbon	mg/L	6 - 8	75%	1.54	2	1.85	2.03	1.76	NA	No ESV
Hardness (As CaCO3)	mg/L	8 - 8	100%	136	147	–	–	142	NA	No ESV
Total Dissolved Solids	mg/L	8 - 8	100%	131	179	–	–	161	NA	No ESV
Total Suspended Solids	mg/L	8 - 8	100%	5.3	12.4	–	–	9.41	NA	No ESV

Note: Surface water samples were collected once each week for 8 weeks (8/31/2010 – 10/19/2010).

– = Not detected/ not analyzed/ not applicable

% = Percent.

CRM = Clinch River mile.

mg/L = Milligram per liter.

NA = Not available.

pCi/L = Picocuries per liter.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

For duplicate samples, the highest detect

For constituents analyzed in two methods,

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-66. Surface Water (Epi-Benthic) Dataset: Tennessee River - Reference (above TRM 568.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations	Detection Limits	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min Max	Min Max			
Total Inorganics								
Aluminum, Total	mg/L	8 - 8	100%	0.13 - 0.315	– - –	0.22	0.087	Yes
Antimony, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.16	–
Arsenic, Total	mg/L	8 - 8	100%	0.00044 - 0.00147	– - –	0.0011	0.19	no
Barium, Total	mg/L	8 - 8	100%	0.026 - 0.0415	– - –	0.038	NA	No ESV
Beryllium, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00053	–
Boron, Total	mg/L	8 - 8	100%	0.0132 - 0.0215	– - –	0.017	0.75	no
Cadmium, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00066	–
Calcium, Total	mg/L	8 - 8	100%	20.2 - 37.5	– - –	33.7	NA	No ESV
Chromium, Total	mg/L	3 - 8	38%	0.00035 - 0.0004	0.00033 - 0.00047	0.00038	0.11732	no
Cobalt, Total	mg/L	2 - 8	25%	0.00038 - 0.00042	0.00033 - 0.00033	0.0004	NA	No ESV
Copper, Total	mg/L	8 - 8	100%	0.00056 - 0.00166	– - –	0.0013	0.00654	no
Iron, Total	mg/L	8 - 8	100%	0.167 - 0.326	– - –	0.237	1	no
Lead, Total	mg/L	6 - 8	75%	0.00034 - 0.00066	0.00033 - 0.00034	0.00048	0.00132	no
Magnesium, Total	mg/L	8 - 8	100%	5.01 - 10.8	– - –	9.57	NA	No ESV
Manganese, Total	mg/L	8 - 8	100%	0.0619 - 0.122	– - –	0.085	NA	No ESV
Mercury, Total	mg/L	0 - 8	0%	– - –	0.00015 - 0.00015	–	0.000012	–
Molybdenum, Total	mg/L	7 - 8	88%	0.00037 - 0.00087	0.00033 - 0.00033	0.00065	NA	No ESV
Nickel, Total	mg/L	7 - 8	88%	0.00045 - 0.00079	0.00033 - 0.00033	0.0006	0.08771	no
Potassium, Total	mg/L	8 - 8	100%	1.55 - 1.7	– - –	1.6	NA	No ESV
Selenium, Total	mg/L	2 - 8	25%	0.00043 - 0.00055	0.00033 - 0.00033	0.0005	0.005	no
Silver, Total	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.000012	–
Sodium, Total	mg/L	8 - 8	100%	6.3 - 8.38	– - –	6.97	NA	No ESV
Strontium, Total	mg/L	8 - 8	100%	0.0746 - 0.117	– - –	0.104	NA	No ESV
Thallium, Total	mg/L	0 - 8	0%	– - –	0.0005 - 0.0005	–	0.004	–
Vanadium, Total	mg/L	6 - 8	75%	0.00119 - 0.00174	0.001 - 0.001	0.0014	NA	No ESV
Zinc, Total	mg/L	0 - 8	0%	– - –	0.0083 - 0.0083	–	0.05891	–
Dissolved Inorganics								
Aluminum, Dissolved	mg/L	0 - 8	0%	– - –	0.05 - 0.05	–	0.087	–
Antimony, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.16	–
Arsenic, Dissolved	mg/L	7 - 8	88%	0.00072 - 0.00113	0.00033 - 0.00033	0.0009	0.19	no
Barium, Dissolved	mg/L	8 - 8	100%	0.023 - 0.0375	– - –	0.033	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00053	–
Boron, Dissolved	mg/L	7 - 8	88%	0.0156 - 0.0219	0.0125 - 0.0125	0.017	0.75	no
Cadmium, Dissolved	mg/L	0 - 8	0%	– - –	0.00033 - 0.00033	–	0.00066	–
Calcium, Dissolved	mg/L	8 - 8	100%	19.7 - 36.7	– - –	33.2	NA	No ESV

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Table 2-66. Surface Water (Epi-Benthic) Dataset: Tennessee River - Reference (above TRM 568.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics (continued)										
Chromium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.11732	–
Cobalt, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	NA	No ESV
Copper, Dissolved	mg/L	6 - 8	75%	0.0006	0.00243	0.00033	0.0005	0.001	0.00654	no
Hex. Chromium, Dissolved	mg/L	1 - 1	100%	0.0016	0.0016	–	–	0.0016	0.011	no
Iron, Dissolved	mg/L	0 - 8	0%	–	–	0.025	0.025	–	1	–
Lead, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00132	–
Magnesium, Dissolved	mg/L	8 - 8	100%	4.84	10.5	–	–	9.355	NA	No ESV
Manganese, Dissolved	mg/L	8 - 8	100%	0.00206	0.0518	–	–	0.017	NA	No ESV
Mercury, Dissolved	mg/L	0 - 8	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	7 - 8	88%	0.00044	0.00096	0.00033	0.00033	0.00066	NA	No ESV
Nickel, Dissolved	mg/L	2 - 8	25%	0.00033	0.00041	0.00033	0.00054	0.0004	0.08771	no
Potassium, Dissolved	mg/L	8 - 8	100%	1.51	1.62	–	–	1.55	NA	No ESV
Selenium, Dissolved	mg/L	2 - 8	25%	0.00039	0.00045	0.00033	0.00033	0.00042	0.005	no
Silver, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Dissolved	mg/L	8 - 8	100%	6.2	8.31	–	–	6.9	NA	No ESV
Strontium, Dissolved	mg/L	8 - 8	100%	0.0735	0.114	–	–	0.1	NA	No ESV
Thallium, Dissolved	mg/L	0 - 8	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	1 - 8	13%	0.00111	0.00111	0.001	0.001	0.0011	NA	No ESV
Zinc, Dissolved	mg/L	0 - 8	0%	–	–	0.0083	0.0083	–	0.05891	–
Speciation										
Arsenate, Dissolved	mg/L	2 - 2	100%	0.00046	0.00064	–	–	0.00055	NA	No ESV
Arsenic, Dissolved (from speciation lab)	mg/L	2 - 2	100%	0.00085	0.0012	–	–	0.001	NA	No ESV
Arsenite, Dissolved	mg/L	2 - 2	100%	0.00011	0.00019	–	–	0.00015	0.19	no
Inorganic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00056	0.00083	–	–	0.0007	NA	No ESV
Inorganic Selenium, Dissolved	mg/L	1 - 2	50%	0.00033	0.00033	0.00029	0.00029	0.00033	NA	No ESV
Organic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00029	0.00038	–	–	0.00033	NA	No ESV
Organic Selenium, Dissolved	mg/L	1 - 2	50%	0.00045	0.00045	0.00039	0.00039	0.00045	NA	No ESV
Selenate, Dissolved	mg/L	1 - 2	50%	0.00033	0.00033	0.00016	0.00016	0.00033	NA	No ESV
Selenite, Dissolved	mg/L	0 - 2	0%	–	–	0.00029	0.00029	–	NA	No ESV
Selenium, Dissolved (from speciation lab)	mg/L	1 - 2	50%	0.00078	0.00078	0.00039	0.00039	0.00078	0.005	no
Radionuclides										
Actinium-228	pCi/L	0 - 3	0%	–	–	11.6	15.5	–	NA	No ESV
Americium-241	pCi/L	0 - 3	0%	–	–	10.4	24.1	–	NA	No ESV
Bismuth-214	pCi/L	0 - 3	0%	–	–	7.52	10.7	–	NA	No ESV
Cesium-137	pCi/L	0 - 3	0%	–	–	2.73	4.09	–	NA	No ESV
Cobalt-60	pCi/L	0 - 3	0%	–	–	2.3	3.86	–	NA	No ESV

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Table 2-66. Surface Water (Epi-Benthic) Dataset: Tennessee River - Reference (above TRM 568.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Radionuclides (continued)										
Lead-212	pCi/L	0 - 3	0%	–	–	5.9	8.54	–	NA	No ESV
Lead-214	pCi/L	0 - 3	0%	–	–	7.06	20.7	–	NA	No ESV
Potassium-40	pCi/L	0 - 3	0%	–	–	37.2	50.4	–	NA	No ESV
Radium-226	pCi/L	0 - 3	0%	–	–	0.464	0.606	–	NA	No ESV
Radium-228	pCi/L	0 - 3	0%	–	–	0.424	0.967	–	NA	No ESV
Thallium-208	pCi/L	0 - 3	0%	–	–	3.24	4.7	–	NA	No ESV
Thorium-228	pCi/L	0 - 3	0%	–	–	0.0728	0.149	–	NA	No ESV
Thorium-230	pCi/L	0 - 3	0%	–	–	0.0726	0.163	–	NA	No ESV
Thorium-232	pCi/L	0 - 3	0%	–	–	0.0528	0.147	–	NA	No ESV
Thorium-234	pCi/L	0 - 3	0%	–	–	119	245	–	NA	No ESV
Uranium-234	pCi/L	2 - 3	67%	0.159	0.297	0.0952	0.0952	0.228	NA	No ESV
Uranium-235	pCi/L	0 - 3	0%	–	–	0.0736	0.158	–	NA	No ESV
Uranium-238	pCi/L	0 - 3	0%	–	–	0.0596	0.214	–	NA	No ESV
Physical Properties										
Dissolved Organic Carbon	mg/L	7 - 8	88%	1.61	2.01	1.82	1.82	1.81	NA	No ESV
Hardness (As CaCO3)	mg/L	8 - 8	100%	71.1	137	–	–	123	NA	No ESV
Total Dissolved Solids	mg/L	8 - 8	100%	93	167	–	–	147	NA	No ESV
Total Suspended Solids	mg/L	8 - 8	100%	8.1	16.3	–	–	12.24	NA	No ESV

Note: Surface water samples were collected once each week for 8 weeks (8/31/2010 – 10/19/2010).

– = Not detected/ not analyzed/ not applicable

% = Percent.

mg/L = Milligram per liter.

NA = Not available.

pCi/L = Picocuries per liter.

TRM = Tennessee River mile.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

For duplicate samples, the highest detect

For constituents analyzed in two methods,

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-67. Surface Water (Epi-Benthic) Dataset: Tennessee River - Reach B (TRM 566.0 to TRM 568.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Total Inorganics										
Aluminum, Total	mg/L	8 - 8	100%	0.139	0.592	–	–	0.3	0.087	Yes
Antimony, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.16	–
Arsenic, Total	mg/L	8 - 8	100%	0.00055	0.00198	–	–	0.0013	0.19	no
Barium, Total	mg/L	8 - 8	100%	0.0312	0.0431	–	–	0.037	NA	No ESV
Beryllium, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Total	mg/L	7 - 8	88%	0.0141	0.018	0.0125	0.0125	0.016	0.75	no
Cadmium, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Total	mg/L	8 - 8	100%	24.5	35.9	–	–	31.04	NA	No ESV
Chromium, Total	mg/L	5 - 8	63%	0.00038	0.00067	0.00033	0.00049	0.00045	0.11732	no
Cobalt, Total	mg/L	4 - 8	50%	0.00033	0.0005	0.00033	0.00033	0.00039	NA	No ESV
Copper, Total	mg/L	8 - 8	100%	0.0006	0.00194	–	–	0.0013	0.00654	no
Iron, Total	mg/L	8 - 8	100%	0.127	0.542	–	–	0.29	1	no
Lead, Total	mg/L	5 - 8	63%	0.00044	0.00083	0.00033	0.0006	0.0006	0.00132	no
Magnesium, Total	mg/L	8 - 8	100%	6.46	10.6	–	–	8.7	NA	No ESV
Manganese, Total	mg/L	8 - 8	100%	0.0631	0.231	–	–	0.128	NA	No ESV
Mercury, Total	mg/L	0 - 8	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Total	mg/L	7 - 8	88%	0.00039	0.00065	0.00033	0.00033	0.00058	NA	No ESV
Nickel, Total	mg/L	8 - 8	100%	0.00034	0.00077	–	–	0.00061	0.08771	no
Potassium, Total	mg/L	8 - 8	100%	1.52	1.66	–	–	1.6	NA	No ESV
Selenium, Total	mg/L	1 - 8	13%	0.00033	0.00033	0.00033	0.00033	0.00033	0.005	no
Silver, Total	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Total	mg/L	8 - 8	100%	6.37	7.92	–	–	7.09	NA	No ESV
Strontium, Total	mg/L	8 - 8	100%	0.0859	0.11	–	–	0.099	NA	No ESV
Thallium, Total	mg/L	0 - 8	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Total	mg/L	6 - 8	75%	0.00135	0.00223	0.001	0.001	0.0017	NA	No ESV
Zinc, Total	mg/L	0 - 8	0%	–	–	0.0083	0.0083	–	0.05891	–
Dissolved Inorganics										
Aluminum, Dissolved	mg/L	0 - 8	0%	–	–	0.05	0.05	–	0.087	–
Antimony, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.16	–
Arsenic, Dissolved	mg/L	8 - 8	100%	0.00059	0.00161	–	–	0.001	0.19	no
Barium, Dissolved	mg/L	8 - 8	100%	0.0274	0.0361	–	–	0.032	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Dissolved	mg/L	8 - 8	100%	0.0137	0.0196	–	–	0.0171	0.75	no
Cadmium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Dissolved	mg/L	8 - 8	100%	24.3	35.2	–	–	30.8	NA	No ESV

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Table 2-67. Surface Water (Epi-Benthic) Dataset: Tennessee River - Reach B (TRM 566.0 to TRM 568.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Dissolved Inorganics (continued)										
Chromium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.11732	–
Cobalt, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	NA	No ESV
Copper, Dissolved	mg/L	6 - 8	75%	0.00038	0.00065	0.00057	0.00073	0.00053	0.00654	no
Hex. Chromium, Dissolved	mg/L	1 - 1	100%	0.0017	0.0017	–	–	0.0017	0.011	no
Iron, Dissolved	mg/L	0 - 8	0%	–	–	0.025	0.025	–	1	–
Lead, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.00132	–
Magnesium, Dissolved	mg/L	8 - 8	100%	6.34	10.2	–	–	8.57	NA	No ESV
Manganese, Dissolved	mg/L	8 - 8	100%	0.00147	0.131	–	–	0.042	NA	No ESV
Mercury, Dissolved	mg/L	0 - 8	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Dissolved	mg/L	8 - 8	100%	0.00039	0.00064	–	–	0.00054	NA	No ESV
Nickel, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00039	–	0.08771	–
Potassium, Dissolved	mg/L	8 - 8	100%	1.48	1.6	–	–	1.54	NA	No ESV
Selenium, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.005	–
Silver, Dissolved	mg/L	0 - 8	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Dissolved	mg/L	8 - 8	100%	6.18	7.7	–	–	7.04	NA	No ESV
Strontium, Dissolved	mg/L	8 - 8	100%	0.0837	0.109	–	–	0.097	NA	No ESV
Thallium, Dissolved	mg/L	0 - 8	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Dissolved	mg/L	0 - 8	0%	–	–	0.001	0.001	–	NA	No ESV
Zinc, Dissolved	mg/L	0 - 8	0%	–	–	0.0083	0.0083	–	0.05891	–
Speciation										
Arsenate, Dissolved	mg/L	2 - 2	100%	0.00037	0.00071	–	–	0.0005	NA	No ESV
Arsenic, Dissolved (from speciation lab)	mg/L	2 - 2	100%	0.00084	0.00106	–	–	0.00095	NA	No ESV
Arsenite, Dissolved	mg/L	2 - 2	100%	0.00013	0.00017	–	–	0.00015	0.19	no
Inorganic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00049	0.00088	–	–	0.00069	NA	No ESV
Inorganic Selenium, Dissolved	mg/L	0 - 2	0%	–	–	0.00029	0.00029	–	NA	No ESV
Organic Arsenic, Dissolved	mg/L	2 - 2	100%	0.00018	0.00034	–	–	0.000261	NA	No ESV
Organic Selenium, Dissolved	mg/L	0 - 2	0%	–	–	0.00039	0.00039	–	NA	No ESV
Selenate, Dissolved	mg/L	0 - 2	0%	–	–	0.00016	0.00016	–	NA	No ESV
Selenite, Dissolved	mg/L	0 - 2	0%	–	–	0.00029	0.00029	–	NA	No ESV
Selenium, Dissolved (from speciation lab)	mg/L	0 - 2	0%	–	–	0.00039	0.00039	–	0.005	–
Radionuclides										
Actinium-228	pCi/L	0 - 2	0%	–	–	10.5	14.1	–	NA	No ESV
Americium-241	pCi/L	0 - 2	0%	–	–	4.28	17.5	–	NA	No ESV
Bismuth-214	pCi/L	0 - 2	0%	–	–	6.19	8.79	–	NA	No ESV
Cesium-137	pCi/L	0 - 2	0%	–	–	3.53	4.27	–	NA	No ESV
Cobalt-60	pCi/L	0 - 2	0%	–	–	3.12	3.79	–	NA	No ESV

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Table 2-67. Surface Water (Epi-Benthic) Dataset: Tennessee River - Reach B (TRM 566.0 to TRM 568.0)

Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Radionuclides (continued)										
Lead-212	pCi/L	0 - 2	0%	–	–	4.79	6.32	–	NA	No ESV
Lead-214	pCi/L	0 - 2	0%	–	–	5.4	8.37	–	NA	No ESV
Potassium-40	pCi/L	0 - 2	0%	–	–	35.6	42.9	–	NA	No ESV
Radium-226	pCi/L	0 - 2	0%	–	–	0.494	0.582	–	NA	No ESV
Radium-228	pCi/L	0 - 2	0%	–	–	0.537	0.992	–	NA	No ESV
Thallium-208	pCi/L	0 - 2	0%	–	–	2.91	3.45	–	NA	No ESV
Thorium-228	pCi/L	0 - 2	0%	–	–	0.0867	0.127	–	NA	No ESV
Thorium-230	pCi/L	0 - 2	0%	–	–	0.0574	0.0616	–	NA	No ESV
Thorium-232	pCi/L	0 - 2	0%	–	–	0.0573	0.0614	–	NA	No ESV
Thorium-234	pCi/L	0 - 2	0%	–	–	61.3	179	–	NA	No ESV
Uranium-234	pCi/L	1 - 2	50%	0.199	0.199	0.252	0.252	0.199	NA	No ESV
Uranium-235	pCi/L	0 - 2	0%	–	–	0.119	0.269	–	NA	No ESV
Uranium-238	pCi/L	0 - 2	0%	–	–	0.0963	0.218	–	NA	No ESV
Physical Properties										
Dissolved Organic Carbon	mg/L	7 - 8	88%	1.68	2.11	1.82	1.82	1.85	NA	No ESV
Hardness (As CaCO3)	mg/L	8 - 8	100%	87.8	133	–	–	113	NA	No ESV
Total Dissolved Solids	mg/L	8 - 8	100%	113	159	–	–	138	NA	No ESV
Total Suspended Solids	mg/L	8 - 8	100%	5.8	21.3	–	–	16.4	NA	No ESV

Note: Surface water samples were collected once each week for 8 weeks (8/31/2010 – 10/19/2010).

– = Not detected/ not analyzed/ not applicable

% = Percent.

mg/L = Milligram per liter.

NA = Not available.

pCi/L = Picocuries per liter.

TRM = Tennessee River mile.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

For duplicate samples, the highest detect

For constituents analyzed in two methods,

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-68. Bulk Surface Water Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Total Inorganics								
Aluminum, Total	mg/L	14 - 16	88%	0.058 - 0.26	0.05 - 0.0849	0.11	0.087	Yes
Antimony, Total	mg/L	0 - 16	0%	– - –	0.00033 - 0.00033	–	0.16	–
Arsenic, Total	mg/L	12 - 16	75%	0.00033 - 0.00082	0.00033 - 0.00033	0.00055	0.19	no
Barium, Total	mg/L	16 - 16	100%	0.0297 - 0.0758	0.01 - 0.01	0.043	NA	No ESV
Beryllium, Total	mg/L	1 - 16	6%	0.00039 - 0.00039	0.00033 - 0.00033	0.00039	0.00053	no
Boron, Total	mg/L	11 - 16	69%	0.0136 - 0.0174	0.0125 - 0.0125	0.0156	0.75	no
Cadmium, Total	mg/L	0 - 16	0%	– - –	0.00033 - 0.00033	–	0.00066	–
Calcium, Total	mg/L	16 - 16	100%	7.86 - 32.8	0.5 - 0.5	15.2	NA	No ESV
Chromium, Total	mg/L	4 - 16	25%	0.00034 - 0.0005	0.00033 - 0.00033	0.00039	0.11732	no
Cobalt, Total	mg/L	8 - 16	50%	0.00034 - 0.00082	0.00033 - 0.00033	0.000515	NA	No ESV
Copper, Total	mg/L	16 - 16	100%	0.00037 - 0.00094	0.00033 - 0.00033	0.00057	0.00654	no
Iron, Total	mg/L	16 - 16	100%	0.091 - 0.442	0.025 - 0.025	0.249	1	no
Lead, Total	mg/L	3 - 16	19%	0.00041 - 0.00046	0.00033 - 0.00033	0.00044	0.00132	no
Magnesium, Total	mg/L	16 - 16	100%	1.6 - 9.09	0.25 - 0.25	4.15	NA	No ESV
Manganese, Total	mg/L	16 - 16	100%	0.0313 - 1.88	0.00033 - 0.00165	0.401	NA	No ESV
Mercury, Total	mg/L	0 - 16	0%	– - –	0.00015 - 0.00015	–	0.000012	–
Molybdenum, Total	mg/L	7 - 16	44%	0.00033 - 0.00067	0.00033 - 0.00033	0.00046	NA	No ESV
Nickel, Total	mg/L	16 - 16	100%	0.00055 - 0.00118	0.00033 - 0.00033	0.00089	0.08771	no
Potassium, Total	mg/L	16 - 16	100%	0.931 - 1.63	0.25 - 0.25	1.32	NA	No ESV
Selenium, Total	mg/L	2 - 16	13%	0.00039 - 0.00059	0.00033 - 0.00033	0.00049	0.005	no
Silver, Total	mg/L	1 - 16	6%	0.00036 - 0.00036	0.00033 - 0.00033	0.00036	0.000012	Yes
Sodium, Total	mg/L	16 - 16	100%	2.06 - 5.48	0.25 - 0.25	3.14	NA	No ESV
Strontium, Total	mg/L	16 - 16	100%	0.0332 - 0.0956	0.0125 - 0.0125	0.048	NA	No ESV
Thallium, Total	mg/L	0 - 16	0%	– - –	0.0005 - 0.0005	–	0.004	–
Vanadium, Total	mg/L	0 - 16	0%	– - –	0.001 - 0.001	–	NA	No ESV
Zinc, Total	mg/L	0 - 16	0%	– - –	0.0083 - 0.0083	–	0.05891	–
Physical Properties								
Dissolved Organic Carbon	mg/L	16 - 16	100%	1.18 - 13.6	1 - 1	3.03	NA	No ESV
Total Suspended Solids	mg/L	16 - 16	100%	2.6 - 11.7	1 - 1.67	6.4	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/L = Milligram per liter.
NA = Not available.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-69. Bulk Surface Water Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max			
Total Inorganics										
Aluminum, Total	mg/L	12 - 14	86%	0.0527	0.335	0.05	0.05	0.12	0.087	Yes
Antimony, Total	mg/L	0 - 14	0%	–	–	0.00033	0.00033	–	0.16	–
Arsenic, Total	mg/L	14 - 14	100%	0.00033	0.00049	0.00033	0.00033	0.00038	0.19	no
Barium, Total	mg/L	14 - 14	100%	0.0314	0.0358	0.01	0.01	0.034	NA	No ESV
Beryllium, Total	mg/L	0 - 14	0%	–	–	0.00033	0.00033	–	0.00053	–
Boron, Total	mg/L	10 - 14	71%	0.0129	0.0415	0.0125	0.0125	0.0197	0.75	no
Cadmium, Total	mg/L	0 - 14	0%	–	–	0.00033	0.00033	–	0.00066	–
Calcium, Total	mg/L	14 - 14	100%	33.2	40	0.5	0.5	37.3	NA	No ESV
Chromium, Total	mg/L	1 - 14	7%	0.00033	0.00033	0.00033	0.00033	0.00033	0.11732	no
Cobalt, Total	mg/L	0 - 14	0%	–	–	0.00033	0.00033	–	NA	No ESV
Copper, Total	mg/L	14 - 14	100%	0.00038	0.00076	0.00033	0.00033	0.00059	0.00654	no
Iron, Total	mg/L	14 - 14	100%	0.0412	0.21	0.025	0.025	0.112	1	no
Lead, Total	mg/L	1 - 14	7%	0.00038	0.00038	0.00033	0.00033	0.00038	0.00132	no
Magnesium, Total	mg/L	14 - 14	100%	9.9	12.2	0.25	0.25	11.29	NA	No ESV
Manganese, Total	mg/L	14 - 14	100%	0.0122	0.0352	0.00033	0.00033	0.024	NA	No ESV
Mercury, Total	mg/L	0 - 14	0%	–	–	0.00015	0.00015	–	0.000012	–
Molybdenum, Total	mg/L	12 - 14	86%	0.00033	0.00136	0.00033	0.00033	0.00050	NA	No ESV
Nickel, Total	mg/L	13 - 14	93%	0.00036	0.00553	0.00033	0.00033	0.00082	0.08771	no
Potassium, Total	mg/L	14 - 14	100%	1.49	2.77	0.25	0.25	1.82	NA	No ESV
Selenium, Total	mg/L	0 - 14	0%	–	–	0.00033	0.00033	–	0.005	–
Silver, Total	mg/L	0 - 14	0%	–	–	0.00033	0.00033	–	0.000012	–
Sodium, Total	mg/L	14 - 14	100%	6.27	8.65	0.25	0.25	7.52	NA	No ESV
Strontium, Total	mg/L	14 - 14	100%	0.0913	0.121	0.0125	0.0125	0.108	NA	No ESV
Thallium, Total	mg/L	0 - 14	0%	–	–	0.0005	0.0005	–	0.004	–
Vanadium, Total	mg/L	0 - 14	0%	–	–	0.001	0.001	–	NA	No ESV
Zinc, Total	mg/L	0 - 14	0%	–	–	0.0083	0.0083	–	0.05891	–
Physical Properties										
Dissolved Organic Carbon	mg/L	14 - 14	100%	1.64	2.17	1	1	1.83	NA	No ESV
Total Suspended Solids	mg/L	14 - 14	100%	1.3	18.8	1	1	5.1	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/L = Milligram per liter.
NA = Not available.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-70. Permanent Groundwater Well Dataset: Well 6AR
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Total Inorganics										
Aluminum, Total	mg/L	2 - 2	100%	9.54	12.879	–	–	0.212	0.087	Yes
Antimony, Total	mg/L	0 - 2	0%	–	–	0.01782	0.01782	–	0.16	–
Arsenic, Total	mg/L	0 - 2	0%	–	–	0.01815	0.01815	–	0.19	–
Barium, Total	mg/L	2 - 2	100%	1.4672	1.54	–	–	0.0269	NA	No ESV
Beryllium, Total	mg/L	3 - 3	100%	0.01938	0.03363	–	–	0.00045	0.00053	Yes
Boron, Total	mg/L	2 - 2	100%	37.294	38.512	–	–	0.654	0.75	Yes
Cadmium, Total	mg/L	3 - 3	100%	0.12508	0.1416	–	–	0.00224	0.00066	Yes
Calcium, Total	mg/L	2 - 2	100%	2850	2850	–	–	47.5	NA	No ESV
Chromium, Total	mg/L	0 - 2	0%	–	–	0.02013	0.0305	–	0.11732	–
Cobalt, Total	mg/L	3 - 3	100%	5.704	6.572	–	–	0.101	NA	No ESV
Copper, Total	mg/L	0 - 2	0	–	–	0.02079	0.02079	–	0.00654	–
Iron, Total	mg/L	2 - 2	100%	24.576	36.8	–	–	0.48	1	Yes
Lead, Total	mg/L	0 - 2	0	–	–	0.02145	0.02145	–	0.00132	–
Magnesium, Total	mg/L	2 - 2	100%	858	930.6	–	–	13.6	NA	No ESV
Manganese, Total	mg/L	2 - 2	100%	2157.4	2224.4	–	–	32.7	NA	No ESV
Mercury, Total	mg/L	0 - 2	0%	–	–	0.0102	0.0136	–	0.000012	–
Molybdenum, Total	mg/L	0 - 2	0%	–	–	0.02277	0.02277	–	NA	No ESV
Nickel, Total	mg/L	3 - 3	100%	2.744	3.101	–	–	0.0424	0.08771	Yes
Potassium, Total	mg/L	2 - 2	100%	52.824	64.326	–	–	0.825	NA	No ESV
Selenium, Total	mg/L	0 - 2	0%	–	–	0.02376	0.02376	–	0.005	–
Silver, Total	mg/L	0 - 2	0%	–	–	0.02409	0.02409	–	0.000012	–
Sodium, Total	mg/L	2 - 2	100%	500.24	551.3	–	–	7.11	NA	No ESV
Strontium, Total	mg/L	2 - 2	100%	8.775	9.6	–	–	0.123	NA	No ESV
Sulfate	mg/L	2 - 2	100%	16340	19228	–	–	234	NA	No ESV
Thallium, Total	mg/L	0 - 2	0%	–	–	0.0385	0.0385	–	0.004	–
Vanadium, Total	mg/L	0 - 2	0%	–	–	0.078	0.078	–	NA	No ESV
Zinc, Total	mg/L	2 - 2	100%	2.5833	2.9862	–	–	0.0353	0.05891	Yes
Dissolved Inorganics										
Aluminum, Dissolved	mg/L	2 - 2	100%	0.114	0.144	–	–	0.129	0.087	Yes
Antimony, Dissolved	mg/L	0 - 2	0%	–	–	0.00066	0.00066	–	0.16	–
Arsenic, Dissolved	mg/L	0 - 2	0%	–	–	0.00099	0.00099	–	0.19	–
Barium, Dissolved	mg/L	2 - 2	100%	0.102	0.108	–	–	0.0263	NA	No ESV
Beryllium, Dissolved	mg/L	2 - 2	100%	0.0028	0.0033	–	–	0.00061	0.00053	Yes
Boron, Dissolved	mg/L	2 - 2	100%	3.912	4.11	–	–	0.669	0.75	Yes

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Table 2-70. Permanent Groundwater Well Dataset: Well 6AR
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Dissolved Inorganics (continued)										
Cadmium, Dissolved	mg/L	2 - 2	100%	0.01533	0.01659	–	–	0.00228	0.00066	Yes
Calcium, Dissolved	mg/L	2 - 2	100%	382.4	383.2	–	–	47.9	NA	No ESV
Chromium, Dissolved	mg/L	0 - 2	0%	–	–	0.00297	0.0045	–	0.11732	–
Cobalt, Dissolved	mg/L	2 - 2	100%	0.939	1.05	–	–	0.0995	NA	No ESV
Copper, Dissolved	mg/L	0 - 2	0%	–	–	0.00363	0.00363	–	0.00654	–
Iron, Dissolved	mg/L	2 - 2	100%	3.66	5.688	–	–	0.39	1	Yes
Lead, Dissolved	mg/L	0 - 2	0%	–	–	0.00429	0.00429	–	0.00132	–
Magnesium, Dissolved	mg/L	2 - 2	100%	183.4	198.8	–	–	13.7	NA	No ESV
Manganese, Dissolved	mg/L	2 - 2	100%	466.5	513	–	–	32.7	NA	No ESV
Mercury, Dissolved	mg/L	0 - 2	0%	–	–	0.0024	0.0032	–	0.000012	–
Molybdenum, Dissolved	mg/L	0 - 2	0%	–	–	0.00561	0.00561	–	NA	No ESV
Nickel, Dissolved	mg/L	2 - 2	100%	0.7146	0.7884	–	–	0.0418	0.08771	Yes
Potassium, Dissolved	mg/L	2 - 2	100%	14.497	15.504	–	–	0.79	NA	No ESV
Selenium, Dissolved	mg/L	0 - 2	0%	–	–	0.0066	0.0066	–	0.005	–
Silver, Dissolved	mg/L	0 - 2	0%	–	–	0.00693	0.00693	–	0.000012	–
Sodium, Dissolved	mg/L	2 - 2	100%	148.94	168.08	–	–	7.21	NA	No ESV
Strontium, Dissolved	mg/L	2 - 2	100%	2.76	3.036	–	–	0.126	NA	No ESV
Thallium, Dissolved	mg/L	0 - 2	0%	–	–	0.012	0.012	–	0.004	–
Vanadium, Dissolved	mg/L	0 - 2	0%	–	–	0.025	0.025	–	NA	No ESV
Zinc, Dissolved	mg/L	2 - 2	100%	0.8658	0.9724	–	–	0.0354	0.05891	Yes
Radionuclides										
Actinium-228	mg/L	0 - 1	0%	–	–	486.5	486.5	–	NA	No ESV
Americium-241	mg/L	0 - 1	0%	–	–	810	810	–	NA	No ESV
Bismuth-214	mg/L	1 - 1	100%	1502.2	1502.2	–	–	40.6	NA	No ESV
Cesium-137	mg/L	0 - 1	0%	–	–	143.64	143.64	–	NA	No ESV
Cobalt-60	mg/L	0 - 1	0%	–	–	157.17	157.17	–	NA	No ESV
Lead-212	mg/L	0 - 1	0%	–	–	303.6	303.6	–	NA	No ESV
Lead-214	mg/L	1 - 1	100%	1865.5	1865.5	–	–	45.5	NA	No ESV
Potassium-40	mg/L	0 - 1	0%	–	–	1726.2	1726.2	–	NA	No ESV
Radium-226	mg/L	0 - 1	0%	–	–	20.124	20.124	–	NA	No ESV
Radium-228	mg/L	0 - 1	0%	–	–	62.04	62.04	–	NA	No ESV
Thallium-208	mg/L	0 - 1	0%	–	–	187.65	187.65	–	NA	No ESV

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Table 2-70. Permanent Groundwater Well Dataset: Well 6AR
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Radionuclides (continued)										
Thorium-228	mg/L	0 - 1	0%	–	–	3.7306	3.7306	–	NA	No ESV
Thorium-230	mg/L	0 - 1	0%	–	–	3.7788	3.7788	–	NA	No ESV
Thorium-232	mg/L	0 - 1	0%	–	–	2.6352	2.6352	–	NA	No ESV
Thorium-234	mg/L	0 - 1	0%	–	–	10143	10143	–	NA	No ESV
Uranium-234	mg/L	0 - 1	0%	–	–	8.55	8.55	–	NA	No ESV
Uranium-235	mg/L	0 - 1	0%	–	–	7.395	7.395	–	NA	No ESV
Uranium-238	mg/L	0 - 1	0%	–	–	3.3124	3.3124	–	NA	No ESV
Physical Properties										
Ammonia, as N	mg/L	2 - 2	100%	11.529	15.255	–	–	0.496	NA	No ESV
Chloride	mg/L	2 - 2	100%	127.68	138.6	–	–	4.76	NA	No ESV
Fluoride	mg/L	2 - 2	100%	4.089	7.047	–	–	0.192	NA	No ESV
Nitrate-Nitrite Nitrogen	mg/L	0 - 2	0%	–	–	3	3	–	NA	No ESV
Total Dissolved Solids	mg/L	2 - 2	100%	11005	11470	–	–	363	NA	No ESV
Total Inorganic Carbon	mg/L	2 - 2	100%	1728	2326.4	–	–	63.4	NA	No ESV
Total Kjeldahl Nitrogen	mg/L	2 - 2	100%	21.615	24.222	–	–	0.695	NA	No ESV
Total Suspended Solids	mg/L	2 - 2	100%	105.4	149.6	–	–	3.75	NA	No ESV

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/L = Milligram per liter.
NA = Not available.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using detected concentrations only.
[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-71. Permanent Groundwater Well Dataset: Well 22
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min		Max	Detection Limits Min		Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Total Inorganics												
Aluminum, Total	mg/L	2 - 2	100%	11.713	-	13.356	–	-	–	0.237	0.087	Yes
Antimony, Total	mg/L	0 - 2	0%	–	-	–	0.01782	-	0.01782	–	0.16	–
Arsenic, Total	mg/L	0 - 2	0%	–	-	–	0.01815	-	0.01815	–	0.19	–
Barium, Total	mg/L	2 - 2	100%	1.708	-	1.9712	–	-	–	0.0329	NA	No ESV
Beryllium, Total	mg/L	0 - 2	0%	–	-	–	0.01881	-	0.01881	–	0.00053	–
Boron, Total	mg/L	2 - 2	100%	58	-	65.54	–	-	–	1.07	0.75	Yes
Cadmium, Total	mg/L	0 - 2	0%	–	-	–	0.01947	-	0.01947	–	0.00066	–
Calcium, Total	mg/L	2 - 2	100%	2298	-	2376	–	-	–	39	NA	No ESV
Chromium, Total	mg/L	1 - 2	50%	0.02623	-	0.02623	0.02013	-	0.02013	0.00043	0.11732	no
Cobalt, Total	mg/L	2 - 2	100%	0.07688	-	0.10664	–	-	–	0.00148	NA	No ESV
Copper, Total	mg/L	2 - 2	100%	0.02079	-	0.02331	–	-	–	0.00035	0.00654	Yes
Iron, Total	mg/L	2 - 2	100%	16.512	-	28.416	–	-	–	0.351	1	Yes
Lead, Total	mg/L	0 - 2	0%	–	-	–	0.02145	-	0.02145	–	0.00132	–
Magnesium, Total	mg/L	2 - 2	100%	726	-	778.8	–	-	–	11.4	NA	No ESV
Manganese, Total	mg/L	2 - 2	100%	131.32	-	136.01	–	-	–	2	NA	No ESV
Mercury, Total	mg/L	0 - 2	0%	–	-	–	0.0136	-	0.0136	–	0.000012	–
Molybdenum, Total	mg/L	0 - 1	0%	–	-	–	0.02277	-	0.02277	–	NA	No ESV
Nickel, Total	mg/L	2 - 2	100%	0.0798	-	0.0945	–	-	–	0.00125	0.08771	Yes
Potassium, Total	mg/L	2 - 2	100%	198.09	-	208.74	–	-	–	2.87	NA	No ESV
Selenium, Total	mg/L	0 - 2	0%	–	-	–	0.02376	-	0.02376	–	0.005	–
Silver, Total	mg/L	0 - 2	0%	–	-	–	0.02409	-	0.02409	–	0.000012	–
Sodium, Total	mg/L	2 - 2	100%	631.96	-	686.72	–	-	–	8.91	NA	No ESV
Strontium, Total	mg/L	2 - 2	100%	38.325	-	43.5	–	-	–	0.546	NA	No ESV
Sulfate	mg/L	2 - 2	100%	7980	-	8892	–	-	–	111	NA	No ESV
Thallium, Total	mg/L	0 - 2	0%	–	-	–	0.0385	-	0.0385	–	0.004	–
Vanadium, Total	mg/L	0 - 2	0%	–	-	–	0.078	-	0.078	–	NA	No ESV
Zinc, Total	mg/L	0 - 2	0%	–	-	–	0.6557	-	0.6557	–	0.05891	–
Dissolved Inorganics												
Aluminum, Dissolved	mg/L	0 - 2	0%	–	-	–	0.05	-	0.05	–	0.087	–
Antimony, Dissolved	mg/L	0 - 2	0%	–	-	–	0.00066	-	0.00066	–	0.16	–
Arsenic, Dissolved	mg/L	1 - 2	50%	0.00216	-	0.00216	0.00099	-	0.00099	0.00072	0.19	no
Barium, Dissolved	mg/L	2 - 2	100%	0.1136	-	0.1244	–	-	–	0.0298	NA	No ESV
Beryllium, Dissolved	mg/L	0 - 2	0%	–	-	–	0.00165	-	0.00165	–	0.00053	–
Boron, Dissolved	mg/L	2 - 2	100%	6.18	-	6.96	–	-	–	1.1	0.75	Yes

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Table 2-71. Permanent Groundwater Well Dataset: Well 22
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Max	Detection Limits Min	Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Dissolved Inorganics (continued)										
Cadmium, Dissolved	mg/L	0 - 2	0%	–	–	0.00231	0.00231	–	0.00066	–
Calcium, Dissolved	mg/L	2 - 2	100%	312	321.6	–	–	39.6	NA	No ESV
Chromium, Dissolved	mg/L	0 - 2	0%	–	–	0.00297	0.0045	–	0.11732	–
Cobalt, Dissolved	mg/L	2 - 2	100%	0.0092	0.0132	–	–	0.00112	NA	No ESV
Copper, Dissolved	mg/L	0 - 2	0%	–	–	0.00363	0.00363	–	0.00654	–
Iron, Dissolved	mg/L	2 - 2	100%	0.4752	0.612	–	–	0.0453	1	no
Lead, Dissolved	mg/L	0 - 2	0%	–	–	0.00429	0.00429	–	0.00132	–
Magnesium, Dissolved	mg/L	2 - 2	100%	152.6	166.6	–	–	11.4	NA	No ESV
Manganese, Dissolved	mg/L	2 - 2	100%	27.6	30.6	–	–	1.94	NA	No ESV
Mercury, Dissolved	mg/L	0 - 2	0%	–	–	0.0032	0.0032	–	0.000012	–
Molybdenum, Dissolved	mg/L	0 - 1	0%	–	–	0.00561	0.00561	–	NA	No ESV
Nickel, Dissolved	mg/L	2 - 2	100%	0.01566	0.0189	–	–	0.00096	0.08771	no
Potassium, Dissolved	mg/L	2 - 2	100%	52.82	56.62	–	–	2.88	NA	No ESV
Selenium, Dissolved	mg/L	0 - 2	0%	–	–	0.0066	0.0066	–	0.005	–
Silver, Dissolved	mg/L	0 - 2	0%	–	–	0.00693	0.00693	–	0.000012	–
Sodium, Dissolved	mg/L	2 - 2	100%	186.78	210.98	–	–	9.04	NA	No ESV
Strontium, Dissolved	mg/L	2 - 2	100%	12.144	13.915	–	–	0.567	NA	No ESV
Thallium, Dissolved	mg/L	1 - 2	50%	0.01392	0.01392	0.012	0.012	0.00058	0.004	Yes
Vanadium, Dissolved	mg/L	0 - 2	0%	–	–	0.025	0.025	–	NA	No ESV
Zinc, Dissolved	mg/L	0 - 2	0%	–	–	0.2158	0.2158	–	0.05891	–
Radionuclides										
Actinium-228	mg/L	0 - 1	0%	–	–	605.5	605.5	–	NA	No ESV
Americium-241	mg/L	0 - 1	0%	–	–	1148.4	1148.4	–	NA	No ESV
Bismuth-214	mg/L	1 - 1	100%	1709.4	1709.4	–	–	46.2	NA	No ESV
Cesium-137	mg/L	0 - 1	0%	–	–	133.38	133.38	–	NA	No ESV
Cobalt-60	mg/L	0 - 1	0%	–	–	156.39	156.39	–	NA	No ESV
Lead-212	mg/L	0 - 1	0%	–	–	318	318	–	NA	No ESV
Lead-214	mg/L	1 - 1	100%	2607.6	2607.6	–	–	63.6	NA	No ESV
Potassium-40	mg/L	0 - 1	0%	–	–	2272.2	2272.2	–	NA	No ESV
Radium-226	mg/L	0 - 1	0%	–	–	25.112	25.112	–	NA	No ESV
Radium-228	mg/L	1 - 1	100%	37.092	37.092	–	–	0.843	NA	No ESV
Thallium-208	mg/L	0 - 1	0%	–	–	190.8	190.8	–	NA	No ESV
Thorium-228	mg/L	0 - 1	0%	–	–	2.2724	2.2724	–	NA	No ESV
Thorium-230	mg/L	0 - 1	0%	–	–	3.4075	3.4075	–	NA	No ESV

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Table 2-71. Permanent Groundwater Well Dataset: Well 22
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min		Max	Detection Limits Min		Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
Radionuclides (continued)												
Thorium-232	mg/L	0 - 1	0%	–	-	–	2.3568	-	2.3568	–	NA	No ESV
Thorium-234	mg/L	0 - 1	0%	–	-	–	12691	-	12691	–	NA	No ESV
Uranium-234	mg/L	0 - 1	0%	–	-	–	2.825	-	2.825	–	NA	No ESV
Uranium-235	mg/L	0 - 1	0%	–	-	–	6.579	-	6.579	–	NA	No ESV
Uranium-238	mg/L	0 - 1	0%	–	-	–	5.408	-	5.408	–	NA	No ESV
Physical Properties												
Ammonia, as N	mg/L	2 - 2	100%	28.62	-	29.16	–	-	–	1.07	NA	No ESV
Chloride	mg/L	2 - 2	100%	201.32	-	209.16	–	-	–	7.33	NA	No ESV
Fluoride	mg/L	0 - 2	0%	–	-	–	2.9	-	2.9	–	NA	No ESV
Nitrate-Nitrite Nitrogen	mg/L	0 - 2	0%	–	-	–	3	-	3	–	NA	No ESV
Total Dissolved Solids	mg/L	2 - 2	100%	6355	-	6665	–	-	–	210	NA	No ESV
Total Inorganic Carbon	mg/L	2 - 2	100%	572.8	-	633.6	–	-	–	18.9	NA	No ESV
Total Kjeldahl Nitrogen	mg/L	2 - 2	100%	36.96	-	41.91	–	-	–	1.2	NA	No ESV
Total Suspended Solids	mg/L	2 - 2	100%	255	-	476	–	-	–	10.8	NA	No ESV

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/L = Milligram per liter.

NA = Not available.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using detected concentrations only.

[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-72. Groundwater Modeling Dataset: Emory River
Tennessee Valley Authority Kingston, Tennessee

Constituent	Ash Kd (L/kg)	Segment Mass Flux (gram/d)	Detected Concentrations (µg/L dw) [a] Min	Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
30-Year							
Arsenic	61.6	0.026	0.31 -	0.81	0.45	190	No
Arsenic	100	0.026	0.31 -	0.81	0.45	190	No
Arsenic	180	0.026	0.31 -	0.81	0.45	190	No
Selenium	21	0.019	0.15 -	0.70	0.33	5	No
Selenium	250	0.019	0.15 -	0.65	0.33	5	No
Radium-226	3370	4.87E-08	6.42E-07 -	9.31E-07	8.95E-07	NA	No ESV
100-Year							
Arsenic	61.6	0.026	0.22 -	1.27	0.45	190	No
Arsenic	100	0.025	0.22 -	0.92	0.45	190	No
Arsenic	180	0.025	0.22 -	0.82	0.45	190	No
Selenium	21	0.020	0.08 -	0.96	0.34	5	No
Selenium	250	0.019	0.08 -	0.67	0.33	5	No
Radium-226	3370	4.45E-08	4.52E-07 -	8.85E-07	8.53E-07	NA	No ESV

d = Day.
Kd = Partition coefficient.
L/kg = Liters per kilogram.
µg/L dw = Micrograms per liter dry weight.
NA = Not available.
[a] All results are predictions from groundwater modeling (Geosyntec et al. 2011)
[b] Mean concentration calculated using predicted concentrations only.
[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-73. Groundwater Modeling Dataset: Intake Channel
Tennessee Valley Authority Kingston, Tennessee

Constituent	Ash Kd (L/kg)	Segment Mass Flux (gram/d)	Detected Concentrations (µg/L dw) [a] Min	Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
30-Year							
Arsenic	61.6	0.099	0.40	31.01	0.96	190	No
Arsenic	100	0.099	0.40	31.00	0.96	190	No
Arsenic	180	0.099	0.40	30.99	0.96	190	No
Selenium	21	0.015	0.21	1.07	0.35	5	No
Selenium	250	0.015	0.20	1.05	0.35	5	No
Radium-226	3370	3.16E-08	8.14E-07	9.25E-07	8.95E-07	NA	No ESV
100-Year							
Arsenic	61.6	0.105	0.30	31.43	0.97	190	No
Arsenic	100	0.105	0.30	31.43	0.97	190	No
Arsenic	180	0.105	0.29	31.43	0.97	190	No
Selenium	21	0.015	0.11	1.02	0.35	5	No
Selenium	250	0.015	0.11	1.07	0.35	5	No
Radium-226	3370	2.90E-08	6.05E-07	8.75E-07	8.50E-07	NA	No ESV

d = Day.

Kd = Partition coefficient.

L/kg = Liters per kilogram.

µg/L dw = Micrograms per liter dry weight.

NA = Not available.

[a] All results are predictions from groundwater modeling (Geosyntec et al. 2011)

[b] Mean concentration calculated using predicted concentrations only.

[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-74. Groundwater Modeling Dataset: Swan Pond

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Ash Kd (L/kg)	Segment Mass Flux (gram/d)	Detected Concentrations (µg/L dw) [a] Min	Max	Mean Detected Concentration [b]	Ecological Screening Value [c]	Does Max Concentration Exceed ESV (Yes/No)
30-Year							
Arsenic	61.6	0.028	0.37 -	2.10	0.45	190	No
Arsenic	100	0.028	0.37 -	2.06	0.45	190	No
Arsenic	180	0.028	0.37 -	2.04	0.45	190	No
Selenium	21	0.018	0.26 -	0.33	0.33	5	No
Selenium	250	0.018	0.29 -	0.33	0.33	5	No
Radium-226	3370	4.78E-08	7.11E-07 -	8.97E-07	8.94E-07	NA	No ESV
100-year							
Arsenic	61.6	0.072	0.38 -	13.49	0.52	190	No
Arsenic	100	0.072	0.38 -	13.47	0.52	190	No
Arsenic	180	0.071	0.38 -	13.41	0.52	190	No
Selenium	21	0.017	0.26 -	0.39	0.33	5	No
Selenium	250	0.018	0.27 -	0.33	0.33	5	No
Radium-226	3370	4.42E-08	6.27E-07 -	8.61E-07	8.52E-07	NA	No ESV

d = Day.

Kd = Partition coefficient.

L/kg = Liters per kilogram.

µg/L dw = Micrograms per liter dry weight.

NA = Not available.

[a] All results are predictions from groundwater modeling (Geosyntec et al. 2011)

[b] Mean concentration calculated using predicted concentrations only.

[c] U.S. Environmental Protection Agency Ecological Screening Value (ESV) for Surface Water (2001).

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Table 2-75. Largemouth Bass Fillet (2010) Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 24	0%	–	–	16.06	37	19.4
Antimony	mg/kg dw	0 - 24	0%	–	–	0.05963	0.077	0.0675
Arsenic	mg/kg dw	24 - 24	100%	0.069	0.9859	–	–	0.486
Barium	mg/kg dw	3 - 24	13%	0.057	0.23	0.1835	0.24	0.208
Beryllium	mg/kg dw	0 - 24	0%	–	–	0.1193	0.55	0.174
Boron	mg/kg dw	0 - 24	0%	–	–	1.651	3.8	2.02
Cadmium	mg/kg dw	0 - 24	0%	–	–	0.03028	0.04	0.0354
Chromium	mg/kg dw	0 - 24	0%	–	–	0.5046	1.2	0.619
Cobalt	mg/kg dw	0 - 24	0%	–	–	0.05505	0.13	0.0681
Copper	mg/kg dw	24 - 24	100%	0.2	3	–	–	1.33
Lead	mg/kg dw	2 - 24	8%	0.093	0.15	0.11	0.15	0.128
Manganese	mg/kg dw	6 - 24	25%	0.19	1	0.6881	1.6	0.776
Mercury	mg/kg dw	24 - 24	100%	0.089	1.1	–	–	0.536
Molybdenum	mg/kg dw	0 - 24	0%	–	–	0.14	0.19	0.165
Nickel	mg/kg dw	2 - 24	8%	0.22	2.8	0.3899	0.9	0.56
Selenium	mg/kg dw	24 - 24	100%	0.45	3.099	–	–	1.84
Silver	mg/kg dw	0 - 24	0%	–	–	0.01147	0.046	0.0159
Strontium	mg/kg dw	23 - 24	96%	0.044	2.7	0.19	0.19	0.711
Thallium	mg/kg dw	0 - 24	0%	–	–	0.05505	0.073	0.0647
Vanadium	mg/kg dw	0 - 24	0%	–	–	0.1835	0.83	0.267
Zinc	mg/kg dw	24 - 24	100%	7.6	68.35	–	–	36.3
Inorganic-cations/anions								
Calcium	mg/kg dw	24 - 24	100%	424	4250	–	–	1463
Iron	mg/kg dw	0 - 24	0%	–	–	48.17	111	58.4
Magnesium	mg/kg dw	24 - 24	100%	1240	1574	–	–	1387
Potassium	mg/kg dw	24 - 24	100%	16468	21200	–	–	19200
Sodium	mg/kg dw	24 - 24	100%	1404	2200	–	–	1787
Polychlorinated Biphenyls (PCBs)								
PCB-1016	mg/kg dw	0 - 3	0%	–	–	0.2315	0.2577	0.242
PCB-1221	mg/kg dw	0 - 3	0%	–	–	0.2315	0.2577	0.242
PCB-1232	mg/kg dw	0 - 3	0%	–	–	0.2315	0.2577	0.242
PCB-1242	mg/kg dw	0 - 3	0%	–	–	0.2315	0.2577	0.242

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Table 2-75. Largemouth Bass Fillet (2010) Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Polychlorinated Biphenyls (PCBs) (continued)								
PCB-1248	mg/kg dw	0 - 3	0%	–	–	0.2315	0.2577	0.242
PCB-1254	mg/kg dw	0 - 3	0%	–	–	0.2315	0.2577	0.242
PCB-1260	mg/kg dw	3 - 3	100%	0.2891	0.5412	–	–	0.427
Total PCBs	mg/kg dw	3 - 3	100%	1.7111	2.0874	–	–	1.88
Pesticides								
Aldrin	mg/kg dw	0 - 3	0%	–	–	0.01157	0.01289	0.0121
alpha-Chlordane	mg/kg dw	0 - 3	0%	–	–	0.01157	0.01289	0.0121
gamma-Chlordane	mg/kg dw	0 - 3	0%	–	–	0.01157	0.01289	0.0121
4,4'-DDD	mg/kg dw	0 - 3	0%	–	–	0.02315	0.02577	0.0242
4,4'-DDE	mg/kg dw	0 - 3	0%	–	–	0.02315	0.02577	0.0242
4,4'-DDT	mg/kg dw	0 - 3	0%	–	–	0.02315	0.02577	0.0242
alpha-BHC	mg/kg dw	0 - 3	0%	–	–	0.01157	0.01289	0.0121
beta-BHC	mg/kg dw	0 - 3	0%	–	–	0.01157	0.01289	0.0121
delta-BHC	mg/kg dw	0 - 3	0%	–	–	0.01157	0.01289	0.0121
gamma-BHC (Lindane)	mg/kg dw	0 - 3	0%	–	–	0.01157	0.01289	0.0121
Dieldrin	mg/kg dw	0 - 3	0%	–	–	0.02315	0.02577	0.0242
Endosulfan I	mg/kg dw	0 - 3	0%	–	–	0.01157	0.01289	0.0121
Endosulfan II	mg/kg dw	0 - 3	0%	–	–	0.02315	0.02577	0.0242
Endosulfan Sulfate	mg/kg dw	0 - 3	0%	–	–	0.02315	0.02577	0.0242
Endrin	mg/kg dw	0 - 3	0%	–	–	0.02315	0.02577	0.0242
Endrin aldehyde	mg/kg dw	0 - 3	0%	–	–	0.02315	0.02577	0.0242
Endrin Ketone	mg/kg dw	0 - 3	0%	–	–	0.02315	0.02577	0.0242
Heptachlor	mg/kg dw	0 - 3	0%	–	–	0.01157	0.01289	0.0121
Heptachlor Epoxide	mg/kg dw	0 - 3	0%	–	–	0.01157	0.01289	0.0121
Methoxychlor	mg/kg dw	0 - 3	0%	–	–	0.1157	0.1289	0.121
Toxaphene	mg/kg dw	0 - 3	0%	–	–	0.3472	0.3866	0.363
Total DDx	mg/kg dw	0 - 3	0%	–	–	0.06945	0.07731	0.0726
Total Chlordane	mg/kg dw	0 - 3	0%	–	–	0.02314	0.02578	0.0242
Speciation								
Arsenic	mg/kg dw	3 - 3	100%	0.7238	0.9905	–	–	0.881
Organic Arsenic	mg/kg dw	3 - 3	100%	0.7238	0.9905	–	–	0.881

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Table 2-75. Largemouth Bass Fillet (2010) Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Radionuclides								
Actinium-228	pCi/g dw	0 - 1	0%	–	–	0.451	0.451	0.451
Americium-241	pCi/g dw	0 - 1	0%	–	–	0.397	0.397	0.397
Bismuth-214	pCi/g dw	0 - 1	0%	–	–	0.259	0.259	0.259
Cesium-137	pCi/g dw	0 - 1	0%	–	–	0.0975	0.0975	0.0975
Cobalt-60	pCi/g dw	0 - 1	0%	–	–	0.143	0.143	0.143
Lead-212	pCi/g dw	0 - 1	0%	–	–	0.16	0.16	0.16
Lead-214	pCi/g dw	0 - 1	0%	–	–	0.221	0.221	0.221
Potassium-40	pCi/g dw	1 - 1	100%	15.7	15.7	–	–	15.7
Radium-226	pCi/g dw	1 - 1	100%	0.449	0.449	–	–	0.449
Radium-228	pCi/g dw	0 - 1	0%	–	–	0.451	0.451	0.451
Thallium-208	pCi/g dw	0 - 1	0%	–	–	0.109	0.109	0.109
Thorium-228	pCi/g dw	0 - 1	0%	–	–	0.38	0.38	0.38
Thorium-230	pCi/g dw	0 - 1	0%	–	–	0.374	0.374	0.374
Thorium-232	pCi/g dw	0 - 1	0%	–	–	0.322	0.322	0.322
Thorium-234	pCi/g dw	0 - 1	0%	–	–	3.1	3.1	3.1
Uranium-234	pCi/g dw	0 - 1	0%	–	–	0.197	0.197	0.197
Uranium-235	pCi/g dw	0 - 1	0%	–	–	0.244	0.244	0.244
Uranium-238	pCi/g dw	0 - 1	0%	–	–	0.364	0.364	0.364

Note: Largemouth bass fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 79 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
pCi/g dw = Picocuries per gram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-76. Largemouth Bass Fillet (2010) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 12	0%	–	–	15.49	40	20.6
Antimony	mg/kg dw	0 - 12	0%	–	–	0.05752	0.14	0.0743
Arsenic	mg/kg dw	12 - 12	100%	0.4	1.8	–	–	1.36
Barium	mg/kg dw	1 - 12	8%	0.2667	0.2667	0.177	0.46	0.241
Beryllium	mg/kg dw	0 - 12	0%	–	–	0.115	0.29	0.152
Boron	mg/kg dw	0 - 12	0%	–	–	1.593	4.1	2.13
Cadmium	mg/kg dw	0 - 12	0%	–	–	0.02965	0.076	0.0391
Chromium	mg/kg dw	0 - 12	0%	–	–	0.4867	1.3	0.654
Cobalt	mg/kg dw	0 - 12	0%	–	–	0.0531	0.14	0.0719
Copper	mg/kg dw	11 - 12	92%	0.99	2.075	1.4	1.4	1.43
Lead	mg/kg dw	0 - 12	0%	–	–	0.1062	0.1716	0.131
Manganese	mg/kg dw	6 - 12	50%	0.8017	1.3	0.7075	1.7	0.949
Mercury	mg/kg dw	12 - 12	100%	0.3	1.657	–	–	0.575
Molybdenum	mg/kg dw	0 - 12	0%	–	–	0.1372	0.35	0.181
Nickel	mg/kg dw	0 - 12	0%	–	–	0.3805	0.98	0.502
Selenium	mg/kg dw	12 - 12	100%	2.4	3.905	–	–	3.29
Silver	mg/kg dw	0 - 12	0%	–	–	0.01106	0.029	0.0149
Strontium	mg/kg dw	12 - 12	100%	0.35	3.363	–	–	1.16
Thallium	mg/kg dw	0 - 12	0%	–	–	0.05907	0.17	0.0779
Vanadium	mg/kg dw	0 - 12	0%	–	–	0.177	0.46	0.236
Zinc	mg/kg dw	12 - 12	100%	30.5	91.03	–	–	50.7
Inorganic-cations/anions								
Calcium	mg/kg dw	12 - 12	100%	677	4220	–	–	1671
Iron	mg/kg dw	0 - 12	0%	–	–	46.9	120	61.9
Magnesium	mg/kg dw	12 - 12	100%	1280	1633	–	–	1475
Potassium	mg/kg dw	9 - 12	75%	17257	20500	16700	18000	18300
Sodium	mg/kg dw	12 - 12	100%	1726	3716	–	–	2133
Polychlorinated Biphenyls (PCBs)								
PCB-1016	mg/kg dw	0 - 4	0%	–	–	0.2294	0.25	0.236
PCB-1221	mg/kg dw	0 - 4	0%	–	–	0.2294	0.25	0.236
PCB-1232	mg/kg dw	0 - 4	0%	–	–	0.2294	0.25	0.236
PCB-1242	mg/kg dw	0 - 4	0%	–	–	0.2294	0.25	0.236
PCB-1248	mg/kg dw	0 - 4	0%	–	–	0.2294	0.25	0.236
PCB-1254	mg/kg dw	0 - 4	0%	–	–	0.2294	0.25	0.236
PCB-1260	mg/kg dw	4 - 4	100%	0.3015	0.7248	–	–	0.485
Total PCBs	mg/kg dw	4 - 4	100%	1.8015	2.1012	–	–	1.9

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Table 2-76. Largemouth Bass Fillet (2010) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Pesticides								
Aldrin	mg/kg dw	0 - 4	0%	–	–	0.01147	0.0125	0.0118
alpha-Chlordane	mg/kg dw	0 - 4	0%	–	–	0.01147	0.0125	0.0118
gamma-Chlordane	mg/kg dw	0 - 4	0%	–	–	0.01147	0.0125	0.0118
4,4'-DDD	mg/kg dw	0 - 4	0%	–	–	0.02294	0.025	0.0236
4,4'-DDE	mg/kg dw	1 - 4	25%	0.02982	0.02982	0.02315	0.025	0.0253
4,4'-DDT	mg/kg dw	1 - 4	25%	0.02385	0.02385	0.02315	0.025	0.0238
alpha-BHC	mg/kg dw	0 - 4	0%	–	–	0.01147	0.0125	0.0118
beta-BHC	mg/kg dw	0 - 4	0%	–	–	0.01147	0.0125	0.0118
delta-BHC	mg/kg dw	0 - 4	0%	–	–	0.01147	0.0125	0.0118
gamma-BHC (Lindane)	mg/kg dw	0 - 4	0%	–	–	0.01147	0.0125	0.0118
Dieldrin	mg/kg dw	0 - 4	0%	–	–	0.02294	0.025	0.0236
Endosulfan I	mg/kg dw	0 - 4	0%	–	–	0.01147	0.0125	0.0118
Endosulfan II	mg/kg dw	0 - 4	0%	–	–	0.02294	0.025	0.0236
Endosulfan Sulfate	mg/kg dw	0 - 4	0%	–	–	0.02294	0.025	0.0236
Endrin	mg/kg dw	0 - 4	0%	–	–	0.02294	0.025	0.0236
Endrin aldehyde	mg/kg dw	0 - 4	0%	–	–	0.02294	0.025	0.0236
Endrin Ketone	mg/kg dw	0 - 4	0%	–	–	0.02294	0.025	0.0236
Heptachlor	mg/kg dw	0 - 4	0%	–	–	0.01147	0.0125	0.0118
Heptachlor Epoxide	mg/kg dw	0 - 4	0%	–	–	0.01147	0.0125	0.0118
Methoxychlor	mg/kg dw	0 - 4	0%	–	–	0.1147	0.125	0.118
Toxaphene	mg/kg dw	0 - 4	0%	–	–	0.344	0.375	0.354
Total DDx	mg/kg dw	1 - 4	25%	0.07661	0.07661	0.06945	0.075	0.0728
Total Chlordane	mg/kg dw	0 - 4	0%	–	–	0.02294	0.025	0.0236
Speciation								
Arsenic	mg/kg dw	8 - 8	100%	1.086	2.071	–	–	1.43
Arsenite	mg/kg dw	1 - 1	100%	0.02381	0.02381	–	–	0.0238
Organic Arsenic	mg/kg dw	8 - 8	100%	1.086	2.071	–	–	1.43
Radionuclides								
Actinium-228	pCi/g dw	0 - 1	0%	–	–	0.555	0.555	0.555
Americium-241	pCi/g dw	0 - 1	0%	–	–	0.324	0.324	0.324
Bismuth-214	pCi/g dw	0 - 1	0%	–	–	0.277	0.277	0.277
Cesium-137	pCi/g dw	0 - 1	0%	–	–	0.131	0.131	0.131
Cobalt-60	pCi/g dw	0 - 1	0%	–	–	0.13	0.13	0.13
Lead-212	pCi/g dw	0 - 1	0%	–	–	0.199	0.199	0.199
Lead-214	pCi/g dw	0 - 1	0%	–	–	0.24	0.24	0.24

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Table 2-76. Largemouth Bass Fillet (2010) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Radionuclides (continued)								
Potassium-40	pCi/g dw	1 - 1	100%	13.6	13.6	–	–	13.6
Radium-226	pCi/g dw	1 - 1	100%	0.651	0.651	–	–	0.651
Radium-228	pCi/g dw	0 - 1	0%	–	–	0.555	0.555	0.555
Thallium-208	pCi/g dw	0 - 1	0%	–	–	0.109	0.109	0.109
Thorium-228	pCi/g dw	0 - 1	0%	–	–	0.696	0.696	0.696
Thorium-230	pCi/g dw	0 - 1	0%	–	–	0.379	0.379	0.379
Thorium-232	pCi/g dw	0 - 1	0%	–	–	0.481	0.481	0.481
Thorium-234	pCi/g dw	0 - 1	0%	–	–	3.05	3.05	3.05
Uranium-234	pCi/g dw	0 - 1	0%	–	–	0.194	0.194	0.194
Uranium-235	pCi/g dw	0 - 1	0%	–	–	0.382	0.382	0.382
Uranium-238	pCi/g dw	0 - 1	0%	–	–	0.194	0.194	0.194

Note: Largemouth bass fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 79 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
pCi/g dw = Picocuries per gram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-77. Largemouth Bass Fillet (2010) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 13	0%	–	–	16.9	19.8	18.3
Antimony	mg/kg dw	0 - 13	0%	–	–	0.061	0.071	0.0663
Arsenic	mg/kg dw	13 - 13	100%	0.62	1.37	–	–	0.884
Barium	mg/kg dw	0 - 13	0%	–	–	0.19	0.23	0.209
Beryllium	mg/kg dw	0 - 13	0%	–	–	0.12	0.285	0.145
Boron	mg/kg dw	0 - 13	0%	–	–	1.7	2	1.89
Cadmium	mg/kg dw	0 - 13	0%	–	–	0.032	0.038	0.0348
Chromium	mg/kg dw	0 - 13	0%	–	–	0.54	0.63	0.579
Cobalt	mg/kg dw	2 - 13	15%	0.07442	0.077	0.059	0.069	0.0657
Copper	mg/kg dw	13 - 13	100%	0.93	33.7	–	–	4.05
Lead	mg/kg dw	2 - 13	15%	0.1485	1.1	0.1193	0.14	0.205
Manganese	mg/kg dw	6 - 13	46%	0.7339	1.1	0.73	0.84	0.83
Mercury	mg/kg dw	13 - 13	100%	0.2146	0.85	–	–	0.492
Molybdenum	mg/kg dw	0 - 13	0%	–	–	0.15	0.17	0.16
Nickel	mg/kg dw	2 - 13	15%	0.6436	3.5	0.42	0.48	0.698
Selenium	mg/kg dw	13 - 13	100%	2.1	4	–	–	3.34
Silver	mg/kg dw	0 - 13	0%	–	–	0.012	0.044	0.0155
Strontium	mg/kg dw	13 - 13	100%	0.3014	1.8	–	–	0.812
Thallium	mg/kg dw	0 - 13	0%	–	–	0.058	0.19	0.0795
Vanadium	mg/kg dw	0 - 13	0%	–	–	0.19	0.23	0.209
Zinc	mg/kg dw	13 - 13	100%	24	70.59	–	–	44.5
Inorganic-cations/anions								
Calcium	mg/kg dw	13 - 13	100%	663	2360	–	–	1245
Iron	mg/kg dw	0 - 13	0%	–	–	50.8	59.5	55
Magnesium	mg/kg dw	13 - 13	100%	1220	1545	–	–	1403
Potassium	mg/kg dw	13 - 13	100%	17692	21881	–	–	19400
Sodium	mg/kg dw	13 - 13	100%	1710	2213	–	–	1951
Polychlorinated Biphenyls (PCBs)								
PCB-1016	mg/kg dw	0 - 3	0%	–	–	0.211	0.2525	0.233
PCB-1221	mg/kg dw	0 - 3	0%	–	–	0.211	0.2525	0.233
PCB-1232	mg/kg dw	0 - 3	0%	–	–	0.211	0.2525	0.233
PCB-1242	mg/kg dw	0 - 3	0%	–	–	0.211	0.2525	0.233
PCB-1248	mg/kg dw	0 - 3	0%	–	–	0.211	0.2525	0.233
PCB-1254	mg/kg dw	0 - 3	0%	–	–	0.211	0.2525	0.233
PCB-1260	mg/kg dw	3 - 3	100%	0.2895	0.7136	–	–	0.503
Total PCBs	mg/kg dw	3 - 3	100%	1.5555	2.1218	–	–	1.9

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Table 2-77. Largemouth Bass Fillet (2010) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Pesticides								
Aldrin	mg/kg dw	0 - 3	0%	– - –		0.01055 - 0.01263		0.0116
alpha-Chlordane	mg/kg dw	0 - 3	0%	– - –		0.01055 - 0.01263		0.0116
gamma-Chlordane	mg/kg dw	0 - 3	0%	– - –		0.01055 - 0.01263		0.0116
4,4'-DDD	mg/kg dw	0 - 3	0%	– - –		0.0211 - 0.02525		0.0233
4,4'-DDE	mg/kg dw	1 - 3	33%	0.03427 - 0.03427		0.0211 - 0.02525		0.0269
4,4'-DDT	mg/kg dw	0 - 3	0%	– - –		0.0211 - 0.02525		0.0233
alpha-BHC	mg/kg dw	0 - 3	0%	– - –		0.01055 - 0.01263		0.0116
beta-BHC	mg/kg dw	0 - 3	0%	– - –		0.01055 - 0.01263		0.0116
delta-BHC	mg/kg dw	0 - 3	0%	– - –		0.01055 - 0.01263		0.0116
gamma-BHC (Lindane)	mg/kg dw	0 - 3	0%	– - –		0.01055 - 0.01263		0.0116
Dieldrin	mg/kg dw	0 - 3	0%	– - –		0.0211 - 0.02525		0.0233
Endosulfan I	mg/kg dw	0 - 3	0%	– - –		0.01055 - 0.01263		0.0116
Endosulfan II	mg/kg dw	0 - 3	0%	– - –		0.0211 - 0.02525		0.0233
Endosulfan Sulfate	mg/kg dw	0 - 3	0%	– - –		0.0211 - 0.02525		0.0233
Endrin	mg/kg dw	0 - 3	0%	– - –		0.0211 - 0.02525		0.0233
Endrin aldehyde	mg/kg dw	0 - 3	0%	– - –		0.0211 - 0.02525		0.0233
Endrin Ketone	mg/kg dw	0 - 3	0%	– - –		0.0211 - 0.02525		0.0233
Heptachlor	mg/kg dw	0 - 3	0%	– - –		0.01055 - 0.01263		0.0116
Heptachlor Epoxide	mg/kg dw	0 - 3	0%	– - –		0.01055 - 0.01263		0.0116
Methoxychlor	mg/kg dw	0 - 3	0%	– - –		0.1055 - 0.1263		0.116
Toxaphene	mg/kg dw	0 - 3	0%	– - –		0.3165 - 0.3788		0.349
Total DDx	mg/kg dw	1 - 3	33%	0.08121 - 0.08121		0.0633 - 0.07575		0.0734
Total Chlordane	mg/kg dw	0 - 3	0%	– - –		0.0211 - 0.02526		0.0233
Speciation								
Arsenic	mg/kg dw	7 - 7	100%	0.7286 - 1.29		– - –		0.958
Organic Arsenic	mg/kg dw	7 - 7	100%	0.7286 - 1.29		– - –		0.958
Radionuclides								
Actinium-228	pCi/g dw	0 - 1	0%	– - –		0.487 - 0.487		0.487
Americium-241	pCi/g dw	0 - 1	0%	– - –		0.381 - 0.381		0.381
Bismuth-214	pCi/g dw	0 - 1	0%	– - –		0.241 - 0.241		0.241
Cesium-137	pCi/g dw	0 - 1	0%	– - –		0.135 - 0.135		0.135
Cobalt-60	pCi/g dw	0 - 1	0%	– - –		0.133 - 0.133		0.133
Lead-212	pCi/g dw	0 - 1	0%	– - –		0.204 - 0.204		0.204
Lead-214	pCi/g dw	0 - 1	0%	– - –		0.228 - 0.228		0.228

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Table 2-77. Largemouth Bass Fillet (2010) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Radionuclides (continued)								
Potassium-40	pCi/g dw	1 - 1	100%	16.3	16.3	–	–	16.3
Radium-226	pCi/g dw	1 - 1	100%	0.281	0.281	–	–	0.281
Radium-228	pCi/g dw	0 - 1	0%	–	–	0.487	0.487	0.487
Thallium-208	pCi/g dw	0 - 1	0%	–	–	0.127	0.127	0.127
Thorium-228	pCi/g dw	0 - 1	0%	–	–	0.444	0.444	0.444
Thorium-230	pCi/g dw	0 - 1	0%	–	–	0.376	0.376	0.376
Thorium-232	pCi/g dw	0 - 1	0%	–	–	0.324	0.324	0.324
Thorium-234	pCi/g dw	0 - 1	0%	–	–	3.82	3.82	3.82
Uranium-234	pCi/g dw	0 - 1	0%	–	–	0.441	0.441	0.441
Uranium-235	pCi/g dw	0 - 1	0%	–	–	0.428	0.428	0.428
Uranium-238	pCi/g dw	0 - 1	0%	–	–	0.4	0.4	0.4

Note: Largemouth bass fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 79 percent where individual sample percent moisture value was rejected.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

pCi/g dw = Picocuries per gram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-78. Largemouth Bass Fillet (2010) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 6	0%	–	–	16.7	20	18.6
Antimony	mg/kg dw	0 - 6	0%	–	–	0.06	0.072	0.067
Arsenic	mg/kg dw	6 - 6	100%	0.52	1.1	–	–	0.77
Barium	mg/kg dw	2 - 6	33%	0.24	0.32	0.19	0.22	0.228
Beryllium	mg/kg dw	0 - 6	0%	–	–	0.12	0.15	0.137
Boron	mg/kg dw	0 - 6	0%	–	–	1.7	2.1	1.92
Cadmium	mg/kg dw	0 - 6	0%	–	–	0.032	0.038	0.0353
Chromium	mg/kg dw	1 - 6	17%	0.66	0.66	0.53	0.63	0.607
Cobalt	mg/kg dw	0 - 6	0%	–	–	0.059	0.07	0.0653
Copper	mg/kg dw	6 - 6	100%	0.87	2.9	–	–	1.75
Lead	mg/kg dw	0 - 6	0%	–	–	0.12	0.14	0.13
Manganese	mg/kg dw	3 - 6	50%	0.81	1.2	0.71	0.83	0.862
Mercury	mg/kg dw	6 - 6	100%	0.28	0.58	–	–	0.472
Molybdenum	mg/kg dw	0 - 6	0%	–	–	0.15	0.18	0.163
Nickel	mg/kg dw	1 - 6	17%	0.5	0.5	0.41	0.49	0.468
Selenium	mg/kg dw	6 - 6	100%	1.6	3.2	–	–	2.47
Silver	mg/kg dw	0 - 6	0%	–	–	0.012	0.014	0.0133
Strontium	mg/kg dw	6 - 6	100%	0.35	4.8	–	–	2.06
Thallium	mg/kg dw	0 - 6	0%	–	–	0.057	0.075	0.0672
Vanadium	mg/kg dw	0 - 6	0%	–	–	0.23	0.74	0.39
Zinc	mg/kg dw	6 - 6	100%	24.9	60.6	–	–	44.9
Inorganic-cations/anions								
Calcium	mg/kg dw	6 - 6	100%	698	6420	–	–	3062
Iron	mg/kg dw	0 - 6	0%	–	–	50.2	60.2	55.8
Magnesium	mg/kg dw	6 - 6	100%	1140	1560	–	–	1398
Potassium	mg/kg dw	6 - 6	100%	15000	18400	–	–	16900
Sodium	mg/kg dw	6 - 6	100%	1560	2070	–	–	1870

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Table 2-78. Largemouth Bass Fillet (2010) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Polychlorinated Biphenyls (PCBs)								
PCB-1016	mg/kg dw	0 - 2	0%	– - –		0.2392 - 0.4255		0.332
PCB-1221	mg/kg dw	0 - 2	0%	– - –		0.2392 - 0.4255		0.332
PCB-1232	mg/kg dw	0 - 2	0%	– - –		0.2392 - 0.4255		0.332
PCB-1242	mg/kg dw	0 - 2	0%	– - –		0.2392 - 0.4255		0.332
PCB-1248	mg/kg dw	0 - 2	0%	– - –		0.2392 - 0.4255		0.332
PCB-1254	mg/kg dw	1 - 2	50%	0.9064 - 0.9064		0.2392 - 0.2392		0.573
PCB-1260	mg/kg dw	2 - 2	100%	0.3536 - 2.115		– - –		1.23
Total PCBs	mg/kg dw	2 - 2	100%	1.7888 - 5.1489		– - –		3.47
Pesticides								
Aldrin	mg/kg dw	0 - 2	0%	– - –		0.01064 - 0.01196		0.0113
alpha-Chlordane	mg/kg dw	1 - 2	50%	0.04 - 0.04		0.01196 - 0.01196		0.026
gamma-Chlordane	mg/kg dw	0 - 2	0%	– - –		0.01064 - 0.01196		0.0113
4,4'-DDD	mg/kg dw	0 - 2	0%	– - –		0.02128 - 0.02392		0.0226
4,4'-DDE	mg/kg dw	1 - 2	50%	0.1183 - 0.1183		0.02392 - 0.02392		0.0711
4,4'-DDT	mg/kg dw	1 - 2	50%	0.05702 - 0.05702		0.02392 - 0.02392		0.0405
alpha-BHC	mg/kg dw	0 - 2	0%	– - –		0.01064 - 0.01196		0.0113
beta-BHC	mg/kg dw	0 - 2	0%	– - –		0.01064 - 0.01196		0.0113
delta-BHC	mg/kg dw	0 - 2	0%	– - –		0.01064 - 0.01196		0.0113
gamma-BHC (Lindane)	mg/kg dw	0 - 2	0%	– - –		0.01064 - 0.01196		0.0113
Dieldrin	mg/kg dw	0 - 2	0%	– - –		0.02128 - 0.02392		0.0226
Endosulfan I	mg/kg dw	0 - 2	0%	– - –		0.01064 - 0.01196		0.0113
Endosulfan II	mg/kg dw	0 - 2	0%	– - –		0.02128 - 0.02392		0.0226
Endosulfan Sulfate	mg/kg dw	0 - 2	0%	– - –		0.02128 - 0.02392		0.0226
Endrin	mg/kg dw	0 - 2	0%	– - –		0.02128 - 0.02392		0.0226
Endrin aldehyde	mg/kg dw	0 - 2	0%	– - –		0.02128 - 0.02392		0.0226
Endrin Ketone	mg/kg dw	0 - 2	0%	– - –		0.02128 - 0.02392		0.0226
Heptachlor	mg/kg dw	0 - 2	0%	– - –		0.01064 - 0.01196		0.0113
Heptachlor Epoxide	mg/kg dw	1 - 2	50%	0.01702 - 0.01702		0.01196 - 0.01196		0.0145
Methoxychlor	mg/kg dw	0 - 2	0%	– - –		0.1064 - 0.1196		0.113
Toxaphene	mg/kg dw	0 - 2	0%	– - –		0.3191 - 0.3589		0.339
Total DDx	mg/kg dw	1 - 2	50%	0.1966 - 0.1966		0.07176 - 0.07176		0.134
Total Chlordane	mg/kg dw	1 - 2	50%	0.05064 - 0.05064		0.02392 - 0.02392		0.0373

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Table 2-78. Largemouth Bass Fillet (2010) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Speciation								
Arsenic	mg/kg dw	1 - 1	100%	0.8524	0.8524	–	–	0.852
Organic Arsenic	mg/kg dw	1 - 1	100%	0.8524	0.8524	–	–	0.852

Note: Largemouth bass fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 79 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
pCi/g dw = Picocuries per gram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-79. Largemouth Bass Fillet (2010) Dataset: Clinch River - Reference (Above CRM 4.5)

Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 12	0%	–	–	17.1	19.7	18.3
Antimony	mg/kg dw	0 - 12	0%	–	–	0.062	0.071	0.0663
Arsenic	mg/kg dw	12 - 12	100%	0.62	1.5	–	–	1.17
Barium	mg/kg dw	0 - 12	0%	–	–	0.2	0.23	0.211
Beryllium	mg/kg dw	0 - 12	0%	–	–	0.13	0.15	0.137
Boron	mg/kg dw	0 - 12	0%	–	–	1.8	2	1.89
Cadmium	mg/kg dw	0 - 12	0%	–	–	0.033	0.038	0.035
Chromium	mg/kg dw	1 - 12	8%	1.2	1.2	0.54	0.63	0.628
Cobalt	mg/kg dw	1 - 12	8%	0.063	0.063	0.06	0.069	0.0645
Copper	mg/kg dw	12 - 12	100%	0.71	2.8	–	–	1.44
Lead	mg/kg dw	0 - 12	0%	–	–	0.12	0.14	0.128
Manganese	mg/kg dw	6 - 12	50%	0.81	1.1	0.74	0.84	0.88
Mercury	mg/kg dw	12 - 12	100%	0.27	0.79	–	–	0.548
Molybdenum	mg/kg dw	0 - 12	0%	–	–	0.15	0.17	0.16
Nickel	mg/kg dw	1 - 12	8%	0.59	0.59	0.42	0.48	0.458
Selenium	mg/kg dw	12 - 12	100%	1.9	3.6	–	–	2.44
Silver	mg/kg dw	0 - 12	0%	–	–	0.012	0.014	0.0133
Strontium	mg/kg dw	12 - 12	100%	0.31	2.8	–	–	1.07
Thallium	mg/kg dw	0 - 12	0%	–	–	0.059	0.086	0.0647
Vanadium	mg/kg dw	1 - 12	8%	0.39	0.39	0.2	0.23	0.223
Zinc	mg/kg dw	12 - 12	100%	19.6	89.4	–	–	46.2
Inorganic-cations/anions								
Calcium	mg/kg dw	12 - 12	100%	685	3930	–	–	1678
Iron	mg/kg dw	0 - 12	0%	–	–	51.6	59.5	55.2
Magnesium	mg/kg dw	12 - 12	100%	1260	1480	–	–	1381
Potassium	mg/kg dw	12 - 12	100%	16500	21500	–	–	18700
Sodium	mg/kg dw	12 - 12	100%	1830	2340	–	–	2094
Polychlorinated Biphenyls (PCBs)								
PCB-1016	mg/kg dw	0 - 3	0%	–	–	0.2252	0.2427	0.234
PCB-1221	mg/kg dw	0 - 3	0%	–	–	0.2252	0.2427	0.234
PCB-1232	mg/kg dw	0 - 3	0%	–	–	0.2252	0.2427	0.234
PCB-1242	mg/kg dw	0 - 3	0%	–	–	0.2252	0.2427	0.234
PCB-1248	mg/kg dw	0 - 3	0%	–	–	0.2252	0.2427	0.234
PCB-1254	mg/kg dw	1 - 3	33%	0.3224	0.3224	0.2252	0.2427	0.263
PCB-1260	mg/kg dw	3 - 3	100%	0.3662	0.8972	–	–	0.575
Total PCBs	mg/kg dw	3 - 3	100%	1.7174	2.3876	–	–	2.01

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Table 2-79. Largemouth Bass Fillet (2010) Dataset: Clinch River - Reference (Above CRM 4.5)

Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Pesticides								
Aldrin	mg/kg dw	0 - 3	0%	–	–	0.01126	0.01214	0.0117
alpha-Chlordane	mg/kg dw	1 - 3	33%	0.02523	0.02523	0.01126	0.01214	0.0162
gamma-Chlordane	mg/kg dw	0 - 3	0%	–	–	0.01126	0.01214	0.0117
4,4'-DDD	mg/kg dw	0 - 3	0%	–	–	0.02252	0.02427	0.0234
4,4'-DDE	mg/kg dw	1 - 3	33%	0.03879	0.03879	0.02252	0.02427	0.0285
4,4'-DDT	mg/kg dw	0 - 3	0%	–	–	0.02252	0.02427	0.0234
alpha-BHC	mg/kg dw	0 - 3	0%	–	–	0.01126	0.01214	0.0117
beta-BHC	mg/kg dw	0 - 3	0%	–	–	0.01126	0.01214	0.0117
delta-BHC	mg/kg dw	0 - 3	0%	–	–	0.01126	0.01214	0.0117
gamma-BHC (Lindane)	mg/kg dw	0 - 3	0%	–	–	0.01126	0.01214	0.0117
Dieldrin	mg/kg dw	0 - 3	0%	–	–	0.02252	0.02427	0.0234
Endosulfan I	mg/kg dw	0 - 3	0%	–	–	0.01126	0.01214	0.0117
Endosulfan II	mg/kg dw	0 - 3	0%	–	–	0.02252	0.02427	0.0234
Endosulfan Sulfate	mg/kg dw	0 - 3	0%	–	–	0.02252	0.02427	0.0234
Endrin	mg/kg dw	0 - 3	0%	–	–	0.02252	0.02427	0.0234
Endrin aldehyde	mg/kg dw	0 - 3	0%	–	–	0.02252	0.02427	0.0234
Endrin Ketone	mg/kg dw	0 - 3	0%	–	–	0.02252	0.02427	0.0234
Heptachlor	mg/kg dw	0 - 3	0%	–	–	0.01126	0.01214	0.0117
Heptachlor Epoxide	mg/kg dw	1 - 3	33%	0.01682	0.01682	0.01126	0.01214	0.0134
Methoxychlor	mg/kg dw	0 - 3	0%	–	–	0.1126	0.1214	0.117
Toxaphene	mg/kg dw	0 - 3	0%	–	–	0.3378	0.3641	0.351
Total DDx	mg/kg dw	1 - 3	33%	0.08551	0.08551	0.06756	0.07281	0.0753
Total Chlordane	mg/kg dw	1 - 3	33%	0.03691	0.03691	0.02252	0.02428	0.0279
Speciation								
Arsenic	mg/kg dw	6 - 6	100%	0.9143	1.419	–	–	1.26
Organic Arsenic	mg/kg dw	6 - 6	100%	0.9143	1.419	–	–	1.26
Radionuclides								
Actinium-228	pCi/g dw	0 - 1	0%	–	–	0.409	0.409	0.409
Americium-241	pCi/g dw	0 - 1	0%	–	–	0.25	0.25	0.25
Bismuth-214	pCi/g dw	0 - 1	0%	–	–	0.216	0.216	0.216
Cesium-137	pCi/g dw	0 - 1	0%	–	–	0.116	0.116	0.116
Cobalt-60	pCi/g dw	0 - 1	0%	–	–	0.111	0.111	0.111
Lead-212	pCi/g dw	0 - 1	0%	–	–	0.148	0.148	0.148
Lead-214	pCi/g dw	0 - 1	0%	–	–	0.206	0.206	0.206

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Table 2-79. Largemouth Bass Fillet (2010) Dataset: Clinch River - Reference (Above CRM 4.5)

Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Radionuclides (continued)								
Potassium-40	pCi/g dw	1 - 1	100%	14.5	14.5	–	–	14.5
Radium-226	pCi/g dw	0 - 1	0%	–	–	0.208	0.208	0.208
Radium-228	pCi/g dw	0 - 1	0%	–	–	0.409	0.409	0.409
Thallium-208	pCi/g dw	0 - 1	0%	–	–	0.1	0.1	0.1
Thorium-228	pCi/g dw	0 - 1	0%	–	–	0.441	0.441	0.441
Thorium-230	pCi/g dw	1 - 1	100%	0.379	0.379	–	–	0.379
Thorium-232	pCi/g dw	0 - 1	0%	–	–	0.2	0.2	0.2
Thorium-234	pCi/g dw	0 - 1	0%	–	–	2.16	2.16	2.16
Uranium-234	pCi/g dw	0 - 1	0%	–	–	0.362	0.362	0.362
Uranium-235	pCi/g dw	0 - 1	0%	–	–	0.351	0.351	0.351
Uranium-238	pCi/g dw	0 - 1	0%	–	–	0.284	0.284	0.284

Note: Largemouth bass fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 79 percent where individual sample percent moisture value was rejected.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

pCi/g dw = Picocuries per gram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-80. Largemouth Bass Fillet (2010) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 12	0%	– - –		16.6 - 20.4		18.5
Antimony	mg/kg dw	0 - 12	0%	– - –		0.06 - 0.074		0.0669
Arsenic	mg/kg dw	12 - 12	100%	0.3 - 1.5		– - –		0.933
Barium	mg/kg dw	0 - 12	0%	– - –		0.19 - 0.23		0.212
Beryllium	mg/kg dw	0 - 12	0%	– - –		0.12 - 0.29		0.207
Boron	mg/kg dw	0 - 12	0%	– - –		1.7 - 2.1		1.92
Cadmium	mg/kg dw	0 - 12	0%	– - –		0.032 - 0.039		0.0352
Chromium	mg/kg dw	0 - 12	0%	– - –		0.53 - 0.65		0.588
Cobalt	mg/kg dw	0 - 12	0%	– - –		0.058 - 0.072		0.0649
Copper	mg/kg dw	12 - 12	100%	0.99 - 2.7		– - –		1.77
Lead	mg/kg dw	0 - 12	0%	– - –		0.12 - 0.14		0.128
Manganese	mg/kg dw	9 - 12	75%	0.76 - 1.4		0.79 - 0.87		0.945
Mercury	mg/kg dw	12 - 12	100%	0.18 - 1.9		– - –		0.583
Molybdenum	mg/kg dw	0 - 12	0%	– - –		0.15 - 0.18		0.163
Nickel	mg/kg dw	3 - 12	25%	0.44 - 0.65		0.4 - 0.5		0.473
Selenium	mg/kg dw	12 - 12	100%	1.8 - 5.2		– - –		2.93
Silver	mg/kg dw	0 - 12	0%	– - –		0.012 - 0.049		0.0215
Strontium	mg/kg dw	12 - 12	100%	0.39 - 3.1		– - –		1.25
Thallium	mg/kg dw	0 - 12	0%	– - –		0.057 - 0.07		0.064
Vanadium	mg/kg dw	0 - 12	0%	– - –		0.19 - 0.23		0.211
Zinc	mg/kg dw	12 - 12	100%	28.6 - 85		– - –		54.3
Calcium	mg/kg dw	12 - 12	100%	678 - 3910		– - –		1788
Iron	mg/kg dw	0 - 12	0%	– - –		49.9 - 61.5		55.7
Magnesium	mg/kg dw	12 - 12	100%	1310 - 1680		– - –		1433
Potassium	mg/kg dw	12 - 12	100%	16500 - 20300		– - –		18600
Sodium	mg/kg dw	12 - 12	100%	1450 - 2830		– - –		2096
Polychlorinated Biphenyls (PCBs)								
PCB-1016	mg/kg dw	0 - 3	0%	– - –		0.2392 - 0.2551		0.246
PCB-1221	mg/kg dw	0 - 3	0%	– - –		0.2392 - 0.2551		0.246
PCB-1232	mg/kg dw	0 - 3	0%	– - –		0.2392 - 0.2551		0.246
PCB-1242	mg/kg dw	0 - 3	0%	– - –		0.2392 - 0.2551		0.246
PCB-1248	mg/kg dw	0 - 3	0%	– - –		0.2392 - 0.2551		0.246
PCB-1254	mg/kg dw	2 - 3	67%	0.2871 - 0.425		0.2439 - 0.2439		0.319
PCB-1260	mg/kg dw	3 - 3	100%	0.3263 - 1.133		– - –		0.86
Total PCBs	mg/kg dw	3 - 3	100%	1.7897 - 2.8335		– - –		2.41

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Table 2-80. Largemouth Bass Fillet (2010) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Pesticides								
Aldrin	mg/kg dw	0 - 3	0%	–	–	0.01196	0.01276	0.0123
alpha-Chlordane	mg/kg dw	0 - 3	0%	–	–	0.01196	0.01276	0.0123
gamma-Chlordane	mg/kg dw	0 - 3	0%	–	–	0.01196	0.01276	0.0123
4,4'-DDD	mg/kg dw	0 - 3	0%	–	–	0.02392	0.02551	0.0246
4,4'-DDE	mg/kg dw	2 - 3	67%	0.03732	0.09184	0.02439	0.02439	0.0512
4,4'-DDT	mg/kg dw	1 - 3	33%	0.02392	0.02392	0.02439	0.02551	0.0246
alpha-BHC	mg/kg dw	0 - 3	0%	–	–	0.01196	0.01276	0.0123
beta-BHC	mg/kg dw	0 - 3	0%	–	–	0.01196	0.01276	0.0123
delta-BHC	mg/kg dw	0 - 3	0%	–	–	0.01196	0.01276	0.0123
gamma-BHC (Lindane)	mg/kg dw	0 - 3	0%	–	–	0.01196	0.01276	0.0123
Dieldrin	mg/kg dw	0 - 3	0%	–	–	0.02392	0.02551	0.0246
Endosulfan I	mg/kg dw	0 - 3	0%	–	–	0.01196	0.01276	0.0123
Endosulfan II	mg/kg dw	0 - 3	0%	–	–	0.02392	0.02551	0.0246
Endosulfan Sulfate	mg/kg dw	0 - 3	0%	–	–	0.02392	0.02551	0.0246
Endrin	mg/kg dw	0 - 3	0%	–	–	0.02392	0.02551	0.0246
Endrin aldehyde	mg/kg dw	0 - 3	0%	–	–	0.02392	0.02551	0.0246
Endrin Ketone	mg/kg dw	0 - 3	0%	–	–	0.02392	0.02551	0.0246
Heptachlor	mg/kg dw	0 - 3	0%	–	–	0.01196	0.01276	0.0123
Heptachlor Epoxide	mg/kg dw	0 - 3	0%	–	–	0.01196	0.01276	0.0123
Methoxychlor	mg/kg dw	0 - 3	0%	–	–	0.1196	0.1276	0.123
Toxaphene	mg/kg dw	0 - 3	0%	–	–	0.3589	0.3827	0.369
Total DDx	mg/kg dw	2 - 3	67%	0.08516	0.14286	0.07317	0.07317	0.1
Total Chlordane	mg/kg dw	0 - 3	0%	–	–	0.02392	0.02552	0.0246
Speciation								
Arsenic	mg/kg dw	3 - 3	100%	0.9286	1.424	–	–	1.25
Organic Arsenic	mg/kg dw	3 - 3	100%	0.9286	1.424	–	–	1.25
Radionuclides								
Actinium-228	pCi/g dw	0 - 1	0%	–	–	0.399	0.399	0.399
Americium-241	pCi/g dw	0 - 1	0%	–	–	0.433	0.433	0.433
Bismuth-214	pCi/g dw	0 - 1	0%	–	–	0.206	0.206	0.206
Cesium-137	pCi/g dw	0 - 1	0%	–	–	0.0965	0.0965	0.0965
Cobalt-60	pCi/g dw	0 - 1	0%	–	–	0.103	0.103	0.103
Lead-212	pCi/g dw	0 - 1	0%	–	–	0.151	0.151	0.151
Lead-214	pCi/g dw	0 - 1	0%	–	–	0.195	0.195	0.195

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Table 2-80. Largemouth Bass Fillet (2010) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Radionuclides (continued)								
Potassium-40	pCi/g dw	1 - 1	100%	15.4	15.4	–	–	15.4
Radium-226	pCi/g dw	1 - 1	100%	0.263	0.263	–	–	0.263
Radium-228	pCi/g dw	0 - 1	0%	–	–	0.399	0.399	0.399
Thallium-208	pCi/g dw	0 - 1	0%	–	–	0.0892	0.0892	0.0892
Thorium-228	pCi/g dw	0 - 1	0%	–	–	0.476	0.476	0.476
Thorium-230	pCi/g dw	0 - 1	0%	–	–	0.4	0.4	0.4
Thorium-232	pCi/g dw	0 - 1	0%	–	–	0.399	0.399	0.399
Thorium-234	pCi/g dw	0 - 1	0%	–	–	3.61	3.61	3.61
Uranium-234	pCi/g dw	0 - 1	0%	–	–	0.373	0.373	0.373
Uranium-235	pCi/g dw	0 - 1	0%	–	–	0.25	0.25	0.25
Uranium-238	pCi/g dw	0 - 1	0%	–	–	0.323	0.323	0.323

Note: Largemouth bass fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 79 percent where individual sample percent moisture value was rejected.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

pCi/g dw = Picocuries per gram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-81. Largemouth Bass Fillet (2010) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 12	0%	–	–	12.7	19.6	17.4
Antimony	mg/kg dw	0 - 12	0%	–	–	0.046	0.071	0.0628
Arsenic	mg/kg dw	12 - 12	100%	0.8019	1.467	–	–	1.14
Barium	mg/kg dw	3 - 12	25%	0.5	1.9	0.1721	0.22	0.394
Beryllium	mg/kg dw	0 - 12	0%	–	–	0.1107	0.292	0.195
Boron	mg/kg dw	0 - 12	0%	–	–	1.3	2	1.81
Cadmium	mg/kg dw	0 - 12	0%	–	–	0.024	0.037	0.033
Chromium	mg/kg dw	0 - 12	0%	–	–	0.4	0.62	0.551
Cobalt	mg/kg dw	1 - 12	8%	0.057	0.057	0.05328	0.069	0.0623
Copper	mg/kg dw	12 - 12	100%	0.94	39.75	–	–	4.59
Lead	mg/kg dw	1 - 12	8%	0.8607	0.8607	0.088	0.14	0.184
Manganese	mg/kg dw	7 - 12	58%	0.7787	8.8	0.6637	0.8019	1.67
Mercury	mg/kg dw	12 - 12	100%	0.13	0.6604	–	–	0.403
Molybdenum	mg/kg dw	0 - 12	0%	–	–	0.11	0.17	0.153
Nickel	mg/kg dw	2 - 12	17%	0.7547	2.237	0.31	0.48	0.599
Selenium	mg/kg dw	12 - 12	100%	1.7	4.099	–	–	2.87
Silver	mg/kg dw	0 - 12	0%	–	–	0.0092	0.014	0.0125
Strontium	mg/kg dw	12 - 12	100%	0.5263	51.2	–	–	7.75
Thallium	mg/kg dw	0 - 12	0%	–	–	0.044	0.075	0.0624
Vanadium	mg/kg dw	0 - 12	0%	–	–	0.15	0.22	0.199
Zinc	mg/kg dw	12 - 12	100%	28.2	72.95	–	–	44.7
Inorganic-cations/anions								
Calcium	mg/kg dw	12 - 12	100%	1026	69300	–	–	10100
Iron	mg/kg dw	1 - 12	8%	56.9	56.9	45.08	58.9	53.8
Magnesium	mg/kg dw	12 - 12	100%	1263	1780	–	–	1430
Potassium	mg/kg dw	12 - 12	100%	7850	17100	–	–	15500
Sodium	mg/kg dw	12 - 12	100%	1553	5340	–	–	2416

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Table 2-81. Largemouth Bass Fillet (2010) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Polychlorinated Biphenyls (PCBs)								
PCB-1016	mg/kg dw	0 - 2	0%	– - –		0.2513 - 0.3497		0.301
PCB-1221	mg/kg dw	0 - 2	0%	– - –		0.2513 - 0.3497		0.301
PCB-1232	mg/kg dw	0 - 2	0%	– - –		0.2513 - 0.3497		0.301
PCB-1242	mg/kg dw	0 - 2	0%	– - –		0.2513 - 0.3497		0.301
PCB-1248	mg/kg dw	0 - 2	0%	– - –		0.2513 - 0.3497		0.301
PCB-1254	mg/kg dw	1 - 2	50%	0.4441 - 0.4441		0.2513 - 0.2513		0.348
PCB-1260	mg/kg dw	2 - 2	100%	0.4538 - 1.339		– - –		0.896
Total PCBs	mg/kg dw	2 - 2	100%	1.9616 - 3.5316		– - –		2.75
Pesticides								
Aldrin	mg/kg dw	0 - 2	0%	– - –		0.00874 - 0.01256		0.0107
alpha-Chlordane	mg/kg dw	1 - 2	50%	0.01958 - 0.01958		0.01256 - 0.01256		0.0161
gamma-Chlordane	mg/kg dw	0 - 2	0%	– - –		0.00874 - 0.01256		0.0107
4,4'-DDD	mg/kg dw	0 - 2	0%	– - –		0.01748 - 0.02513		0.0213
4,4'-DDE	mg/kg dw	1 - 2	50%	0.07587 - 0.07587		0.02513 - 0.02513		0.0505
4,4'-DDT	mg/kg dw	1 - 2	50%	0.0458 - 0.0458		0.02513 - 0.02513		0.0355
alpha-BHC	mg/kg dw	0 - 2	0%	– - –		0.00874 - 0.01256		0.0107
beta-BHC	mg/kg dw	0 - 2	0%	– - –		0.00874 - 0.01256		0.0107
delta-BHC	mg/kg dw	0 - 2	0%	– - –		0.00874 - 0.01256		0.0107
gamma-BHC (Lindane)	mg/kg dw	0 - 2	0%	– - –		0.00874 - 0.01256		0.0107
Dieldrin	mg/kg dw	0 - 2	0%	– - –		0.01748 - 0.02513		0.0213
Endosulfan I	mg/kg dw	0 - 2	0%	– - –		0.00874 - 0.01256		0.0107
Endosulfan II	mg/kg dw	0 - 2	0%	– - –		0.01748 - 0.02513		0.0213
Endosulfan Sulfate	mg/kg dw	0 - 2	0%	– - –		0.01748 - 0.02513		0.0213
Endrin	mg/kg dw	0 - 2	0%	– - –		0.01748 - 0.02513		0.0213
Endrin aldehyde	mg/kg dw	0 - 2	0%	– - –		0.01748 - 0.02513		0.0213
Endrin Ketone	mg/kg dw	0 - 2	0%	– - –		0.01748 - 0.02513		0.0213
Heptachlor	mg/kg dw	0 - 2	0%	– - –		0.00874 - 0.01256		0.0107
Heptachlor Epoxide	mg/kg dw	1 - 2	50%	0.01189 - 0.01189		0.01256 - 0.01256		0.0122
Methoxychlor	mg/kg dw	0 - 2	0%	– - –		0.08741 - 0.1256		0.107
Toxaphene	mg/kg dw	0 - 2	0%	– - –		0.2622 - 0.3769		0.32
Total DDx	mg/kg dw	1 - 2	50%	0.13915 - 0.13915		0.07539 - 0.07539		0.107
Total Chlordane	mg/kg dw	1 - 2	50%	0.028321 - 0.028321		0.02512 - 0.02512		0.0267

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Table 2-81. Largemouth Bass Fillet (2010) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Speciation								
Arsenic	mg/kg dw	2 - 2	100%	0.9429	1.167	–	–	1.05
Organic Arsenic	mg/kg dw	2 - 2	100%	0.9429	1.167	–	–	1.05

Note: Largemouth bass fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 79 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-82. Bluegill Sunfish Fillet (2010) Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	1 - 24	4%	22	22	15.7	288	40.7
Antimony	mg/kg dw	0 - 24	0%	–	–	0.057	1	0.145
Arsenic	mg/kg dw	11 - 24	46%	0.034	0.3551	0.1295	2	0.303
Barium	mg/kg dw	9 - 24	38%	0.092	2.487	0.22	3.3	0.759
Beryllium	mg/kg dw	0 - 24	0%	–	–	0.12	2.1	0.317
Boron	mg/kg dw	0 - 24	0%	–	–	1.6	29.8	4.2
Cadmium	mg/kg dw	0 - 24	0%	–	–	0.03	0.55	0.0819
Chromium	mg/kg dw	3 - 24	13%	0.6736	3.472	0.5	9.1	1.41
Cobalt	mg/kg dw	0 - 24	0%	–	–	0.055	1	0.142
Copper	mg/kg dw	20 - 24	83%	0.21	2.461	0.8	10.4	1.81
Lead	mg/kg dw	1 - 24	4%	2.6	2.6	0.11	1.2	0.307
Manganese	mg/kg dw	21 - 24	88%	0.24	36.79	3.4	12.3	6.06
Mercury	mg/kg dw	22 - 24	92%	0.022	0.6218	0.5	0.83	0.293
Molybdenum	mg/kg dw	0 - 24	0%	–	–	0.14	2.5	0.354
Nickel	mg/kg dw	1 - 24	4%	1.813	1.813	0.38	7	1.04
Selenium	mg/kg dw	22 - 24	92%	0.38	4.8	2.9	4.9	2.24
Silver	mg/kg dw	0 - 24	0%	–	–	0.011	0.21	0.0295
Strontium	mg/kg dw	21 - 24	88%	0.073	14.51	0.87	3.2	3.11
Thallium	mg/kg dw	0 - 24	0%	–	–	0.054	0.99	0.139
Vanadium	mg/kg dw	0 - 24	0%	–	–	0.18	3.3	0.491
Zinc	mg/kg dw	22 - 24	92%	7.6	103.8	94.5	157	66.2
Inorganic-cations/anions								
Calcium	mg/kg dw	21 - 24	88%	531	17617	957	3470	4301
Iron	mg/kg dw	0 - 24	0%	–	–	47.3	868	122.2
Magnesium	mg/kg dw	22 - 24	92%	1290	1827	2090	3470	1629
Potassium	mg/kg dw	22 - 24	92%	13523	22600	31400	52100	20000
Sodium	mg/kg dw	22 - 24	92%	1320	4264	2090	3470	2114

Note: Bluegill sunfish fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 81 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-83. Bluegill Sunfish Fillet (2010) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 11	0%	–	–	17.5	21.5	19.5
Antimony	mg/kg dw	0 - 11	0%	–	–	0.063	0.07813	0.0711
Arsenic	mg/kg dw	11 - 11	100%	0.16	1.132	–	–	0.492
Barium	mg/kg dw	8 - 11	73%	0.24	1.154	0.21	0.25	0.479
Beryllium	mg/kg dw	0 - 11	0%	–	–	0.1282	0.31	0.183
Boron	mg/kg dw	0 - 11	0%	–	–	1.8	2.2	2.03
Cadmium	mg/kg dw	0 - 11	0%	–	–	0.03333	0.067	0.0402
Chromium	mg/kg dw	3 - 11	27%	0.9375	1.3	0.55	0.68	0.758
Cobalt	mg/kg dw	0 - 11	0%	–	–	0.05983	0.076	0.068
Copper	mg/kg dw	11 - 11	100%	1.1	4.017	–	–	1.98
Lead	mg/kg dw	1 - 11	9%	0.359	0.359	0.12	0.15	0.157
Manganese	mg/kg dw	11 - 11	100%	1.1	5.8	–	–	2.47
Mercury	mg/kg dw	11 - 11	100%	0.1535	0.58	–	–	0.279
Molybdenum	mg/kg dw	0 - 11	0%	–	–	0.15	0.19	0.172
Nickel	mg/kg dw	2 - 11	18%	0.6	0.6838	0.43	0.52	0.508
Selenium	mg/kg dw	11 - 11	100%	2.6	5.366	–	–	3.96
Silver	mg/kg dw	5 - 11	45%	0.05446	0.1068	0.013	0.052	0.0509
Strontium	mg/kg dw	11 - 11	100%	0.38	9.901	–	–	3.37
Thallium	mg/kg dw	0 - 11	0%	–	–	0.05983	0.18	0.0787
Vanadium	mg/kg dw	1 - 11	9%	0.2521	0.2521	0.2	0.4	0.246
Zinc	mg/kg dw	11 - 11	100%	52.2	93.8	–	–	72.5
Inorganic-cations/anions								
Calcium	mg/kg dw	11 - 11	100%	710	8663	–	–	3571
Iron	mg/kg dw	1 - 11	9%	73.3	73.3	52.6	64.7	59.8
Magnesium	mg/kg dw	11 - 11	100%	1180	1837	–	–	1547
Potassium	mg/kg dw	11 - 11	100%	13700	19792	–	–	17700
Sodium	mg/kg dw	11 - 11	100%	1350	1927	–	–	1650

Note: Bluegill sunfish fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 81 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-84. Bluegill Sunfish Fillet (2010) Dataset: Emory River - Reach B (ERM 11.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 12	0%	–	–	16.08	22.3	20.1
Antimony	mg/kg dw	0 - 12	0%	–	–	0.05882	0.08	0.0724
Arsenic	mg/kg dw	12 - 12	100%	0.2674	0.6952	–	–	0.413
Barium	mg/kg dw	12 - 12	100%	0.2194	1.7	–	–	0.498
Beryllium	mg/kg dw	0 - 12	0%	–	–	0.1176	0.16	0.147
Boron	mg/kg dw	0 - 12	0%	–	–	1.686	2.3	2.09
Cadmium	mg/kg dw	0 - 12	0%	–	–	0.03098	0.042	0.0383
Chromium	mg/kg dw	1 - 12	8%	0.8163	0.8163	0.5098	0.71	0.658
Cobalt	mg/kg dw	4 - 12	33%	0.075	0.11	0.05882	0.078	0.0756
Copper	mg/kg dw	12 - 12	100%	0.96	3	–	–	1.55
Lead	mg/kg dw	2 - 12	17%	0.14	0.49	0.1137	0.16	0.169
Manganese	mg/kg dw	12 - 12	100%	1.4	10.2	–	–	3.31
Mercury	mg/kg dw	12 - 12	100%	0.1531	0.43	–	–	0.281
Molybdenum	mg/kg dw	0 - 12	0%	–	–	0.1412	0.2	0.177
Nickel	mg/kg dw	1 - 12	8%	1.1	1.1	0.3922	0.54	0.541
Selenium	mg/kg dw	12 - 12	100%	2.314	5.3	–	–	3.94
Silver	mg/kg dw	0 - 12	0%	–	–	0.01176	0.016	0.0146
Strontium	mg/kg dw	12 - 12	100%	0.7653	26.3	–	–	5.61
Thallium	mg/kg dw	0 - 12	0%	–	–	0.0549	0.13	0.0798
Vanadium	mg/kg dw	0 - 12	0%	–	–	0.1843	0.25	0.231
Zinc	mg/kg dw	12 - 12	100%	52.1	80.61	–	–	64.2
Inorganic-cations/anions								
Calcium	mg/kg dw	12 - 12	100%	1026	25500	–	–	5582
Iron	mg/kg dw	0 - 12	0%	–	–	49.02	67.1	60.7
Magnesium	mg/kg dw	12 - 12	100%	1330	1850	–	–	1601
Potassium	mg/kg dw	12 - 12	100%	16100	20410	–	–	18200
Sodium	mg/kg dw	12 - 12	100%	1510	2376	–	–	1922

Note: Bluegill sunfish fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 81 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-85. Bluegill Sunfish Fillet (2010) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations	Detection Limits	Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min - Max	Min - Max	
Inorganics						
Aluminum	mg/kg dw	4 - 6	67%	23.7 - 36.9	19.1 - 20.1	26.9
Antimony	mg/kg dw	0 - 6	0%	– - –	0.065 - 0.077	0.071
Arsenic	mg/kg dw	6 - 6	100%	0.29 - 0.59	– - –	0.415
Barium	mg/kg dw	6 - 6	100%	0.25 - 1.3	– - –	0.785
Beryllium	mg/kg dw	0 - 6	0%	– - –	0.13 - 0.16	0.143
Boron	mg/kg dw	0 - 6	0%	– - –	1.8 - 2.2	2.03
Cadmium	mg/kg dw	0 - 6	0%	– - –	0.034 - 0.04	0.0372
Chromium	mg/kg dw	0 - 6	0%	– - –	0.57 - 0.67	0.622
Cobalt	mg/kg dw	5 - 6	83%	0.082 - 0.13	0.067 - 0.067	0.0935
Copper	mg/kg dw	6 - 6	100%	1.3 - 1.8	– - –	1.57
Lead	mg/kg dw	0 - 6	0%	– - –	0.36 - 1.7	0.803
Manganese	mg/kg dw	6 - 6	100%	2.8 - 11	– - –	8.92
Mercury	mg/kg dw	6 - 6	100%	0.13 - 0.27	– - –	0.172
Molybdenum	mg/kg dw	0 - 6	0%	– - –	0.16 - 0.19	0.173
Nickel	mg/kg dw	0 - 6	0%	– - –	0.44 - 0.52	0.478
Selenium	mg/kg dw	6 - 6	100%	2.3 - 3.6	– - –	2.85
Silver	mg/kg dw	0 - 6	0%	– - –	0.013 - 0.015	0.0142
Strontium	mg/kg dw	6 - 6	100%	0.68 - 6.3	– - –	3.36
Thallium	mg/kg dw	0 - 6	0%	– - –	0.062 - 0.073	0.0675
Vanadium	mg/kg dw	0 - 6	0%	– - –	0.2 - 0.24	0.223
Zinc	mg/kg dw	6 - 6	100%	49.7 - 92.2	– - –	69
Inorganic-cations/anions						
Calcium	mg/kg dw	6 - 6	100%	676 - 4830	– - –	2933
Iron	mg/kg dw	1 - 6	17%	66.8 - 66.8	53.8 - 64	59.6
Magnesium	mg/kg dw	6 - 6	100%	1220 - 1410	– - –	1335
Potassium	mg/kg dw	6 - 6	100%	12500 - 16200	– - –	13900
Sodium	mg/kg dw	6 - 6	100%	1930 - 2530	– - –	2205

Note: Bluegill sunfish fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 81 percent where individual sample percent moisture value was rejected.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-86. Bluegill Sunfish Fillet (2010) Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 17	0%	– - –		15.9 - 24.5		20.6
Antimony	mg/kg dw	0 - 17	0%	– - –		0.058	0.089	0.0746
Arsenic	mg/kg dw	17 - 17	100%	0.18 - 0.8		– - –		0.438
Barium	mg/kg dw	11 - 17	65%	0.25 - 2.2		0.23 - 0.27		0.599
Beryllium	mg/kg dw	0 - 17	0%	– - –		0.12 - 0.18		0.154
Boron	mg/kg dw	1 - 17	6%	2.8 - 2.8		1.7 - 2.5		2.16
Cadmium	mg/kg dw	0 - 17	0%	– - –		0.03 - 0.089		0.0468
Chromium	mg/kg dw	2 - 17	12%	1.2 - 1.7		0.51 - 0.78		0.748
Cobalt	mg/kg dw	0 - 17	0%	– - –		0.056 - 0.086		0.0725
Copper	mg/kg dw	16 - 17	94%	0.45 - 2.2		0.88 - 0.88		1.21
Lead	mg/kg dw	1 - 17	6%	0.22 - 0.22		0.11 - 0.17		0.149
Manganese	mg/kg dw	17 - 17	100%	1.1 - 42.8		– - –		6.95
Mercury	mg/kg dw	17 - 17	100%	0.21 - 0.87		– - –		0.367
Molybdenum	mg/kg dw	0 - 17	0%	– - –		0.14 - 0.22		0.181
Nickel	mg/kg dw	1 - 17	6%	0.76 - 0.76		0.39 - 2		0.604
Selenium	mg/kg dw	17 - 17	100%	2.1 - 3.7		– - –		2.99
Silver	mg/kg dw	0 - 17	0%	– - –		0.012 - 0.018		0.0149
Strontium	mg/kg dw	17 - 17	100%	0.39 - 31.2		– - –		6.15
Thallium	mg/kg dw	0 - 17	0%	– - –		0.055 - 0.084		0.0711
Vanadium	mg/kg dw	0 - 17	0%	– - –		0.18 - 0.28		0.235
Zinc	mg/kg dw	17 - 17	100%	48.1 - 120		– - –		78.5
Inorganic-cations/anions								
Calcium	mg/kg dw	17 - 17	100%	703 - 38700		– - –		7683
Iron	mg/kg dw	0 - 17	0%	– - –		48 - 73.8		62.1
Magnesium	mg/kg dw	17 - 17	100%	1020 - 2030		– - –		1489
Potassium	mg/kg dw	17 - 17	100%	12000 - 20400		– - –		17500
Sodium	mg/kg dw	17 - 17	100%	1320 - 3460		– - –		1959
Speciation								
Arsenic	mg/kg dw	1 - 1	100%	1.342 - 1.342		– - –		1.34
Organic Arsenic	mg/kg dw	1 - 1	100%	1.342 - 1.342		– - –		1.34

Note: Bluegill sunfish fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 81 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-87. Bluegill Sunfish Fillet (2010) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 12	0%	–	–	18.7	25.4	20.6
Antimony	mg/kg dw	0 - 12	0%	–	–	0.067	0.092	0.0746
Arsenic	mg/kg dw	12 - 12	100%	0.16	1.6	–	–	0.596
Barium	mg/kg dw	7 - 12	58%	0.24	1.2	0.22	0.25	0.335
Beryllium	mg/kg dw	0 - 12	0%	–	–	0.14	0.31	0.227
Boron	mg/kg dw	0 - 12	0%	–	–	1.9	2.6	2.13
Cadmium	mg/kg dw	0 - 12	0%	–	–	0.036	0.08228	0.049
Chromium	mg/kg dw	0 - 12	0%	–	–	0.59	0.81	0.654
Cobalt	mg/kg dw	1 - 12	8%	0.08126	0.08126	0.066	0.089	0.0731
Copper	mg/kg dw	12 - 12	100%	1	2.1	–	–	1.42
Lead	mg/kg dw	1 - 12	8%	0.3	0.3	0.13	0.18	0.159
Manganese	mg/kg dw	11 - 12	92%	1	7.7	0.86	0.86	1.92
Mercury	mg/kg dw	12 - 12	100%	0.17	0.42	–	–	0.292
Molybdenum	mg/kg dw	0 - 12	0%	–	–	0.16	0.22	0.181
Nickel	mg/kg dw	0 - 12	0%	–	–	0.46	0.62	0.505
Selenium	mg/kg dw	12 - 12	100%	3.5	7.7	–	–	5.41
Silver	mg/kg dw	1 - 12	8%	0.023	0.023	0.013	0.018	0.0155
Strontium	mg/kg dw	12 - 12	100%	0.76	13.3	–	–	2.33
Thallium	mg/kg dw	0 - 12	0%	–	–	0.064	0.16	0.0992
Vanadium	mg/kg dw	0 - 12	0%	–	–	0.04774	0.45	0.254
Zinc	mg/kg dw	12 - 12	100%	66.1	117	–	–	85.5
Inorganic-cations/anions								
Calcium	mg/kg dw	12 - 12	100%	817	13400	–	–	2456
Iron	mg/kg dw	0 - 12	0%	–	–	56.2	76.6	62.2
Magnesium	mg/kg dw	12 - 12	100%	1340	1640	–	–	1493
Potassium	mg/kg dw	12 - 12	100%	15700	20300	–	–	18300
Sodium	mg/kg dw	12 - 12	100%	1500	2310	–	–	1959

Note: Bluegill sunfish fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 81 percent where individual sample percent moisture value was rejected.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-88. Bluegill Sunfish Fillet (2010) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 7	0%	–	–	14.98	21.13	18
Antimony	mg/kg dw	0 - 13	0%	–	–	0.05618	0.084	0.0694
Arsenic	mg/kg dw	11 - 13	85%	0.4019	1.4	0.65	0.67	0.75
Barium	mg/kg dw	11 - 12	92%	0.29	2.547	0.2009	0.2009	0.779
Beryllium	mg/kg dw	0 - 13	0%	–	–	0.1124	0.318	0.153
Boron	mg/kg dw	0 - 13	0%	–	–	1.573	2.4	1.99
Cadmium	mg/kg dw	0 - 13	0%	–	–	0.02846	0.08196	0.0397
Chromium	mg/kg dw	0 - 13	0%	–	–	0.4869	0.74	0.612
Cobalt	mg/kg dw	0 - 13	0%	–	–	0.05243	0.082	0.0679
Copper	mg/kg dw	12 - 13	92%	0.8763	1.388	0.71	0.71	1.09
Lead	mg/kg dw	1 - 13	8%	0.14	0.14	0.1049	0.16	0.134
Manganese	mg/kg dw	11 - 13	85%	1.148	12.73	0.7477	0.83	5.5
Mercury	mg/kg dw	13 - 13	100%	0.1798	0.34	–	–	0.262
Molybdenum	mg/kg dw	2 - 13	15%	0.1685	0.2035	0.1542	0.2	0.176
Nickel	mg/kg dw	0 - 13	0%	–	–	0.367	0.57	0.469
Selenium	mg/kg dw	13 - 13	100%	1.91	6.701	–	–	4.63
Silver	mg/kg dw	0 - 13	0%	–	–	0.01086	0.019	0.0142
Strontium	mg/kg dw	13 - 13	100%	0.6075	53.56	–	–	11.1
Thallium	mg/kg dw	0 - 13	0%	–	–	0.05243	0.08658	0.0699
Vanadium	mg/kg dw	2 - 13	15%	0.2772	0.2857	0.2009	0.4825	0.253
Zinc	mg/kg dw	11 - 13	85%	55.83	88.7	53.1	60.4	66.2
Inorganic-cations/anions								
Calcium	mg/kg dw	13 - 13	100%	971	56554	–	–	12200
Iron	mg/kg dw	0 - 7	0%	–	–	45.32	63.4	54
Magnesium	mg/kg dw	13 - 13	100%	1310	1910	–	–	1596
Potassium	mg/kg dw	13 - 13	100%	12472	19400	–	–	16400
Sodium	mg/kg dw	13 - 13	100%	1325	3950	–	–	2497
Speciation								
Arsenic	mg/kg dw	1 - 1	100%	0.6	0.6	–	–	0.6
Organic Arsenic	mg/kg dw	1 - 1	100%	0.6	0.6	–	–	0.6

Note: Bluegill sunfish fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 81 percent where individual sample percent moisture value was rejected.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-89. Bluegill Sunfish Whole Body (2010) Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	60.4	199	–	–	133.5
Antimony	mg/kg dw	0 - 3	0%	–	–	0.062	0.063	0.0627
Arsenic	mg/kg dw	3 - 3	100%	0.43	0.5	–	–	0.473
Barium	mg/kg dw	3 - 3	100%	8.1	9.2	–	–	8.8
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.13	0.13	0.13
Boron	mg/kg dw	0 - 3	0%	–	–	1.8	1.8	1.8
Cadmium	mg/kg dw	3 - 3	100%	0.035	0.039	–	–	0.0367
Chromium	mg/kg dw	2 - 3	67%	0.57	3.7	0.55	0.55	1.61
Cobalt	mg/kg dw	3 - 3	100%	0.16	0.22	–	–	0.19
Copper	mg/kg dw	3 - 3	100%	1.5	1.7	–	–	1.57
Lead	mg/kg dw	3 - 3	100%	0.2	0.33	–	–	0.253
Manganese	mg/kg dw	3 - 3	100%	126	144	–	–	134.3
Mercury	mg/kg dw	3 - 3	100%	0.14	0.15	–	–	0.143
Molybdenum	mg/kg dw	1 - 3	33%	0.18	0.18	0.15	0.15	0.16
Nickel	mg/kg dw	1 - 3	33%	0.49	0.49	0.42	0.43	0.447
Selenium	mg/kg dw	3 - 3	100%	1.6	1.6	–	–	1.6
Silver	mg/kg dw	0 - 3	0%	–	–	0.012	0.013	0.0127
Strontium	mg/kg dw	3 - 3	100%	55.7	60.4	–	–	58.1
Thallium	mg/kg dw	0 - 3	0%	–	–	0.059	0.06	0.0597
Vanadium	mg/kg dw	3 - 3	100%	0.21	0.36	–	–	0.303
Zinc	mg/kg dw	3 - 3	100%	140	150	–	–	145
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	63500	67300	–	–	65000
Iron	mg/kg dw	3 - 3	100%	124	303	–	–	215.3
Magnesium	mg/kg dw	3 - 3	100%	1800	1920	–	–	1870
Potassium	mg/kg dw	3 - 3	100%	11300	11500	–	–	11400
Sodium	mg/kg dw	3 - 3	100%	3360	3600	–	–	3483

Note: Bluegill sunfish fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 81 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-90. Bluegill Sunfish Whole Body (2010) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	253	992	–	–	564.3
Antimony	mg/kg dw	0 - 3	0%	–	–	0.06	0.065	0.063
Arsenic	mg/kg dw	3 - 3	100%	1.4	1.8	–	–	1.53
Barium	mg/kg dw	3 - 3	100%	8.5	18.1	–	–	13.4
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.12	0.27	0.173
Boron	mg/kg dw	0 - 3	0%	–	–	1.7	1.9	1.8
Cadmium	mg/kg dw	3 - 3	100%	0.063	0.072	–	–	0.0673
Chromium	mg/kg dw	3 - 3	100%	0.78	2.2	–	–	1.59
Cobalt	mg/kg dw	3 - 3	100%	0.26	0.86	–	–	0.533
Copper	mg/kg dw	3 - 3	100%	2.5	2.9	–	–	2.77
Lead	mg/kg dw	3 - 3	100%	0.37	0.84	–	–	0.65
Manganese	mg/kg dw	3 - 3	100%	74	164	–	–	108.5
Mercury	mg/kg dw	3 - 3	100%	0.071	0.11	–	–	0.0937
Molybdenum	mg/kg dw	3 - 3	100%	0.22	0.36	–	–	0.297
Nickel	mg/kg dw	3 - 3	100%	0.54	1.3	–	–	0.857
Selenium	mg/kg dw	3 - 3	100%	3.1	4.6	–	–	3.93
Silver	mg/kg dw	0 - 3	0%	–	–	0.012	0.013	0.0127
Strontium	mg/kg dw	3 - 3	100%	67.8	88.8	–	–	79
Thallium	mg/kg dw	0 - 3	0%	–	–	0.093	0.18	0.144
Vanadium	mg/kg dw	3 - 3	100%	1	2.8	–	–	1.83
Zinc	mg/kg dw	3 - 3	100%	156	198	–	–	174.3
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	65700	94700	–	–	78500
Iron	mg/kg dw	3 - 3	100%	283	1070	–	–	588.3
Magnesium	mg/kg dw	3 - 3	100%	1800	2490	–	–	2143
Potassium	mg/kg dw	3 - 3	100%	11500	12300	–	–	11800
Sodium	mg/kg dw	3 - 3	100%	3750	4770	–	–	4270

Note: Bluegill sunfish fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 81 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-91. Bluegill Sunfish Whole Body (2010) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	4 - 4	100%	166	690	–	–	405.5
Antimony	mg/kg dw	0 - 4	0%	–	–	0.055	0.064	0.0608
Arsenic	mg/kg dw	4 - 4	100%	1.1	1.6	–	–	1.35
Barium	mg/kg dw	4 - 4	100%	8.1	17.2	–	–	12.1
Beryllium	mg/kg dw	0 - 4	0%	–	–	0.11	0.13	0.123
Boron	mg/kg dw	0 - 4	0%	–	–	1.6	1.8	1.73
Cadmium	mg/kg dw	4 - 4	100%	0.038	0.067	–	–	0.0558
Chromium	mg/kg dw	2 - 4	50%	1	1.6	0.48	0.53	0.903
Cobalt	mg/kg dw	4 - 4	100%	0.18	0.56	–	–	0.335
Copper	mg/kg dw	4 - 4	100%	1.7	2.8	–	–	2.38
Lead	mg/kg dw	4 - 4	100%	0.21	0.9	–	–	0.478
Manganese	mg/kg dw	4 - 4	100%	87.5	124	–	–	103.5
Mercury	mg/kg dw	4 - 4	100%	0.077	0.12	–	–	0.0928
Molybdenum	mg/kg dw	4 - 4	100%	0.21	0.27	–	–	0.24
Nickel	mg/kg dw	3 - 4	75%	0.81	2.2	0.37	0.37	1.08
Selenium	mg/kg dw	4 - 4	100%	2.4	4.2	–	–	3.2
Silver	mg/kg dw	0 - 4	0%	–	–	0.011	0.013	0.0123
Strontium	mg/kg dw	4 - 4	100%	59.5	110	–	–	76.4
Thallium	mg/kg dw	0 - 4	0%	–	–	0.058	0.15	0.0915
Vanadium	mg/kg dw	4 - 4	100%	0.86	2.2	–	–	1.5
Zinc	mg/kg dw	4 - 4	100%	115	149	–	–	135.5
Inorganic-cations/anions								
Calcium	mg/kg dw	4 - 4	100%	50000	95800	–	–	65800
Iron	mg/kg dw	4 - 4	100%	144	564	–	–	323.8
Magnesium	mg/kg dw	4 - 4	100%	1670	2140	–	–	1903
Potassium	mg/kg dw	4 - 4	100%	11200	11600	–	–	11500
Sodium	mg/kg dw	4 - 4	100%	3410	3840	–	–	3640

Note: Bluegill sunfish fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 81 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-92. Bluegill Sunfish Whole Body (2010) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)

Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	109	190	–	–	152
Antimony	mg/kg dw	0 - 3	0%	–	–	0.062	0.065	0.0633
Arsenic	mg/kg dw	3 - 3	100%	0.64	0.72	–	–	0.67
Barium	mg/kg dw	3 - 3	100%	10.2	11.7	–	–	10.8
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.13	0.13	0.13
Boron	mg/kg dw	0 - 3	0%	–	–	1.8	1.9	1.83
Cadmium	mg/kg dw	3 - 3	100%	0.054	0.057	–	–	0.0553
Chromium	mg/kg dw	2 - 3	67%	0.58	0.78	0.57	0.57	0.643
Cobalt	mg/kg dw	3 - 3	100%	0.23	0.25	–	–	0.24
Copper	mg/kg dw	3 - 3	100%	1.7	2.2	–	–	1.97
Lead	mg/kg dw	3 - 3	100%	0.18	0.93	–	–	0.443
Manganese	mg/kg dw	3 - 3	100%	116	169	–	–	145
Mercury	mg/kg dw	3 - 3	100%	0.13	0.13	–	–	0.13
Molybdenum	mg/kg dw	0 - 3	0%	–	–	0.15	0.16	0.153
Nickel	mg/kg dw	1 - 3	33%	0.48	0.48	0.43	0.44	0.45
Selenium	mg/kg dw	3 - 3	100%	1.8	1.9	–	–	1.87
Silver	mg/kg dw	0 - 3	0%	–	–	0.012	0.013	0.0127
Strontium	mg/kg dw	3 - 3	100%	63.7	69.9	–	–	67.4
Thallium	mg/kg dw	0 - 3	0%	–	–	0.059	0.069	0.0633
Vanadium	mg/kg dw	3 - 3	100%	0.36	0.46	–	–	0.403
Zinc	mg/kg dw	3 - 3	100%	134	157	–	–	149
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	59800	69500	–	–	65600
Iron	mg/kg dw	3 - 3	100%	163	235	–	–	200
Magnesium	mg/kg dw	3 - 3	100%	1940	1970	–	–	1957
Potassium	mg/kg dw	3 - 3	100%	11200	11700	–	–	11400
Sodium	mg/kg dw	3 - 3	100%	3550	3800	–	–	3687

Note: Bluegill sunfish fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 81 percent where individual sample percent moisture value was rejected.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-93. Bluegill Sunfish Whole Body (2010) Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations	Detection Limits	Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min Max	Min Max	
Inorganics						
Aluminum	mg/kg dw	3 - 3	100%	141 - 203	– - –	167
Antimony	mg/kg dw	0 - 3	0%	– - –	0.062 - 0.065	0.064
Arsenic	mg/kg dw	3 - 3	100%	0.61 - 0.71	– - –	0.647
Barium	mg/kg dw	3 - 3	100%	5.4 - 6.1	– - –	5.77
Beryllium	mg/kg dw	0 - 3	0%	– - –	0.13 - 0.13	0.13
Boron	mg/kg dw	0 - 3	0%	– - –	1.8 - 1.9	1.87
Cadmium	mg/kg dw	2 - 3	67%	0.039 - 0.044	0.034 - 0.034	0.039
Chromium	mg/kg dw	3 - 3	100%	0.62 - 0.81	– - –	0.707
Cobalt	mg/kg dw	3 - 3	100%	0.16 - 0.24	– - –	0.19
Copper	mg/kg dw	3 - 3	100%	1.5 - 2.1	– - –	1.8
Lead	mg/kg dw	3 - 3	100%	0.22 - 0.3	– - –	0.26
Manganese	mg/kg dw	3 - 3	100%	56.5 - 69.2	– - –	62
Mercury	mg/kg dw	3 - 3	100%	0.15 - 0.23	– - –	0.183
Molybdenum	mg/kg dw	0 - 3	0%	– - –	0.15 - 0.16	0.157
Nickel	mg/kg dw	1 - 3	33%	0.74 - 0.74	0.42 - 0.44	0.533
Selenium	mg/kg dw	3 - 3	100%	2.4 - 2.8	– - –	2.57
Silver	mg/kg dw	0 - 3	0%	– - –	0.012 - 0.013	0.0127
Strontium	mg/kg dw	3 - 3	100%	53.3 - 61.6	– - –	56.1
Thallium	mg/kg dw	0 - 3	0%	– - –	0.062 - 0.073	0.0657
Vanadium	mg/kg dw	3 - 3	100%	0.28 - 0.55	– - –	0.433
Zinc	mg/kg dw	3 - 3	100%	125 - 152	– - –	141.7
Inorganic-cations/anions						
Calcium	mg/kg dw	3 - 3	100%	58900 - 69200	– - –	64100
Iron	mg/kg dw	3 - 3	100%	168 - 293	– - –	232.3
Magnesium	mg/kg dw	3 - 3	100%	1830 - 2200	– - –	1990
Potassium	mg/kg dw	3 - 3	100%	11300 - 12300	– - –	11900
Sodium	mg/kg dw	3 - 3	100%	3760 - 4300	– - –	4033

Note: Bluegill sunfish fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 81 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-94. Bluegill Sunfish Whole Body (2010) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	251	1980	–	–	830
Antimony	mg/kg dw	1 - 3	33%	0.075	0.075	0.063	0.067	0.0683
Arsenic	mg/kg dw	3 - 3	100%	1.3	3.2	–	–	1.93
Barium	mg/kg dw	3 - 3	100%	8.1	28.5	–	–	15.5
Beryllium	mg/kg dw	1 - 3	33%	0.21	0.21	0.13	0.14	0.16
Boron	mg/kg dw	1 - 3	33%	2.2	2.2	1.8	1.9	1.97
Cadmium	mg/kg dw	3 - 3	100%	0.073	0.17	–	–	0.106
Chromium	mg/kg dw	3 - 3	100%	0.71	2.8	–	–	1.44
Cobalt	mg/kg dw	3 - 3	100%	0.26	1.4	–	–	0.643
Copper	mg/kg dw	3 - 3	100%	2.2	6.1	–	–	3.77
Lead	mg/kg dw	3 - 3	100%	0.4	2.1	–	–	0.977
Manganese	mg/kg dw	3 - 3	100%	51.1	160	–	–	93.4
Mercury	mg/kg dw	3 - 3	100%	0.13	0.16	–	–	0.147
Molybdenum	mg/kg dw	0 - 3	0%	–	–	0.34	0.49	0.403
Nickel	mg/kg dw	3 - 3	100%	0.49	2.6	–	–	1.21
Selenium	mg/kg dw	3 - 3	100%	3.5	4	–	–	3.67
Silver	mg/kg dw	0 - 3	0%	–	–	0.013	0.013	0.013
Strontium	mg/kg dw	3 - 3	100%	69.6	95.1	–	–	83.4
Thallium	mg/kg dw	0 - 3	0%	–	–	0.11	0.27	0.18
Vanadium	mg/kg dw	3 - 3	100%	1.2	5.7	–	–	2.7
Zinc	mg/kg dw	3 - 3	100%	173	203	–	–	193
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	70900	93700	–	–	82100
Iron	mg/kg dw	3 - 3	100%	251	1970	–	–	825
Magnesium	mg/kg dw	3 - 3	100%	2190	2470	–	–	2360
Potassium	mg/kg dw	3 - 3	100%	12600	13000	–	–	12800
Sodium	mg/kg dw	3 - 3	100%	4630	4990	–	–	4773

Note: Bluegill sunfish fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 81 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-95. Bluegill Sunfish Whole Body (2010) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	8 - 8	100%	91.1	361	–	–	216.3
Antimony	mg/kg dw	0 - 8	0%	–	–	0.059	0.067	0.0618
Arsenic	mg/kg dw	8 - 8	100%	1	1.4	–	–	1.2
Barium	mg/kg dw	8 - 8	100%	4.9	9.6	–	–	7.79
Beryllium	mg/kg dw	0 - 8	0%	–	–	0.12	0.14	0.125
Boron	mg/kg dw	0 - 8	0%	–	–	1.7	1.9	1.76
Cadmium	mg/kg dw	8 - 8	100%	0.05	0.1	–	–	0.066
Chromium	mg/kg dw	5 - 8	63%	0.62	1.3	0.52	0.55	0.778
Cobalt	mg/kg dw	8 - 8	100%	0.12	0.36	–	–	0.233
Copper	mg/kg dw	8 - 8	100%	2	9.2	–	–	3.8
Lead	mg/kg dw	8 - 8	100%	0.17	0.61	–	–	0.383
Manganese	mg/kg dw	8 - 8	100%	51.8	95.9	–	–	74
Mercury	mg/kg dw	8 - 8	100%	0.018	0.14	–	–	0.0929
Molybdenum	mg/kg dw	4 - 8	50%	0.19	0.28	0.15	0.34	0.245
Nickel	mg/kg dw	5 - 8	63%	0.44	1.8	0.4	0.43	0.644
Selenium	mg/kg dw	8 - 8	100%	2.8	4.1	–	–	3.35
Silver	mg/kg dw	0 - 8	0%	–	–	0.012	0.013	0.0124
Strontium	mg/kg dw	8 - 8	100%	43.3	83.6	–	–	63.3
Thallium	mg/kg dw	0 - 8	0%	–	–	0.079	0.17	0.115
Vanadium	mg/kg dw	8 - 8	100%	0.4	1.3	–	–	0.894
Zinc	mg/kg dw	8 - 8	100%	121	212	–	–	158.5
Inorganic-cations/anions								
Calcium	mg/kg dw	8 - 8	100%	49700	86600	–	–	66400
Iron	mg/kg dw	8 - 8	100%	98.5	353	–	–	210.1
Magnesium	mg/kg dw	8 - 8	100%	1670	2480	–	–	2009
Potassium	mg/kg dw	8 - 8	100%	11300	12500	–	–	12000
Sodium	mg/kg dw	8 - 8	100%	3370	4720	–	–	4021

Note: Bluegill sunfish fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 81 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-96. Channel Catfish Fillet (2010) Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations	Detection Limits	Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min Max	Min Max	
Inorganics						
Aluminum	mg/kg dw	0 - 20	0%	– - –	16.14 - 25.16	20
Antimony	mg/kg dw	0 - 20	0%	– - –	0.0583 - 0.09032	0.0719
Arsenic	mg/kg dw	0 - 20	0%	– - –	0.1121 - 0.1742	0.14
Barium	mg/kg dw	6 - 20	30%	0.35 - 0.75	0.1883 - 0.2839	0.325
Beryllium	mg/kg dw	0 - 20	0%	– - –	0.1211 - 0.1871	0.147
Boron	mg/kg dw	0 - 20	0%	– - –	1.704 - 2.581	2.07
Cadmium	mg/kg dw	0 - 20	0%	– - –	0.03094 - 0.04774	0.0382
Chromium	mg/kg dw	0 - 20	0%	– - –	0.5381 - 0.7742	0.637
Cobalt	mg/kg dw	0 - 20	0%	– - –	0.0583 - 0.09032	0.0706
Copper	mg/kg dw	20 - 20	100%	0.14 - 5.4	– - –	1.77
Lead	mg/kg dw	1 - 20	5%	0.22 - 0.22	0.1121 - 0.1742	0.143
Manganese	mg/kg dw	11 - 20	55%	0.89 - 5.3	0.6726 - 1.032	1.46
Mercury	mg/kg dw	20 - 20	100%	0.049 - 1.548	– - –	0.517
Molybdenum	mg/kg dw	0 - 20	0%	– - –	0.1435 - 0.2194	0.176
Nickel	mg/kg dw	4 - 20	20%	0.5392 - 1.1	0.3991 - 0.58	0.562
Selenium	mg/kg dw	20 - 20	100%	0.26 - 2	– - –	1.16
Silver	mg/kg dw	0 - 20	0%	– - –	0.01166 - 0.054	0.0247
Strontium	mg/kg dw	20 - 20	100%	0.071 - 5.6	– - –	1.38
Thallium	mg/kg dw	0 - 20	0%	– - –	0.0583 - 0.15	0.0896
Vanadium	mg/kg dw	0 - 20	0%	– - –	0.1883 - 0.2839	0.229
Zinc	mg/kg dw	20 - 20	100%	4.5 - 66.9	– - –	34.6
Inorganic-cations/anions						
Calcium	mg/kg dw	20 - 20	100%	343 - 6190	– - –	1589
Iron	mg/kg dw	0 - 20	0%	– - –	48.88 - 75.48	60.3
Magnesium	mg/kg dw	20 - 20	100%	1148 - 1550	– - –	1325
Potassium	mg/kg dw	20 - 20	100%	16726 - 26300	– - –	21200
Sodium	mg/kg dw	20 - 20	100%	1660 - 3813	– - –	2178
Polychlorinated Biphenyls (PCBs)						
PCB-1016	mg/kg dw	0 - 3	0%	– - –	0.2525 - 0.5181	0.424
PCB-1221	mg/kg dw	0 - 3	0%	– - –	0.2525 - 0.5181	0.424
PCB-1232	mg/kg dw	0 - 3	0%	– - –	0.2525 - 0.5181	0.424
PCB-1242	mg/kg dw	0 - 3	0%	– - –	0.2525 - 0.5181	0.424
PCB-1248	mg/kg dw	0 - 3	0%	– - –	0.2525 - 0.5181	0.424
PCB-1254	mg/kg dw	3 - 3	100%	0.3278 - 0.7085	– - –	0.535
PCB-1260	mg/kg dw	3 - 3	100%	0.8889 - 2.56	– - –	1.69
Total PCBs	mg/kg dw	3 - 3	100%	2.4792 - 5.7204	– - –	4.34

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Table 2-96. Channel Catfish Fillet (2010) Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations	Detection Limits	Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min Max	Min Max	
Pesticides						
Aldrin	mg/kg dw	0 - 3	0%	– - –	0.01256 - 0.01295	0.0127
alpha-Chlordane	mg/kg dw	3 - 3	100%	0.01313 - 0.04623	– - –	0.0269
gamma-Chlordane	mg/kg dw	1 - 3	33%	0.03166 - 0.03166	0.01263 - 0.01295	0.0191
4,4'-DDD	mg/kg dw	0 - 3	0%	– - –	0.02513 - 0.02591	0.0254
4,4'-DDE	mg/kg dw	3 - 3	100%	0.04444 - 0.1035	– - –	0.0778
4,4'-DDT	mg/kg dw	2 - 3	67%	0.04472 - 0.05544	0.02525 - 0.02525	0.0418
alpha-BHC	mg/kg dw	0 - 3	0%	– - –	0.01256 - 0.01295	0.0127
beta-BHC	mg/kg dw	0 - 3	0%	– - –	0.01256 - 0.01295	0.0127
delta-BHC	mg/kg dw	0 - 3	0%	– - –	0.01256 - 0.01295	0.0127
gamma-BHC (Lindane)	mg/kg dw	0 - 3	0%	– - –	0.01256 - 0.01295	0.0127
Dieldrin	mg/kg dw	0 - 3	0%	– - –	0.02513 - 0.02591	0.0254
Endosulfan I	mg/kg dw	0 - 3	0%	– - –	0.01256 - 0.01295	0.0127
Endosulfan II	mg/kg dw	0 - 3	0%	– - –	0.02513 - 0.02591	0.0254
Endosulfan Sulfate	mg/kg dw	0 - 3	0%	– - –	0.02513 - 0.02591	0.0254
Endrin	mg/kg dw	0 - 3	0%	– - –	0.02513 - 0.02591	0.0254
Endrin aldehyde	mg/kg dw	0 - 3	0%	– - –	0.02513 - 0.02591	0.0254
Endrin Ketone	mg/kg dw	0 - 3	0%	– - –	0.02513 - 0.02591	0.0254
Heptachlor	mg/kg dw	0 - 3	0%	– - –	0.01256 - 0.01295	0.0127
Heptachlor Epoxide	mg/kg dw	0 - 3	0%	– - –	0.01256 - 0.01295	0.0127
Methoxychlor	mg/kg dw	0 - 3	0%	– - –	0.1256 - 0.1295	0.127
Toxaphene	mg/kg dw	0 - 3	0%	– - –	0.3769 - 0.3886	0.381
Total DDx	mg/kg dw	3 - 3	100%	0.09494 - 0.17335	– - –	0.145
Total Chlordane	mg/kg dw	3 - 3	100%	0.02576 - 0.07789	– - –	0.0459
Radionuclides						
Actinium-228	pCi/g dw	0 - 1	0%	– - –	0.413 - 0.413	0.413
Americium-241	pCi/g dw	0 - 1	0%	– - –	0.485 - 0.485	0.485
Bismuth-214	pCi/g dw	0 - 1	0%	– - –	0.263 - 0.263	0.263
Cesium-137	pCi/g dw	0 - 1	0%	– - –	0.109 - 0.109	0.109
Cobalt-60	pCi/g dw	0 - 1	0%	– - –	0.137 - 0.137	0.137
Lead-212	pCi/g dw	0 - 1	0%	– - –	0.17 - 0.17	0.17
Lead-214	pCi/g dw	0 - 1	0%	– - –	0.23 - 0.23	0.23
Potassium-40	pCi/g dw	1 - 1	100%	16.7 - 16.7	– - –	16.7
Radium-226	pCi/g dw	0 - 1	0%	– - –	0.197 - 0.197	0.197
Radium-228	pCi/g dw	0 - 1	0%	– - –	0.413 - 0.413	0.413
Thallium-208	pCi/g dw	0 - 1	0%	– - –	0.123 - 0.123	0.123

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Table 2-96. Channel Catfish Fillet (2010) Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Radionuclides (continued)								
Thorium-228	pCi/g dw	0 - 1	0%	–	–	0.483	0.483	0.483
Thorium-230	pCi/g dw	0 - 1	0%	–	–	0.411	0.411	0.411
Thorium-232	pCi/g dw	0 - 1	0%	–	–	0.452	0.452	0.452
Thorium-234	pCi/g dw	0 - 1	0%	–	–	4.32	4.32	4.32
Uranium-234	pCi/g dw	0 - 1	0%	–	–	0.474	0.474	0.474
Uranium-235	pCi/g dw	0 - 1	0%	–	–	0.251	0.251	0.251
Uranium-238	pCi/g dw	0 - 1	0%	–	–	0.446	0.446	0.446

Note: Channel catfish fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 80 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
pCi/g dw = Picocuries per gram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-97. Channel Catfish Fillet (2010) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 11	0%	–	–	15	23.08	18.5
Antimony	mg/kg dw	0 - 11	0%	–	–	0.054	0.08242	0.0666
Arsenic	mg/kg dw	5 - 11	45%	0.19	0.34	0.12	0.1593	0.197
Barium	mg/kg dw	2 - 11	18%	0.28	0.78	0.17	0.2637	0.271
Beryllium	mg/kg dw	0 - 11	0%	–	–	0.11	0.1703	0.136
Boron	mg/kg dw	0 - 11	0%	–	–	1.6	2.363	1.92
Cadmium	mg/kg dw	1 - 11	9%	0.0989	0.0989	0.029	0.038	0.0401
Chromium	mg/kg dw	0 - 11	0%	–	–	0.48	0.7143	0.579
Cobalt	mg/kg dw	1 - 11	9%	0.074	0.074	0.053	0.08242	0.0664
Copper	mg/kg dw	11 - 11	100%	1.2	46	–	–	7.33
Lead	mg/kg dw	2 - 11	18%	0.85	2	0.1	0.1593	0.364
Manganese	mg/kg dw	6 - 11	55%	1.02	4.7	0.76	0.989	1.5
Mercury	mg/kg dw	11 - 11	100%	0.18	0.5641	–	–	0.348
Molybdenum	mg/kg dw	0 - 11	0%	–	–	0.13	0.1978	0.163
Nickel	mg/kg dw	3 - 11	27%	0.58	2.2	0.37	0.5495	0.665
Selenium	mg/kg dw	11 - 11	100%	1.3	2.69	–	–	1.8
Silver	mg/kg dw	0 - 11	0%	–	–	0.011	0.02253	0.0139
Strontium	mg/kg dw	11 - 11	100%	0.2741	5.6	–	–	1.27
Thallium	mg/kg dw	0 - 11	0%	–	–	0.052	0.07692	0.0629
Vanadium	mg/kg dw	0 - 11	0%	–	–	0.17	0.2582	0.21
Zinc	mg/kg dw	11 - 11	100%	26.37	57.4	–	–	35.9
Inorganic-cations/anions								
Calcium	mg/kg dw	11 - 11	100%	259	7950	–	–	1683
Iron	mg/kg dw	0 - 11	0%	–	–	45.1	68.68	55.5
Magnesium	mg/kg dw	11 - 11	100%	1010	1423	–	–	1192
Potassium	mg/kg dw	11 - 11	100%	15900	22041	–	–	19100
Sodium	mg/kg dw	11 - 11	100%	1300	2250	–	–	1909
Polychlorinated Biphenyls (PCBs)								
PCB-1016	mg/kg dw	0 - 3	0%	–	–	0.2262	0.2513	0.238
PCB-1221	mg/kg dw	0 - 3	0%	–	–	0.2262	0.2513	0.238
PCB-1232	mg/kg dw	0 - 3	0%	–	–	0.2262	0.2513	0.238
PCB-1242	mg/kg dw	0 - 3	0%	–	–	0.2262	0.2513	0.238
PCB-1248	mg/kg dw	0 - 3	0%	–	–	0.2262	0.2513	0.238
PCB-1254	mg/kg dw	3 - 3	100%	0.2975	0.5127	–	–	0.385
PCB-1260	mg/kg dw	3 - 3	100%	0.598	1.309	–	–	0.981
Total PCBs	mg/kg dw	3 - 3	100%	2.152	3.0017	–	–	2.56

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Table 2-97. Channel Catfish Fillet (2010) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Pesticides								
Aldrin	mg/kg dw	0 - 3	0%	–	–	0.01131	0.01256	0.0119
alpha-Chlordane	mg/kg dw	3 - 3	100%	0.01307	0.03814	–	–	0.0252
gamma-Chlordane	mg/kg dw	1 - 3	33%	0.02415	0.02415	0.01131	0.01256	0.016
4,4'-DDD	mg/kg dw	0 - 3	0%	–	–	0.02262	0.02513	0.0238
4,4'-DDE	mg/kg dw	3 - 3	100%	0.03891	0.06525	–	–	0.0483
4,4'-DDT	mg/kg dw	2 - 3	67%	0.02896	0.03941	0.02513	0.02513	0.0312
alpha-BHC	mg/kg dw	0 - 3	0%	–	–	0.01131	0.01256	0.0119
beta-BHC	mg/kg dw	0 - 3	0%	–	–	0.01131	0.01256	0.0119
delta-BHC	mg/kg dw	0 - 3	0%	–	–	0.01131	0.01256	0.0119
gamma-BHC (Lindane)	mg/kg dw	0 - 3	0%	–	–	0.01131	0.01256	0.0119
Dieldrin	mg/kg dw	0 - 3	0%	–	–	0.02262	0.02513	0.0238
Endosulfan I	mg/kg dw	0 - 3	0%	–	–	0.01131	0.01256	0.0119
Endosulfan II	mg/kg dw	0 - 3	0%	–	–	0.02262	0.02513	0.0238
Endosulfan Sulfate	mg/kg dw	0 - 3	0%	–	–	0.02262	0.02513	0.0238
Endrin	mg/kg dw	0 - 3	0%	–	–	0.02262	0.02513	0.0238
Endrin aldehyde	mg/kg dw	0 - 3	0%	–	–	0.02262	0.02513	0.0238
Endrin Ketone	mg/kg dw	0 - 3	0%	–	–	0.02262	0.02513	0.0238
Heptachlor	mg/kg dw	0 - 3	0%	–	–	0.01131	0.01256	0.0119
Heptachlor Epoxide	mg/kg dw	0 - 3	0%	–	–	0.01131	0.01256	0.0119
Methoxychlor	mg/kg dw	0 - 3	0%	–	–	0.1131	0.1256	0.119
Toxaphene	mg/kg dw	0 - 3	0%	–	–	0.3394	0.3769	0.357
Total DDx	mg/kg dw	3 - 3	100%	0.09049	0.12839	–	–	0.103
Total Chlordane	mg/kg dw	3 - 3	100%	0.02563	0.06229	–	–	0.0412
Speciation								
Arsenite	mg/kg dw	3 - 3	100%	0.002	0.045	–	–	0.0173
Inorganic Arsenic	mg/kg dw	1 - 1	100%	0.045	0.045	–	–	0.045
Radionuclides								
Actinium-228	pCi/g dw	0 - 1	0%	–	–	0.512	0.512	0.512
Americium-241	pCi/g dw	0 - 1	0%	–	–	0.339	0.339	0.339
Bismuth-214	pCi/g dw	0 - 1	0%	–	–	0.27	0.27	0.27
Cesium-137	pCi/g dw	0 - 1	0%	–	–	0.113	0.113	0.113
Cobalt-60	pCi/g dw	0 - 1	0%	–	–	0.129	0.129	0.129
Lead-212	pCi/g dw	0 - 1	0%	–	–	0.191	0.191	0.191
Lead-214	pCi/g dw	0 - 1	0%	–	–	0.231	0.231	0.231
Potassium-40	pCi/g dw	1 - 1	100%	17.8	17.8	–	–	17.8
Radium-226	pCi/g dw	1 - 1	100%	0.545	0.545	–	–	0.545
Radium-228	pCi/g dw	0 - 1	0%	–	–	0.512	0.512	0.512
Thallium-208	pCi/g dw	0 - 1	0%	–	–	0.121	0.121	0.121

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Table 2-97. Channel Catfish Fillet (2010) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Radionuclides (continued)								
Thorium-228	pCi/g dw	0 - 1	0%	–	–	0.589	0.589	0.589
Thorium-230	pCi/g dw	0 - 1	0%	–	–	0.391	0.391	0.391
Thorium-232	pCi/g dw	0 - 1	0%	–	–	0.211	0.211	0.211
Thorium-234	pCi/g dw	0 - 1	0%	–	–	2.97	2.97	2.97
Uranium-234	pCi/g dw	0 - 1	0%	–	–	0.195	0.195	0.195
Uranium-235	pCi/g dw	0 - 1	0%	–	–	0.242	0.242	0.242
Uranium-238	pCi/g dw	0 - 1	0%	–	–	0.361	0.361	0.361

Note: Channel catfish fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 80 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
pCi/g dw = Picocuries per gram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-98. Channel Catfish Fillet (2010) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 13	0%	–	–	17.12	21.2	19.2
Antimony	mg/kg dw	0 - 13	0%	–	–	0.06306	0.077	0.0695
Arsenic	mg/kg dw	3 - 13	23%	0.1633	0.51	0.12	0.15	0.168
Barium	mg/kg dw	6 - 13	46%	0.23	1.1	0.1937	0.2335	0.328
Beryllium	mg/kg dw	0 - 13	0%	–	–	0.1261	0.16	0.142
Boron	mg/kg dw	0 - 13	0%	–	–	1.757	2.2	1.98
Cadmium	mg/kg dw	0 - 13	0%	–	–	0.03243	0.04	0.0365
Chromium	mg/kg dw	0 - 13	0%	–	–	0.5405	0.67	0.61
Cobalt	mg/kg dw	2 - 13	15%	0.082	0.13	0.05856	0.075	0.074
Copper	mg/kg dw	13 - 13	100%	1.2	5.612	–	–	1.84
Lead	mg/kg dw	1 - 13	8%	0.1582	0.1582	0.1171	0.15	0.134
Manganese	mg/kg dw	9 - 13	69%	0.9009	4.8	0.8081	0.8629	1.94
Mercury	mg/kg dw	13 - 13	100%	0.12	0.82	–	–	0.352
Molybdenum	mg/kg dw	0 - 13	0%	–	–	0.1486	0.19	0.169
Nickel	mg/kg dw	1 - 13	8%	0.4808	0.4808	0.4144	0.52	0.47
Selenium	mg/kg dw	13 - 13	100%	1.1	2.4	–	–	1.81
Silver	mg/kg dw	0 - 13	0%	–	–	0.01216	0.015	0.0137
Strontium	mg/kg dw	13 - 13	100%	0.2404	6.6	–	–	1.81
Thallium	mg/kg dw	0 - 13	0%	–	–	0.05856	0.073	0.0662
Vanadium	mg/kg dw	0 - 13	0%	–	–	0.1937	0.24	0.219
Zinc	mg/kg dw	13 - 13	100%	25.96	38.07	–	–	32.1
Inorganic-cations/anions								
Calcium	mg/kg dw	13 - 13	100%	320.7	7920	–	–	2187
Iron	mg/kg dw	0 - 13	0%	–	–	51.35	63.8	57.8
Magnesium	mg/kg dw	13 - 13	100%	1060	1455	–	–	1228
Potassium	mg/kg dw	13 - 13	100%	17200	23131	–	–	19800
Sodium	mg/kg dw	13 - 13	100%	1404	2330	–	–	1914
Polychlorinated Biphenyls (PCBs)								
PCB-1016	mg/kg dw	0 - 3	0%	–	–	0.2183	0.2674	0.245
PCB-1221	mg/kg dw	0 - 3	0%	–	–	0.2183	0.2674	0.245
PCB-1232	mg/kg dw	0 - 3	0%	–	–	0.2183	0.2674	0.245
PCB-1242	mg/kg dw	0 - 3	0%	–	–	0.2183	0.2674	0.245
PCB-1248	mg/kg dw	0 - 3	0%	–	–	0.2183	0.2674	0.245
PCB-1254	mg/kg dw	1 - 3	33%	0.4214	0.4214	0.25	0.2674	0.313
PCB-1260	mg/kg dw	3 - 3	100%	0.63	1.293	–	–	0.891
Total PCBs	mg/kg dw	3 - 3	100%	2.13	2.8059	–	–	2.43

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Table 2-98. Channel Catfish Fillet (2010) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Pesticides								
Aldrin	mg/kg dw	0 - 3	0%	–	–	0.01092	0.01337	0.0123
alpha-Chlordane	mg/kg dw	1 - 3	33%	0.0214	0.0214	0.0125	0.01337	0.0158
gamma-Chlordane	mg/kg dw	0 - 3	0%	–	–	0.01092	0.01337	0.0123
4,4'-DDD	mg/kg dw	0 - 3	0%	–	–	0.02183	0.02674	0.0245
4,4'-DDE	mg/kg dw	2 - 3	67%	0.028	0.05895	0.02674	0.02674	0.0379
4,4'-DDT	mg/kg dw	1 - 3	33%	0.03668	0.03668	0.025	0.02674	0.0295
alpha-BHC	mg/kg dw	0 - 3	0%	–	–	0.01092	0.01337	0.0123
beta-BHC	mg/kg dw	0 - 3	0%	–	–	0.01092	0.01337	0.0123
delta-BHC	mg/kg dw	0 - 3	0%	–	–	0.01092	0.01337	0.0123
gamma-BHC (Lindane)	mg/kg dw	0 - 3	0%	–	–	0.01092	0.01337	0.0123
Dieldrin	mg/kg dw	0 - 3	0%	–	–	0.02183	0.02674	0.0245
Endosulfan I	mg/kg dw	0 - 3	0%	–	–	0.01092	0.01337	0.0123
Endosulfan II	mg/kg dw	0 - 3	0%	–	–	0.02183	0.02674	0.0245
Endosulfan Sulfate	mg/kg dw	0 - 3	0%	–	–	0.02183	0.02674	0.0245
Endrin	mg/kg dw	0 - 3	0%	–	–	0.02183	0.02674	0.0245
Endrin aldehyde	mg/kg dw	0 - 3	0%	–	–	0.02183	0.02674	0.0245
Endrin Ketone	mg/kg dw	0 - 3	0%	–	–	0.02183	0.02674	0.0245
Heptachlor	mg/kg dw	0 - 3	0%	–	–	0.01092	0.01337	0.0123
Heptachlor Epoxide	mg/kg dw	0 - 3	0%	–	–	0.01092	0.01337	0.0123
Methoxychlor	mg/kg dw	0 - 3	0%	–	–	0.1092	0.1337	0.123
Toxaphene	mg/kg dw	0 - 3	0%	–	–	0.3275	0.4011	0.368
Total DDx	mg/kg dw	2 - 3	67%	0.078	0.11746	0.08022	0.08022	0.0919
Total Chlordane	mg/kg dw	1 - 3	33%	0.03232	0.03232	0.025	0.02674	0.028
Radionuclides								
Actinium-228	pCi/g dw	0 - 1	0%	–	–	0.362	0.362	0.362
Americium-241	pCi/g dw	0 - 1	0%	–	–	0.207	0.207	0.207
Bismuth-214	pCi/g dw	0 - 1	0%	–	–	0.191	0.191	0.191
Cesium-137	pCi/g dw	0 - 1	0%	–	–	0.0941	0.0941	0.0941
Cobalt-60	pCi/g dw	0 - 1	0%	–	–	0.13	0.13	0.13
Lead-212	pCi/g dw	0 - 1	0%	–	–	0.143	0.143	0.143
Lead-214	pCi/g dw	0 - 1	0%	–	–	0.18	0.18	0.18
Potassium-40	pCi/g dw	1 - 1	100%	14	14	–	–	14
Radium-226	pCi/g dw	1 - 1	100%	0.439	0.439	–	–	0.439
Radium-228	pCi/g dw	0 - 1	0%	–	–	0.362	0.362	0.362
Thallium-208	pCi/g dw	0 - 1	0%	–	–	0.0814	0.0814	0.0814

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Table 2-98. Channel Catfish Fillet (2010) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Radionuclides (continued)								
Thorium-228	pCi/g dw	0 - 1	0%	–	–	0.432	0.432	0.432
Thorium-230	pCi/g dw	0 - 1	0%	–	–	0.366	0.366	0.366
Thorium-232	pCi/g dw	0 - 1	0%	–	–	0.316	0.316	0.316
Thorium-234	pCi/g dw	0 - 1	0%	–	–	1.74	1.74	1.74
Uranium-234	pCi/g dw	0 - 1	0%	–	–	0.222	0.222	0.222
Uranium-235	pCi/g dw	0 - 1	0%	–	–	0.274	0.274	0.274
Uranium-238	pCi/g dw	0 - 1	0%	–	–	0.222	0.222	0.222

Note: Channel catfish fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 80 percent where individual sample percent moisture value was rejected.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

pCi/g dw = Picocuries per gram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-99. Channel Catfish Fillet (2010) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 12	0%	–	–	16.7	23.43	19.6
Antimony	mg/kg dw	0 - 12	0%	–	–	0.06	0.08571	0.0704
Arsenic	mg/kg dw	1 - 12	8%	0.33	0.33	0.12	0.29	0.167
Barium	mg/kg dw	10 - 12	83%	0.2172	3.429	0.21	0.2304	0.696
Beryllium	mg/kg dw	0 - 12	0%	–	–	0.12	0.3486	0.235
Boron	mg/kg dw	0 - 12	0%	–	–	1.7	2.4	2.02
Cadmium	mg/kg dw	0 - 12	0%	–	–	0.032	0.082	0.0408
Chromium	mg/kg dw	0 - 12	0%	–	–	0.53	0.7429	0.623
Cobalt	mg/kg dw	3 - 12	25%	0.09948	0.1768	0.062	0.08	0.0857
Copper	mg/kg dw	12 - 12	100%	1.1	8.5	–	–	2.35
Lead	mg/kg dw	2 - 12	17%	0.16	0.33	0.12	0.16	0.157
Manganese	mg/kg dw	12 - 12	100%	0.9948	25.71	–	–	4.71
Mercury	mg/kg dw	12 - 12	100%	0.1515	1.486	–	–	0.579
Molybdenum	mg/kg dw	0 - 12	0%	–	–	0.15	0.2057	0.172
Nickel	mg/kg dw	4 - 12	33%	0.5641	2.6	0.41	0.52	0.692
Selenium	mg/kg dw	12 - 12	100%	0.7	1.7	–	–	1.26
Silver	mg/kg dw	0 - 12	0%	–	–	0.012	0.051	0.017
Strontium	mg/kg dw	12 - 12	100%	0.6806	17.71	–	–	4.19
Thallium	mg/kg dw	0 - 12	0%	–	–	0.058	0.2343	0.141
Vanadium	mg/kg dw	0 - 12	0%	–	–	0.19	0.2629	0.223
Zinc	mg/kg dw	12 - 12	100%	29.5	67.1	–	–	41
Inorganic-cations/anions								
Calcium	mg/kg dw	12 - 12	100%	701.6	18100	–	–	4807
Iron	mg/kg dw	0 - 12	0%	–	–	50.4	69.71	59
Magnesium	mg/kg dw	12 - 12	100%	1070	1469	–	–	1230
Potassium	mg/kg dw	12 - 12	100%	17000	22400	–	–	19700
Sodium	mg/kg dw	12 - 12	100%	1760	2960	–	–	2231
Polychlorinated Biphenyls (PCBs)								
PCB-1016	mg/kg dw	0 - 2	0%	–	–	0.2463	1.031	0.639
PCB-1221	mg/kg dw	0 - 2	0%	–	–	0.2463	1.031	0.639
PCB-1232	mg/kg dw	0 - 2	0%	–	–	0.2463	1.031	0.639
PCB-1242	mg/kg dw	0 - 2	0%	–	–	0.2463	1.031	0.639
PCB-1248	mg/kg dw	0 - 2	0%	–	–	0.2463	1.031	0.639
PCB-1254	mg/kg dw	0 - 2	0%	–	–	0.2463	1.031	0.639
PCB-1260	mg/kg dw	2 - 2	100%	0.6207	5.773	–	–	3.2
Total PCBs	mg/kg dw	2 - 2	100%	2.0985	11.959	–	–	7.03

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Table 2-99. Channel Catfish Fillet (2010) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Pesticides								
Aldrin	mg/kg dw	0 - 2	0%	–	–	0.01232	0.01289	0.0126
alpha-Chlordane	mg/kg dw	1 - 2	50%	0.01598	0.01598	0.01232	0.01232	0.0142
gamma-Chlordane	mg/kg dw	0 - 2	0%	–	–	0.01232	0.01289	0.0126
4,4'-DDD	mg/kg dw	0 - 2	0%	–	–	0.02463	0.02577	0.0252
4,4'-DDE	mg/kg dw	2 - 2	100%	0.03005	0.0866	–	–	0.0583
4,4'-DDT	mg/kg dw	1 - 2	50%	0.1041	0.1041	0.02463	0.02463	0.0644
alpha-BHC	mg/kg dw	0 - 2	0%	–	–	0.01232	0.01289	0.0126
beta-BHC	mg/kg dw	0 - 2	0%	–	–	0.01232	0.01289	0.0126
delta-BHC	mg/kg dw	0 - 2	0%	–	–	0.01232	0.01289	0.0126
gamma-BHC (Lindane)	mg/kg dw	0 - 2	0%	–	–	0.01232	0.01289	0.0126
Dieldrin	mg/kg dw	0 - 2	0%	–	–	0.02463	0.02577	0.0252
Endosulfan I	mg/kg dw	0 - 2	0%	–	–	0.01232	0.01289	0.0126
Endosulfan II	mg/kg dw	0 - 2	0%	–	–	0.02463	0.02577	0.0252
Endosulfan Sulfate	mg/kg dw	0 - 2	0%	–	–	0.02463	0.02577	0.0252
Endrin	mg/kg dw	0 - 2	0%	–	–	0.02463	0.02577	0.0252
Endrin aldehyde	mg/kg dw	0 - 2	0%	–	–	0.02463	0.02577	0.0252
Endrin Ketone	mg/kg dw	0 - 2	0%	–	–	0.02463	0.02577	0.0252
Heptachlor	mg/kg dw	0 - 2	0%	–	–	0.01232	0.01289	0.0126
Heptachlor Epoxide	mg/kg dw	0 - 2	0%	–	–	0.01232	0.01289	0.0126
Methoxychlor	mg/kg dw	0 - 2	0%	–	–	0.1232	0.1289	0.126
Toxaphene	mg/kg dw	0 - 2	0%	–	–	0.3695	0.3866	0.378
Total DDx	mg/kg dw	2 - 2	100%	0.07931	0.21647	–	–	0.148
Total Chlordane	mg/kg dw	1 - 2	50%	0.02887	0.02887	0.02464	0.02464	0.0268

Note: Channel catfish fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 80 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-100. Channel Catfish Fillet (2010) Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 13	0%	–	–	15.9	22.2	19.2
Antimony	mg/kg dw	0 - 13	0%	–	–	0.058	0.08	0.0693
Arsenic	mg/kg dw	7 - 13	54%	0.15	0.45	0.13	0.15	0.192
Barium	mg/kg dw	5 - 13	38%	0.21	1.5	0.2	0.25	0.47
Beryllium	mg/kg dw	0 - 13	0%	–	–	0.12	0.16	0.143
Boron	mg/kg dw	0 - 13	0%	–	–	1.6	2.3	1.99
Cadmium	mg/kg dw	1 - 13	8%	0.098	0.098	0.03	0.042	0.0411
Chromium	mg/kg dw	0 - 13	0%	–	–	0.5	0.7	0.609
Cobalt	mg/kg dw	7 - 13	54%	0.056	0.14	0.07	0.078	0.0822
Copper	mg/kg dw	13 - 13	100%	1.4	15.9	–	–	2.85
Lead	mg/kg dw	2 - 13	15%	0.12	0.76	0.12	0.15	0.183
Manganese	mg/kg dw	8 - 13	62%	0.85	12.6	0.73	0.95	3.01
Mercury	mg/kg dw	13 - 13	100%	0.22	1.2	–	–	0.459
Molybdenum	mg/kg dw	0 - 13	0%	–	–	0.14	0.2	0.17
Nickel	mg/kg dw	4 - 13	31%	0.7	2.1	0.42	0.54	0.693
Selenium	mg/kg dw	13 - 13	100%	0.71	2	–	–	1.25
Silver	mg/kg dw	0 - 13	0%	–	–	0.012	0.016	0.0138
Strontium	mg/kg dw	13 - 13	100%	0.33	19.3	–	–	4.13
Thallium	mg/kg dw	0 - 13	0%	–	–	0.055	0.076	0.0662
Vanadium	mg/kg dw	0 - 13	0%	–	–	0.18	0.25	0.219
Zinc	mg/kg dw	13 - 13	100%	22.9	65.9	–	–	33.1
Inorganic-cations/anions								
Calcium	mg/kg dw	13 - 13	100%	294	32600	–	–	5527
Iron	mg/kg dw	0 - 13	0%	–	–	47.9	66.9	57.8
Magnesium	mg/kg dw	13 - 13	100%	918	1480	–	–	1181
Potassium	mg/kg dw	13 - 13	100%	14400	21600	–	–	17800
Sodium	mg/kg dw	13 - 13	100%	1630	2890	–	–	2035
Polychlorinated Biphenyls (PCBs)								
PCB-1016	mg/kg dw	0 - 3	0%	–	–	0.2463	0.4545	0.382
PCB-1221	mg/kg dw	0 - 3	0%	–	–	0.2463	0.4545	0.382
PCB-1232	mg/kg dw	0 - 3	0%	–	–	0.2463	0.4545	0.382
PCB-1242	mg/kg dw	0 - 3	0%	–	–	0.2463	0.4545	0.382
PCB-1248	mg/kg dw	0 - 3	0%	–	–	0.2463	0.4545	0.382
PCB-1254	mg/kg dw	3 - 3	100%	0.3384	0.8591	–	–	0.593
PCB-1260	mg/kg dw	3 - 3	100%	0.7537	2.005	–	–	1.36
Total PCBs	mg/kg dw	3 - 3	100%	2.3236	5.1366	–	–	3.86

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Table 2-100. Channel Catfish Fillet (2010) Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Pesticides								
Aldrin	mg/kg dw	0 - 3	0%	–	–	0.01116	0.01232	0.0116
alpha-Chlordane	mg/kg dw	3 - 3	100%	0.01478	0.06364	–	–	0.0416
gamma-Chlordane	mg/kg dw	2 - 3	67%	0.0192	0.03818	0.01232	0.01232	0.0232
4,4'-DDD	mg/kg dw	0 - 3	0%	–	–	0.02232	0.02463	0.0232
4,4'-DDE	mg/kg dw	3 - 3	100%	0.03399	0.1309	–	–	0.0706
4,4'-DDT	mg/kg dw	3 - 3	100%	0.02463	0.05818	–	–	0.0406
alpha-BHC	mg/kg dw	0 - 3	0%	–	–	0.01116	0.01232	0.0116
beta-BHC	mg/kg dw	0 - 3	0%	–	–	0.01116	0.01232	0.0116
delta-BHC	mg/kg dw	0 - 3	0%	–	–	0.01116	0.01232	0.0116
gamma-BHC (Lindane)	mg/kg dw	0 - 3	0%	–	–	0.01116	0.01232	0.0116
Dieldrin	mg/kg dw	0 - 3	0%	–	–	0.02232	0.02463	0.0232
Endosulfan I	mg/kg dw	0 - 3	0%	–	–	0.01116	0.01232	0.0116
Endosulfan II	mg/kg dw	0 - 3	0%	–	–	0.02232	0.02463	0.0232
Endosulfan Sulfate	mg/kg dw	0 - 3	0%	–	–	0.02232	0.02463	0.0232
Endrin	mg/kg dw	0 - 3	0%	–	–	0.02232	0.02463	0.0232
Endrin aldehyde	mg/kg dw	0 - 3	0%	–	–	0.02232	0.02463	0.0232
Endrin Ketone	mg/kg dw	0 - 3	0%	–	–	0.02232	0.02463	0.0232
Heptachlor	mg/kg dw	0 - 3	0%	–	–	0.01116	0.01232	0.0116
Heptachlor Epoxide	mg/kg dw	2 - 3	67%	0.01227	0.01563	0.01232	0.01232	0.0134
Methoxychlor	mg/kg dw	0 - 3	0%	–	–	0.1116	0.1232	0.116
Toxaphene	mg/kg dw	0 - 3	0%	–	–	0.3348	0.3695	0.348
Total DDx	mg/kg dw	3 - 3	100%	0.08325	0.21181	–	–	0.134
Total Chlordane	mg/kg dw	3 - 3	100%	0.0271	0.10182	–	–	0.0649
Speciation								
Arsenite	mg/kg dw	4 - 4	100%	0.003	0.005	–	–	0.00413
Radionuclides								
Actinium-228	pCi/g dw	0 - 1	0%	–	–	0.619	0.619	0.619
Americium-241	pCi/g dw	0 - 1	0%	–	–	0.539	0.539	0.539
Bismuth-214	pCi/g dw	0 - 1	0%	–	–	0.358	0.358	0.358
Cesium-137	pCi/g dw	0 - 1	0%	–	–	0.165	0.165	0.165
Cobalt-60	pCi/g dw	0 - 1	0%	–	–	0.17	0.17	0.17
Lead-212	pCi/g dw	0 - 1	0%	–	–	0.274	0.274	0.274
Lead-214	pCi/g dw	0 - 1	0%	–	–	0.33	0.33	0.33
Potassium-40	pCi/g dw	1 - 1	100%	17.5	17.5	–	–	17.5
Radium-226	pCi/g dw	1 - 1	100%	0.293	0.293	–	–	0.293
Radium-228	pCi/g dw	0 - 1	0%	–	–	0.619	0.619	0.619
Thallium-208	pCi/g dw	0 - 1	0%	–	–	0.144	0.144	0.144

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Table 2-100. Channel Catfish Fillet (2010) Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Radionuclides (continued)								
Thorium-228	pCi/g dw	0 - 1	0%	–	–	0.493	0.493	0.493
Thorium-230	pCi/g dw	0 - 1	0%	–	–	0.446	0.446	0.446
Thorium-232	pCi/g dw	0 - 1	0%	–	–	0.202	0.202	0.202
Thorium-234	pCi/g dw	0 - 1	0%	–	–	5.2	5.2	5.2
Uranium-234	pCi/g dw	0 - 1	0%	–	–	0.406	0.406	0.406
Uranium-235	pCi/g dw	0 - 1	0%	–	–	0.394	0.394	0.394
Uranium-238	pCi/g dw	0 - 1	0%	–	–	0.319	0.319	0.319

Note: Channel catfish fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 80 percent where individual sample percent moisture value was rejected.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

pCi/g dw = Picocuries per gram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using Frequency of detection (FOD) = number of detects / total number of samples analyzed.

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Table 2-101. Channel Catfish Fillet (2010) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 12	0%	–	–	16.9	21.4	19.1
Antimony	mg/kg dw	0 - 12	0%	–	–	0.061	0.077	0.0691
Arsenic	mg/kg dw	6 - 12	50%	0.12	0.44	0.14	0.29	0.218
Barium	mg/kg dw	4 - 12	33%	0.042	0.38	0.2	0.24	0.23
Beryllium	mg/kg dw	0 - 12	0%	–	–	0.12	0.31	0.177
Boron	mg/kg dw	0 - 12	0%	–	–	1.7	2.2	1.98
Cadmium	mg/kg dw	0 - 12	0%	–	–	0.032	0.041	0.0364
Chromium	mg/kg dw	1 - 12	8%	0.89	0.89	0.55	0.68	0.636
Cobalt	mg/kg dw	0 - 12	0%	–	–	0.059	0.075	0.0673
Copper	mg/kg dw	12 - 12	100%	0.25	36.8	–	–	5.32
Lead	mg/kg dw	2 - 12	17%	0.52	1.6	0.12	0.15	0.288
Manganese	mg/kg dw	8 - 12	67%	0.16	2.8	0.83	0.91	1.41
Mercury	mg/kg dw	12 - 12	100%	0.042	0.7	–	–	0.356
Molybdenum	mg/kg dw	0 - 12	0%	–	–	0.15	0.19	0.168
Nickel	mg/kg dw	4 - 12	33%	0.14	2.2	0.42	0.52	0.648
Selenium	mg/kg dw	12 - 12	100%	0.3	2.3	–	–	1.49
Silver	mg/kg dw	0 - 12	0%	–	–	0.012	0.015	0.0138
Strontium	mg/kg dw	12 - 12	100%	0.068	3.8	–	–	1.01
Thallium	mg/kg dw	0 - 12	0%	–	–	0.058	0.074	0.0659
Vanadium	mg/kg dw	0 - 12	0%	–	–	0.19	0.24	0.218
Zinc	mg/kg dw	12 - 12	100%	5.7	62.6	–	–	28
Inorganic-cations/anions								
Calcium	mg/kg dw	12 - 12	100%	331	4770	–	–	1404
Iron	mg/kg dw	0 - 12	0%	–	–	50.8	64.3	57.6
Magnesium	mg/kg dw	12 - 12	100%	1050	1390	–	–	1194
Potassium	mg/kg dw	12 - 12	100%	15400	23400	–	–	19200
Sodium	mg/kg dw	12 - 12	100%	1560	2400	–	–	1943
Polychlorinated Biphenyls (PCBs)								
PCB-1016	mg/kg dw	0 - 3	0%	–	–	0.2475	0.266	0.256
PCB-1221	mg/kg dw	0 - 3	0%	–	–	0.2475	0.266	0.256
PCB-1232	mg/kg dw	0 - 3	0%	–	–	0.2475	0.266	0.256
PCB-1242	mg/kg dw	0 - 3	0%	–	–	0.2475	0.266	0.256
PCB-1248	mg/kg dw	0 - 3	0%	–	–	0.2475	0.266	0.256
PCB-1254	mg/kg dw	3 - 3	100%	0.4878	0.5533	–	–	0.511
PCB-1260	mg/kg dw	3 - 3	100%	1	1.152	–	–	1.07
Total PCBs	mg/kg dw	3 - 3	100%	2.7996	2.9743	–	–	2.86

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Table 2-101. Channel Catfish Fillet (2010) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Pesticides								
Aldrin	mg/kg dw	0 - 3	0%	–	–	0.01238	0.0133	0.0128
alpha-Chlordane	mg/kg dw	2 - 3	67%	0.03706	0.04406	0.0133	0.0133	0.0315
gamma-Chlordane	mg/kg dw	2 - 3	67%	0.01371	0.01535	0.0133	0.0133	0.0141
4,4'-DDD	mg/kg dw	0 - 3	0%	–	–	0.02475	0.0266	0.0256
4,4'-DDE	mg/kg dw	3 - 3	100%	0.0516	0.07129	–	–	0.0636
4,4'-DDT	mg/kg dw	3 - 3	100%	0.0297	0.03249	–	–	0.0308
alpha-BHC	mg/kg dw	0 - 3	0%	–	–	0.01238	0.0133	0.0128
beta-BHC	mg/kg dw	0 - 3	0%	–	–	0.01238	0.0133	0.0128
delta-BHC	mg/kg dw	0 - 3	0%	–	–	0.01238	0.0133	0.0128
gamma-BHC (Lindane)	mg/kg dw	0 - 3	0%	–	–	0.01238	0.0133	0.0128
Dieldrin	mg/kg dw	0 - 3	0%	–	–	0.02475	0.0266	0.0256
Endosulfan I	mg/kg dw	0 - 3	0%	–	–	0.01238	0.0133	0.0128
Endosulfan II	mg/kg dw	0 - 3	0%	–	–	0.02475	0.0266	0.0256
Endosulfan Sulfate	mg/kg dw	0 - 3	0%	–	–	0.02475	0.0266	0.0256
Endrin	mg/kg dw	0 - 3	0%	–	–	0.02475	0.0266	0.0256
Endrin aldehyde	mg/kg dw	0 - 3	0%	–	–	0.02475	0.0266	0.0256
Endrin Ketone	mg/kg dw	0 - 3	0%	–	–	0.02475	0.0266	0.0256
Heptachlor	mg/kg dw	0 - 3	0%	–	–	0.01238	0.0133	0.0128
Heptachlor Epoxide	mg/kg dw	0 - 3	0%	–	–	0.01238	0.0133	0.0128
Methoxychlor	mg/kg dw	0 - 3	0%	–	–	0.1238	0.133	0.128
Toxaphene	mg/kg dw	0 - 3	0%	–	–	0.3713	0.3989	0.384
Total DDx	mg/kg dw	3 - 3	100%	0.10852	0.12589	–	–	0.12
Total Chlordane	mg/kg dw	2 - 3	67%	0.05077	0.05941	0.0266	0.0266	0.0456
Speciation								
Arsenite	mg/kg dw	3 - 3	100%	0.005	0.01	–	–	0.00833
Radionuclides								
Actinium-228	pCi/g dw	0 - 1	0%	–	–	0.438	0.438	0.438
Americium-241	pCi/g dw	0 - 1	0%	–	–	0.457	0.457	0.457
Bismuth-214	pCi/g dw	0 - 1	0%	–	–	0.246	0.246	0.246
Cesium-137	pCi/g dw	0 - 1	0%	–	–	0.108	0.108	0.108
Cobalt-60	pCi/g dw	0 - 1	0%	–	–	0.11	0.11	0.11
Lead-212	pCi/g dw	0 - 1	0%	–	–	0.166	0.166	0.166
Lead-214	pCi/g dw	0 - 1	0%	–	–	0.226	0.226	0.226
Potassium-40	pCi/g dw	1 - 1	100%	18.2	18.2	–	–	18.2
Radium-226	pCi/g dw	1 - 1	100%	0.322	0.322	–	–	0.322
Radium-228	pCi/g dw	0 - 1	0%	–	–	0.438	0.438	0.438
Thallium-208	pCi/g dw	0 - 1	0%	–	–	0.0993	0.0993	0.0993

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Table 2-101. Channel Catfish Fillet (2010) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Radionuclides (continued)								
Thorium-228	pCi/g dw	0 - 1	0%	–	–	0.481	0.481	0.481
Thorium-230	pCi/g dw	0 - 1	0%	–	–	0.404	0.404	0.404
Thorium-232	pCi/g dw	0 - 1	0%	–	–	0.218	0.218	0.218
Thorium-234	pCi/g dw	0 - 1	0%	–	–	4.17	4.17	4.17
Uranium-234	pCi/g dw	0 - 1	0%	–	–	0.408	0.408	0.408
Uranium-235	pCi/g dw	0 - 1	0%	–	–	0.424	0.424	0.424
Uranium-238	pCi/g dw	0 - 1	0%	–	–	0.343	0.343	0.343

Note: Channel catfish fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 80 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
pCi/g dw = Picocuries per gram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-102. Channel Catfish Fillet (2010) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 11	0%	–	–	16.38	22.91	19.3
Antimony	mg/kg dw	0 - 11	0%	–	–	0.06034	0.0838	0.0697
Arsenic	mg/kg dw	2 - 11	18%	0.17	0.19	0.1164	0.3201	0.161
Barium	mg/kg dw	4 - 11	36%	0.23	0.6	0.1897	0.2626	0.263
Beryllium	mg/kg dw	0 - 11	0%	–	–	0.1207	0.3419	0.159
Boron	mg/kg dw	0 - 11	0%	–	–	1.724	2.346	2
Cadmium	mg/kg dw	0 - 11	0%	–	–	0.03147	0.08827	0.0408
Chromium	mg/kg dw	0 - 11	0%	–	–	0.5172	0.7263	0.609
Cobalt	mg/kg dw	4 - 11	36%	0.065	0.1164	0.06	0.07821	0.0742
Copper	mg/kg dw	11 - 11	100%	1.1	13.8	–	–	3.35
Lead	mg/kg dw	2 - 11	18%	0.15	0.59	0.1164	0.162	0.179
Manganese	mg/kg dw	11 - 11	100%	0.7328	6.2	–	–	2.16
Mercury	mg/kg dw	11 - 11	100%	0.1552	2.1	–	–	0.688
Molybdenum	mg/kg dw	0 - 11	0%	–	–	0.1466	0.2011	0.169
Nickel	mg/kg dw	0 - 11	0%	–	–	0.4009	0.5587	0.468
Selenium	mg/kg dw	11 - 11	100%	0.7328	2.235	–	–	1.5
Silver	mg/kg dw	0 - 11	0%	–	–	0.012	0.01676	0.0139
Strontium	mg/kg dw	11 - 11	100%	0.315	7.7	–	–	1.78
Thallium	mg/kg dw	0 - 11	0%	–	–	0.05603	0.07821	0.066
Vanadium	mg/kg dw	0 - 11	0%	–	–	0.1897	0.5184	0.244
Zinc	mg/kg dw	11 - 11	100%	29.7	53.5	–	–	39.9
Inorganic-cations/anions								
Calcium	mg/kg dw	11 - 11	100%	439.7	12200	–	–	2456
Iron	mg/kg dw	0 - 11	0%	–	–	49.57	65.8	57.5
Magnesium	mg/kg dw	11 - 11	100%	1095	1320	–	–	1193
Potassium	mg/kg dw	11 - 11	100%	14957	21200	–	–	19200
Sodium	mg/kg dw	11 - 11	100%	1651	4480	–	–	2405
Polychlorinated Biphenyls (PCBs)								
PCB-1016	mg/kg dw	0 - 2	0%	–	–	0.5952	1.081	0.838
PCB-1221	mg/kg dw	0 - 2	0%	–	–	0.5952	1.081	0.838
PCB-1232	mg/kg dw	0 - 2	0%	–	–	0.5952	1.081	0.838
PCB-1242	mg/kg dw	0 - 2	0%	–	–	0.5952	1.081	0.838
PCB-1248	mg/kg dw	0 - 2	0%	–	–	0.5952	1.081	0.838
PCB-1254	mg/kg dw	0 - 2	0%	–	–	0.5952	1.081	0.838
PCB-1260	mg/kg dw	2 - 2	100%	2.298	4.092	–	–	3.2
Total PCBs	mg/kg dw	2 - 2	100%	5.8692	10.578	–	–	8.22

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Table 2-102. Channel Catfish Fillet (2010) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Pesticides								
Aldrin	mg/kg dw	0 - 2	0%	–	–	0.01351	0.01488	0.0142
alpha-Chlordane	mg/kg dw	1 - 2	50%	0.02486	0.02486	0.01488	0.01488	0.0199
gamma-Chlordane	mg/kg dw	0 - 2	0%	–	–	0.01351	0.01488	0.0142
4,4'-DDD	mg/kg dw	0 - 2	0%	–	–	0.02703	0.02976	0.0284
4,4'-DDE	mg/kg dw	2 - 2	100%	0.07143	0.1827	–	–	0.127
4,4'-DDT	mg/kg dw	2 - 2	100%	0.0619	0.08865	–	–	0.0753
alpha-BHC	mg/kg dw	0 - 2	0%	–	–	0.01351	0.01488	0.0142
beta-BHC	mg/kg dw	0 - 2	0%	–	–	0.01351	0.01488	0.0142
delta-BHC	mg/kg dw	0 - 2	0%	–	–	0.01351	0.01488	0.0142
gamma-BHC (Lindane)	mg/kg dw	0 - 2	0%	–	–	0.01351	0.01488	0.0142
Dieldrin	mg/kg dw	0 - 2	0%	–	–	0.02703	0.02976	0.0284
Endosulfan I	mg/kg dw	0 - 2	0%	–	–	0.01351	0.01488	0.0142
Endosulfan II	mg/kg dw	0 - 2	0%	–	–	0.02703	0.02976	0.0284
Endosulfan Sulfate	mg/kg dw	0 - 2	0%	–	–	0.02703	0.02976	0.0284
Endrin	mg/kg dw	0 - 2	0%	–	–	0.02703	0.02976	0.0284
Endrin aldehyde	mg/kg dw	0 - 2	0%	–	–	0.02703	0.02976	0.0284
Endrin Ketone	mg/kg dw	0 - 2	0%	–	–	0.02703	0.02976	0.0284
Heptachlor	mg/kg dw	0 - 2	0%	–	–	0.01351	0.01488	0.0142
Heptachlor Epoxide	mg/kg dw	0 - 2	0%	–	–	0.01351	0.01488	0.0142
Methoxychlor	mg/kg dw	0 - 2	0%	–	–	0.1351	0.1488	0.142
Toxaphene	mg/kg dw	0 - 2	0%	–	–	0.4054	0.4464	0.426
Total DDx	mg/kg dw	2 - 2	100%	0.16309	0.29838	–	–	0.231
Total Chlordane	mg/kg dw	1 - 2	50%	0.03837	0.03837	0.02976	0.02976	0.0341

Note: Channel catfish fillet concentrations presented in mg/kg dw, using a default site-specific percent moisture of 80 percent where individual sample percent moisture value was rejected.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-103. Gizzard Shad Whole Body (2010) Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	6 - 6	100%	706	1970	–	–	1411
Antimony	mg/kg dw	0 - 6	0%	–	–	0.058	0.066	0.062
Arsenic	mg/kg dw	6 - 6	100%	1.2	1.4	–	–	1.32
Barium	mg/kg dw	6 - 6	100%	19.1	42.4	–	–	31.9
Beryllium	mg/kg dw	0 - 6	0%	–	–	0.13	0.26	0.188
Boron	mg/kg dw	0 - 6	0%	–	–	1.7	8.8	5.18
Cadmium	mg/kg dw	3 - 6	50%	0.066	0.29	0.066	0.11	0.117
Chromium	mg/kg dw	6 - 6	100%	2.6	6.6	–	–	4.93
Cobalt	mg/kg dw	4 - 6	67%	1.3	2.1	0.81	1.2	1.37
Copper	mg/kg dw	6 - 6	100%	5	37.5	–	–	12
Lead	mg/kg dw	5 - 6	83%	1.6	3.7	0.89	0.89	2.35
Manganese	mg/kg dw	6 - 6	100%	180	443	–	–	243.2
Mercury	mg/kg dw	6 - 6	100%	0.056	0.079	–	–	0.0655
Molybdenum	mg/kg dw	0 - 6	0%	–	–	0.15	0.27	0.217
Nickel	mg/kg dw	6 - 6	100%	2	32	–	–	9.23
Selenium	mg/kg dw	6 - 6	100%	1.9	2.6	–	–	2.18
Silver	mg/kg dw	3 - 6	50%	0.012	0.015	0.034	0.092	0.0363
Strontium	mg/kg dw	6 - 6	100%	23.4	46.1	–	–	30.2
Thallium	mg/kg dw	0 - 6	0%	–	–	0.055	0.066	0.0597
Vanadium	mg/kg dw	5 - 6	83%	1.8	3.8	0.86	0.86	2.66
Zinc	mg/kg dw	6 - 6	100%	69.5	91.5	–	–	75.3
Inorganic-cations/anions								
Calcium	mg/kg dw	6 - 6	100%	35600	53300	–	–	45700
Iron	mg/kg dw	6 - 6	100%	1190	2960	–	–	2205
Magnesium	mg/kg dw	6 - 6	100%	1420	1810	–	–	1637
Potassium	mg/kg dw	6 - 6	100%	9840	13700	–	–	12000
Sodium	mg/kg dw	6 - 6	100%	3920	6050	–	–	4918

Note: Gizzard shad whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77 percent where individual sample percent moisture value was rejected.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-104. Gizzard Shad Whole Body (2010) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	1670	1970	–	–	1780
Antimony	mg/kg dw	0 - 3	0%	–	–	0.064	0.066	0.065
Arsenic	mg/kg dw	3 - 3	100%	2	2.1	–	–	2.03
Barium	mg/kg dw	3 - 3	100%	30	32	–	–	31.1
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.13	0.14	0.133
Boron	mg/kg dw	1 - 3	33%	1.9	1.9	8.6	8.6	6.37
Cadmium	mg/kg dw	0 - 3	0%	–	–	0.071	0.078	0.0743
Chromium	mg/kg dw	3 - 3	100%	3.5	5.9	–	–	4.5
Cobalt	mg/kg dw	3 - 3	100%	1.5	1.7	–	–	1.6
Copper	mg/kg dw	3 - 3	100%	5.5	6	–	–	5.7
Lead	mg/kg dw	3 - 3	100%	1.7	2	–	–	1.8
Manganese	mg/kg dw	3 - 3	100%	144	149	–	–	146.3
Mercury	mg/kg dw	3 - 3	100%	0.061	0.095	–	–	0.0753
Molybdenum	mg/kg dw	0 - 3	0%	–	–	0.16	0.16	0.16
Nickel	mg/kg dw	3 - 3	100%	2.1	2.4	–	–	2.2
Selenium	mg/kg dw	3 - 3	100%	1.9	2.7	–	–	2.2
Silver	mg/kg dw	0 - 3	0%	–	–	0.013	0.015	0.0137
Strontium	mg/kg dw	3 - 3	100%	47.6	52.6	–	–	49.8
Thallium	mg/kg dw	0 - 3	0%	–	–	0.16	0.21	0.187
Vanadium	mg/kg dw	3 - 3	100%	2.7	3.1	–	–	2.87
Zinc	mg/kg dw	3 - 3	100%	86.8	91.5	–	–	88.6
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	66700	76200	–	–	71500
Iron	mg/kg dw	3 - 3	100%	1610	2020	–	–	1763
Magnesium	mg/kg dw	3 - 3	100%	1820	1960	–	–	1893
Potassium	mg/kg dw	3 - 3	100%	12800	13600	–	–	13200
Sodium	mg/kg dw	3 - 3	100%	6060	6470	–	–	6260

Note: Gizzard shad whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-105. Gizzard Shad Whole Body (2010) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	6 - 6	100%	44.6	2590	–	–	940.9
Antimony	mg/kg dw	2 - 6	33%	0.097	0.12	0.064	0.06944	0.0807
Arsenic	mg/kg dw	6 - 6	100%	2	4.3	–	–	2.71
Barium	mg/kg dw	6 - 6	100%	13.43	43.4	–	–	25.8
Beryllium	mg/kg dw	2 - 6	33%	0.16	0.25	0.13	0.2927	0.232
Boron	mg/kg dw	2 - 6	33%	2.2	2.2	1.8	2	2.01
Cadmium	mg/kg dw	4 - 6	67%	0.05556	0.11	0.07042	0.07317	0.0839
Chromium	mg/kg dw	3 - 6	50%	3	4	0.5634	0.6341	2.08
Cobalt	mg/kg dw	6 - 6	100%	0.216	2.2	–	–	0.913
Copper	mg/kg dw	6 - 6	100%	5.7	9.1	–	–	7.39
Lead	mg/kg dw	6 - 6	100%	0.1481	2.8	–	–	1.14
Manganese	mg/kg dw	6 - 6	100%	122	218	–	–	164.6
Mercury	mg/kg dw	3 - 6	50%	0.08	0.092	0.05164	0.05854	0.0713
Molybdenum	mg/kg dw	3 - 6	50%	0.16	0.26	0.1596	0.1707	0.195
Nickel	mg/kg dw	2 - 6	33%	4.2	6.5	0.4413	2.1	2.36
Selenium	mg/kg dw	6 - 6	100%	2.2	3.951	–	–	3
Silver	mg/kg dw	3 - 6	50%	0.019	0.023	0.01315	0.01415	0.0175
Strontium	mg/kg dw	6 - 6	100%	37.4	47.6	–	–	42.7
Thallium	mg/kg dw	0 - 6	0%	–	–	0.06103	0.2	0.132
Vanadium	mg/kg dw	6 - 6	100%	0.3194	6.3	–	–	2.44
Zinc	mg/kg dw	6 - 6	100%	74.7	139	–	–	105.5
Inorganic-cations/anions								
Calcium	mg/kg dw	6 - 6	100%	40972	54100	–	–	45800
Iron	mg/kg dw	6 - 6	100%	101.4	2480	–	–	1002
Magnesium	mg/kg dw	6 - 6	100%	1366	1970	–	–	1527
Potassium	mg/kg dw	6 - 6	100%	10600	15600	–	–	12100
Sodium	mg/kg dw	6 - 6	100%	4150	5190	–	–	4560
Polychlorinated Biphenyls (PCBs)								
PCB-1016	mg/kg dw	0 - 3	0%	–	–	0.00023	0.00081	0.0004244
PCB-1221	mg/kg dw	0 - 3	0%	–	–	0.00023	0.00081	0.0004244
PCB-1232	mg/kg dw	0 - 3	0%	–	–	0.00023	0.00081	0.0004244
PCB-1242	mg/kg dw	0 - 3	0%	–	–	0.00023	0.00081	0.0004244
PCB-1248	mg/kg dw	0 - 3	0%	–	–	0.00023	0.00081	0.0004244
PCB-1254	mg/kg dw	1 - 3	33%	0.00027	0.00027	0.00024	0.00081	0.000438267
PCB-1260	mg/kg dw	2 - 3	67%	0.00035	0.00037	0.00081	0.00081	0.000509

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Table 2-105. Gizzard Shad Whole Body (2010) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Pesticides								
Aldrin	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.2E-05	1.18633E-05
alpha-Chlordane	mg/kg dw	3 - 3	100%	2.8E-05	3.2E-05	–	–	3.01367E-05
gamma-Chlordane	mg/kg dw	3 - 3	100%	1.6E-05	1.8E-05	–	–	0.00001692
4,4'-DDD	mg/kg dw	0 - 3	0%	–	–	2.3E-05	2.5E-05	0.00002372
4,4'-DDE	mg/kg dw	0 - 3	0%	–	–	2.3E-05	2.5E-05	0.00002372
4,4'-DDT	mg/kg dw	0 - 3	0%	–	–	2.3E-05	2.5E-05	0.00002372
alpha-BHC	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.2E-05	1.18633E-05
beta-BHC	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.2E-05	1.18633E-05
delta-BHC	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.2E-05	1.18633E-05
gamma-BHC (Lindane)	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.2E-05	1.18633E-05
Dieldrin	mg/kg dw	0 - 3	0%	–	–	2.3E-05	2.5E-05	0.00002372
Endosulfan I	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.2E-05	1.18633E-05
Endosulfan II	mg/kg dw	0 - 3	0%	–	–	2.3E-05	2.5E-05	0.00002372
Endosulfan Sulfate	mg/kg dw	0 - 3	0%	–	–	2.3E-05	2.5E-05	0.00002372
Endrin	mg/kg dw	0 - 3	0%	–	–	2.3E-05	2.5E-05	0.00002372
Endrin aldehyde	mg/kg dw	0 - 3	0%	–	–	2.3E-05	2.5E-05	0.00002372
Endrin Ketone	mg/kg dw	0 - 3	0%	–	–	2.3E-05	2.5E-05	0.00002372
Heptachlor	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.2E-05	1.18633E-05
Heptachlor Epoxide	mg/kg dw	1 - 3	33%	1.4E-05	1.4E-05	1.2E-05	1.2E-05	1.26233E-05
Methoxychlor	mg/kg dw	0 - 3	0%	–	–	0.00011	0.00012	0.000118633
Toxaphene	mg/kg dw	0 - 3	0%	–	–	0.00034	0.00037	0.000355833

Note: Gizzard shad whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77 percent where individual sample percent moisture value was rejected.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-106. Gizzard Shad Whole Body (2010) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	5 - 6	83%	25.66	573	18.81	18.81	258.9
Antimony	mg/kg dw	0 - 6	0%	–	–	0.054	0.06881	0.0596
Arsenic	mg/kg dw	6 - 6	100%	1.1	1.81	–	–	1.51
Barium	mg/kg dw	6 - 6	100%	10.55	16.7	–	–	13.7
Beryllium	mg/kg dw	0 - 6	0%	–	–	0.11	0.2798	0.204
Boron	mg/kg dw	0 - 6	0%	–	–	1.6	3.1	1.96
Cadmium	mg/kg dw	3 - 6	50%	0.046	0.059	0.06335	0.07339	0.0597
Chromium	mg/kg dw	3 - 6	50%	1.5	2	0.4977	0.5963	1.15
Cobalt	mg/kg dw	6 - 6	100%	0.2064	0.65	–	–	0.392
Copper	mg/kg dw	6 - 6	100%	4.2	7.522	–	–	5.04
Lead	mg/kg dw	5 - 6	83%	0.1991	0.71	0.1284	0.1284	0.439
Manganese	mg/kg dw	6 - 6	100%	99.08	153	–	–	130.7
Mercury	mg/kg dw	3 - 6	50%	0.056	0.059	0.04525	0.05505	0.0538
Molybdenum	mg/kg dw	0 - 6	0%	–	–	0.13	0.1651	0.145
Nickel	mg/kg dw	3 - 6	50%	0.84	1	0.3982	0.74	0.713
Selenium	mg/kg dw	6 - 6	100%	1.8	3.213	–	–	2.43
Silver	mg/kg dw	1 - 6	17%	0.012	0.012	0.011	0.0133	0.0121
Strontium	mg/kg dw	6 - 6	100%	28.9	33.94	–	–	31.5
Thallium	mg/kg dw	0 - 6	0%	–	–	0.052	0.087	0.0613
Vanadium	mg/kg dw	5 - 6	83%	0.2566	1	0.2156	0.2156	0.575
Zinc	mg/kg dw	6 - 6	100%	73.9	97.29	–	–	85
Inorganic-cations/anions								
Calcium	mg/kg dw	6 - 6	100%	33303	49200	–	–	41200
Iron	mg/kg dw	6 - 6	100%	79.36	714	–	–	355.2
Magnesium	mg/kg dw	6 - 6	100%	1270	1710	–	–	1450
Potassium	mg/kg dw	6 - 6	100%	11150	13600	–	–	12200
Sodium	mg/kg dw	6 - 6	100%	4040	4610	–	–	4233
Polychlorinated Biphenyls (PCBs)								
PCB-1016	mg/kg dw	0 - 3	0%	–	–	0.00022	0.00023	0.0002229
PCB-1221	mg/kg dw	0 - 3	0%	–	–	0.00022	0.00023	0.0002229
PCB-1232	mg/kg dw	0 - 3	0%	–	–	0.00022	0.00023	0.0002229
PCB-1242	mg/kg dw	0 - 3	0%	–	–	0.00022	0.00023	0.0002229
PCB-1248	mg/kg dw	0 - 3	0%	–	–	0.00022	0.00023	0.0002229
PCB-1254	mg/kg dw	3 - 3	100%	0.00026	0.00046	–	–	0.000329433
PCB-1260	mg/kg dw	3 - 3	100%	0.00039	0.00073	–	–	0.000512233

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Table 2-106. Gizzard Shad Whole Body (2010) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Pesticides								
Aldrin	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	1.11433E-05
alpha-Chlordane	mg/kg dw	3 - 3	100%	2.5E-05	3.3E-05	–	–	0.00002766
gamma-Chlordane	mg/kg dw	3 - 3	100%	1.2E-05	1.6E-05	–	–	1.38267E-05
4,4'-DDD	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	0.00002229
4,4'-DDE	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	0.00002229
4,4'-DDT	mg/kg dw	1 - 3	33%	2.5E-05	2.5E-05	2.2E-05	2.2E-05	0.00002304
alpha-BHC	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	1.11433E-05
beta-BHC	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	1.11433E-05
delta-BHC	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	1.11433E-05
gamma-BHC (Lindane)	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	1.11433E-05
Dieldrin	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	0.00002229
Endosulfan I	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	1.11433E-05
Endosulfan II	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	0.00002229
Endosulfan Sulfate	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	0.00002229
Endrin	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	0.00002229
Endrin aldehyde	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	0.00002229
Endrin Ketone	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	0.00002229
Heptachlor	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	1.11433E-05
Heptachlor Epoxide	mg/kg dw	1 - 3	33%	1.8E-05	1.8E-05	1.1E-05	1.1E-05	1.32467E-05
Methoxychlor	mg/kg dw	0 - 3	0%	–	–	0.00011	0.00011	0.000111433
Toxaphene	mg/kg dw	0 - 3	0%	–	–	0.00033	0.00034	0.000334333

Note: Gizzard shad whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77 percent where individual sample percent moisture value was rejected.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-107. Gizzard Shad Whole Body (2010) Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	6 - 6	100%	101.7	645	–	–	323.3
Antimony	mg/kg dw	0 - 6	0%	–	–	0.06306	0.069	0.0651
Arsenic	mg/kg dw	6 - 6	100%	1.8	2.1	–	–	1.94
Barium	mg/kg dw	6 - 6	100%	10.68	21.5	–	–	15.9
Beryllium	mg/kg dw	0 - 6	0%	–	–	0.1261	0.14	0.131
Boron	mg/kg dw	0 - 6	0%	–	–	1.802	2	1.88
Cadmium	mg/kg dw	6 - 6	100%	0.04054	0.063	–	–	0.0534
Chromium	mg/kg dw	3 - 6	50%	0.87	2	0.5405	0.5909	0.926
Cobalt	mg/kg dw	6 - 6	100%	0.312	0.6	–	–	0.433
Copper	mg/kg dw	6 - 6	100%	4	10	–	–	6.89
Lead	mg/kg dw	6 - 6	100%	0.2564	1.1	–	–	0.605
Manganese	mg/kg dw	6 - 6	100%	117.5	203	–	–	160.6
Mercury	mg/kg dw	3 - 6	50%	0.066	0.11	0.04955	0.05128	0.0711
Molybdenum	mg/kg dw	0 - 6	0%	–	–	0.1532	0.17	0.159
Nickel	mg/kg dw	3 - 6	50%	0.61	4.4	0.4189	0.4409	1.27
Selenium	mg/kg dw	6 - 6	100%	2.432	3.5	–	–	2.92
Silver	mg/kg dw	1 - 6	17%	0.01441	0.01441	0.01282	0.014	0.0134
Strontium	mg/kg dw	6 - 6	100%	32.91	58.56	–	–	43.9
Thallium	mg/kg dw	0 - 6	0%	–	–	0.05856	0.071	0.0635
Vanadium	mg/kg dw	6 - 6	100%	0.3718	1.5	–	–	0.867
Zinc	mg/kg dw	6 - 6	100%	82.5	109	–	–	98
Inorganic-cations/anions								
Calcium	mg/kg dw	6 - 6	100%	36325	65500	–	–	53300
Iron	mg/kg dw	6 - 6	100%	166.7	712	–	–	381.4
Magnesium	mg/kg dw	6 - 6	100%	1265	1900	–	–	1583
Potassium	mg/kg dw	6 - 6	100%	11368	13500	–	–	12500
Sodium	mg/kg dw	6 - 6	100%	4444	5830	–	–	5229
Polychlorinated Biphenyls (PCBs)								
PCB-1016	mg/kg dw	0 - 3	0%	–	–	0.00021	0.00023	0.000217867
PCB-1221	mg/kg dw	0 - 3	0%	–	–	0.00021	0.00023	0.000217867
PCB-1232	mg/kg dw	0 - 3	0%	–	–	0.00021	0.00023	0.000217867
PCB-1242	mg/kg dw	0 - 3	0%	–	–	0.00021	0.00023	0.000217867
PCB-1248	mg/kg dw	0 - 3	0%	–	–	0.00021	0.00023	0.000217867
PCB-1254	mg/kg dw	0 - 3	0%	–	–	0.00021	0.00023	0.000217867
PCB-1260	mg/kg dw	2 - 3	67%	0.00025	0.00025	0.00021	0.00021	0.000238733

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Table 2-107. Gizzard Shad Whole Body (2010) Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Pesticides								
Aldrin	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	0.00001089
alpha-Chlordane	mg/kg dw	3 - 3	100%	2.4E-05	3.2E-05	–	–	2.89533E-05
gamma-Chlordane	mg/kg dw	3 - 3	100%	1.3E-05	2.3E-05	–	–	1.82133E-05
4,4'-DDD	mg/kg dw	0 - 3	0%	–	–	2.1E-05	2.3E-05	2.17867E-05
4,4'-DDE	mg/kg dw	0 - 3	0%	–	–	2.1E-05	2.3E-05	2.17867E-05
4,4'-DDT	mg/kg dw	0 - 3	0%	–	–	2.1E-05	2.3E-05	2.17867E-05
alpha-BHC	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	0.00001089
beta-BHC	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	0.00001089
delta-BHC	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	0.00001089
gamma-BHC (Lindane)	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	0.00001089
Dieldrin	mg/kg dw	1 - 3	33%	2.3E-05	2.3E-05	2.1E-05	2.3E-05	2.20733E-05
Endosulfan I	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	0.00001089
Endosulfan II	mg/kg dw	0 - 3	0%	–	–	2.1E-05	2.3E-05	2.17867E-05
Endosulfan Sulfate	mg/kg dw	0 - 3	0%	–	–	2.1E-05	2.3E-05	2.17867E-05
Endrin	mg/kg dw	0 - 3	0%	–	–	2.1E-05	2.3E-05	2.17867E-05
Endrin aldehyde	mg/kg dw	0 - 3	0%	–	–	2.1E-05	2.3E-05	2.17867E-05
Endrin Ketone	mg/kg dw	0 - 3	0%	–	–	2.1E-05	2.3E-05	2.17867E-05
Heptachlor	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	0.00001089
Heptachlor Epoxide	mg/kg dw	3 - 3	100%	1.5E-05	2.2E-05	–	–	1.87867E-05
Methoxychlor	mg/kg dw	0 - 3	0%	–	–	0.00011	0.00011	0.0001089
Toxaphene	mg/kg dw	0 - 3	0%	–	–	0.00032	0.00034	0.000326767

Note: Gizzard shad whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77 percent where individual sample percent moisture value was rejected.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-108. Gizzard Shad Whole Body (2010) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	6 - 6	100%	441	3074	–	–	1571
Antimony	mg/kg dw	4 - 6	67%	0.064	0.107	0.065	0.067	0.0767
Arsenic	mg/kg dw	6 - 6	100%	1.6	5.116	–	–	3.25
Barium	mg/kg dw	6 - 6	100%	18.1	43.26	–	–	30.3
Beryllium	mg/kg dw	3 - 6	50%	0.162	0.2698	0.278	0.541	0.329
Boron	mg/kg dw	2 - 6	33%	1.982	2.372	1.806	3.7	2.53
Cadmium	mg/kg dw	6 - 6	100%	0.0463	0.09	–	–	0.0717
Chromium	mg/kg dw	5 - 6	83%	1.6	4.651	1.1	1.1	2.64
Cobalt	mg/kg dw	6 - 6	100%	0.47	2.047	–	–	1.19
Copper	mg/kg dw	6 - 6	100%	5.4	14.75	–	–	9.38
Lead	mg/kg dw	6 - 6	100%	0.75	3.209	–	–	1.87
Manganese	mg/kg dw	6 - 6	100%	140	326.7	–	–	214.7
Mercury	mg/kg dw	6 - 6	100%	0.06	0.1475	–	–	0.107
Molybdenum	mg/kg dw	2 - 6	33%	0.1613	0.1814	0.15	0.16	0.161
Nickel	mg/kg dw	6 - 6	100%	1.2	12.44	–	–	3.8
Selenium	mg/kg dw	6 - 6	100%	2	3.442	–	–	2.84
Silver	mg/kg dw	5 - 6	83%	0.014	0.0386	0.013	0.013	0.0191
Strontium	mg/kg dw	6 - 6	100%	37.3	46.54	–	–	41.4
Thallium	mg/kg dw	0 - 6	0%	–	–	0.1	0.1567	0.13
Vanadium	mg/kg dw	6 - 6	100%	1.1	6.977	–	–	3.82
Zinc	mg/kg dw	6 - 6	100%	73.7	130.9	–	–	101.6
Inorganic-cations/anions								
Calcium	mg/kg dw	6 - 6	100%	32512	53900	–	–	44800
Iron	mg/kg dw	6 - 6	100%	448	1395	–	–	1025
Magnesium	mg/kg dw	6 - 6	100%	1498	1690	–	–	1601
Potassium	mg/kg dw	6 - 6	100%	10553	13900	–	–	12200
Sodium	mg/kg dw	6 - 6	100%	4318	5210	–	–	4707
Polychlorinated Biphenyls (PCBs)								
PCB-1016	mg/kg dw	0 - 3	0%	–	–	0.00022	0.00023	0.0002287
PCB-1221	mg/kg dw	0 - 3	0%	–	–	0.00022	0.00023	0.0002287
PCB-1232	mg/kg dw	0 - 3	0%	–	–	0.00022	0.00023	0.0002287
PCB-1242	mg/kg dw	0 - 3	0%	–	–	0.00022	0.00023	0.0002287
PCB-1248	mg/kg dw	0 - 3	0%	–	–	0.00022	0.00023	0.0002287
PCB-1254	mg/kg dw	1 - 3	33%	0.00025	0.00025	0.00022	0.00023	0.000236067
PCB-1260	mg/kg dw	3 - 3	100%	0.0003	0.00044	–	–	0.000392867

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Table 2-108. Gizzard Shad Whole Body (2010) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Pesticides								
Aldrin	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.2E-05	1.14333E-05
alpha-Chlordane	mg/kg dw	3 - 3	100%	1.9E-05	2.5E-05	-		2.10433E-05
gamma-Chlordane	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.2E-05	1.14333E-05
4,4'-DDD	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	0.00002287
4,4'-DDE	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	0.00002287
4,4'-DDT	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	0.00002287
alpha-BHC	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.2E-05	1.14333E-05
beta-BHC	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.2E-05	1.14333E-05
delta-BHC	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.2E-05	1.14333E-05
gamma-BHC (Lindane)	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.2E-05	1.14333E-05
Dieldrin	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	0.00002287
Endosulfan I	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.2E-05	1.14333E-05
Endosulfan II	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	0.00002287
Endosulfan Sulfate	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	0.00002287
Endrin	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	0.00002287
Endrin aldehyde	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	0.00002287
Endrin Ketone	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	0.00002287
Heptachlor	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.2E-05	1.14333E-05
Heptachlor Epoxide	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.2E-05	1.14333E-05
Methoxychlor	mg/kg dw	0 - 3	0%	–	–	0.00011	0.00012	0.000114333
Toxaphene	mg/kg dw	0 - 3	0%	–	–	0.00034	0.00035	0.000343033

Note: Gizzard shad whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77 percent where individual sample percent moisture value was rejected.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-109. Gizzard Shad Whole Body (2010) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	6 - 6	100%	602.7	1560	–	–	959.5
Antimony	mg/kg dw	2 - 6	33%	0.065	0.084	0.058	0.06364	0.0651
Arsenic	mg/kg dw	6 - 6	100%	1.9	3.1	–	–	2.64
Barium	mg/kg dw	6 - 6	100%	16.89	25.7	–	–	20.3
Beryllium	mg/kg dw	2 - 6	33%	0.1	0.13	0.12	0.1318	0.122
Boron	mg/kg dw	0 - 6	0%	–	–	1.4	1.864	1.67
Cadmium	mg/kg dw	6 - 6	100%	0.05023	0.094	–	–	0.0615
Chromium	mg/kg dw	6 - 6	100%	1.142	4.2	–	–	2.38
Cobalt	mg/kg dw	6 - 6	100%	0.6818	1.6	–	–	0.975
Copper	mg/kg dw	6 - 6	100%	5.1	9.545	–	–	7.63
Lead	mg/kg dw	6 - 6	100%	0.6849	3.2	–	–	1.61
Manganese	mg/kg dw	6 - 6	100%	133.8	233	–	–	162.8
Mercury	mg/kg dw	4 - 6	67%	0.05479	0.11	0.04651	0.05	0.0714
Molybdenum	mg/kg dw	2 - 6	33%	0.15	0.19	0.14	0.1591	0.156
Nickel	mg/kg dw	6 - 6	100%	1.05	5.7	–	–	2.18
Selenium	mg/kg dw	6 - 6	100%	1.6	3.349	–	–	2.56
Silver	mg/kg dw	4 - 6	67%	0.014	0.01591	0.0095	0.012	0.0135
Strontium	mg/kg dw	6 - 6	100%	29.3	42.79	–	–	35.3
Thallium	mg/kg dw	0 - 6	0%	–	–	0.082	0.16	0.113
Vanadium	mg/kg dw	6 - 6	100%	1.826	3.8	–	–	2.45
Zinc	mg/kg dw	6 - 6	100%	50.2	111.2	–	–	85.7
Inorganic-cations/anions								
Calcium	mg/kg dw	6 - 6	100%	37400	44186	–	–	40100
Iron	mg/kg dw	6 - 6	100%	616.4	1870	–	–	1049
Magnesium	mg/kg dw	6 - 6	100%	1286	1590	–	–	1425
Potassium	mg/kg dw	6 - 6	100%	9860	11674	–	–	11100
Sodium	mg/kg dw	6 - 6	100%	3020	4744	–	–	3804
Polychlorinated Biphenyls (PCBs)								
PCB-1016	mg/kg dw	0 - 3	0%	–	–	0.00022	0.00023	0.000225933
PCB-1221	mg/kg dw	0 - 3	0%	–	–	0.00022	0.00023	0.000225933
PCB-1232	mg/kg dw	0 - 3	0%	–	–	0.00022	0.00023	0.000225933
PCB-1242	mg/kg dw	0 - 3	0%	–	–	0.00022	0.00023	0.000225933
PCB-1248	mg/kg dw	0 - 3	0%	–	–	0.00022	0.00023	0.000225933
PCB-1254	mg/kg dw	0 - 3	0%	–	–	0.00022	0.00023	0.000225933
PCB-1260	mg/kg dw	3 - 3	100%	0.00028	0.00031	–	–	0.000299433

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Table 2-109. Gizzard Shad Whole Body (2010) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Pesticides								
Aldrin	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	1.12967E-05
alpha-Chlordane	mg/kg dw	3 - 3	100%	2.5E-05	3E-05	–	–	2.69433E-05
gamma-Chlordane	mg/kg dw	3 - 3	100%	1.1E-05	1.8E-05	–	–	0.00001413
4,4'-DDD	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	2.25933E-05
4,4'-DDE	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	2.25933E-05
4,4'-DDT	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	2.25933E-05
alpha-BHC	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	1.12967E-05
beta-BHC	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	1.12967E-05
delta-BHC	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	1.12967E-05
gamma-BHC (Lindane)	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	1.12967E-05
Dieldrin	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	2.25933E-05
Endosulfan I	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	1.12967E-05
Endosulfan II	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	2.25933E-05
Endosulfan Sulfate	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	2.25933E-05
Endrin	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	2.25933E-05
Endrin aldehyde	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	2.25933E-05
Endrin Ketone	mg/kg dw	0 - 3	0%	–	–	2.2E-05	2.3E-05	2.25933E-05
Heptachlor	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	1.12967E-05
Heptachlor Epoxide	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	1.12967E-05
Methoxychlor	mg/kg dw	0 - 3	0%	–	–	0.00011	0.00011	0.000112967
Toxaphene	mg/kg dw	0 - 3	0%	–	–	0.00033	0.00034	0.000338867

Note: Gizzard shad whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77 percent where individual sample percent moisture value was rejected.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-110. Gizzard Shad Whole Body Minus Gut (2010) Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	6 - 6	100%	44.3	555	–	–	203.1
Antimony	mg/kg dw	0 - 6	0%	–	–	0.056	0.065	0.0608
Arsenic	mg/kg dw	6 - 6	100%	0.65	1.2	–	–	0.917
Barium	mg/kg dw	6 - 6	100%	12.6	22.5	–	–	15.9
Beryllium	mg/kg dw	0 - 6	0%	–	–	0.11	0.26	0.187
Boron	mg/kg dw	0 - 6	0%	–	–	1.7	8.7	4.97
Cadmium	mg/kg dw	2 - 6	33%	0.035	0.043	0.03	0.066	0.0402
Chromium	mg/kg dw	3 - 6	50%	0.76	2.1	0.49	0.57	0.928
Cobalt	mg/kg dw	3 - 6	50%	0.27	0.55	0.19	0.2	0.308
Copper	mg/kg dw	6 - 6	100%	2.6	4.1	–	–	3.37
Lead	mg/kg dw	3 - 6	50%	0.36	0.98	0.2	0.21	0.468
Manganese	mg/kg dw	6 - 6	100%	103	162	–	–	134.5
Mercury	mg/kg dw	4 - 6	67%	0.05	0.074	0.045	0.05	0.0573
Molybdenum	mg/kg dw	0 - 6	0%	–	–	0.14	0.17	0.152
Nickel	mg/kg dw	6 - 6	100%	0.53	1.1	–	–	0.717
Selenium	mg/kg dw	6 - 6	100%	1.7	1.9	–	–	1.8
Silver	mg/kg dw	0 - 6	0%	–	–	0.011	0.013	0.0122
Strontium	mg/kg dw	6 - 6	100%	28.2	41.5	–	–	35.1
Thallium	mg/kg dw	0 - 6	0%	–	–	0.055	0.073	0.0612
Vanadium	mg/kg dw	3 - 6	50%	0.42	1.3	0.18	0.21	0.52
Zinc	mg/kg dw	6 - 6	100%	55.9	78.6	–	–	66.9
Inorganic-cations/anions								
Calcium	mg/kg dw	6 - 6	100%	39900	61600	–	–	53000
Iron	mg/kg dw	6 - 6	100%	108	929	–	–	383.8
Magnesium	mg/kg dw	6 - 6	100%	1420	1780	–	–	1630
Potassium	mg/kg dw	6 - 6	100%	11700	13800	–	–	12700
Sodium	mg/kg dw	6 - 6	100%	3590	5160	–	–	4555

Note: Gizzard shad whole body minus gut concentrations presented in mg/kg dw, using a default site-specific percent moisture of 76 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-111. Gizzard Shad Whole Body Minus Gut (2010) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations	Detection Limits	Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min - Max	Min - Max	
Inorganics						
Aluminum	mg/kg dw	3 - 3	100%	218 - 295	– - –	261.7
Antimony	mg/kg dw	0 - 3	0%	– - –	0.059 - 0.069	0.064
Arsenic	mg/kg dw	3 - 3	100%	1.3 - 1.4	– - –	1.33
Barium	mg/kg dw	3 - 3	100%	20.4 - 24.2	– - –	22.8
Beryllium	mg/kg dw	0 - 3	0%	– - –	0.12 - 0.14	0.13
Boron	mg/kg dw	0 - 3	0%	– - –	7.8 - 9.2	8.27
Cadmium	mg/kg dw	0 - 3	0%	– - –	0.041 - 0.043	0.042
Chromium	mg/kg dw	3 - 3	100%	0.87 - 1.1	– - –	0.96
Cobalt	mg/kg dw	0 - 3	0%	– - –	0.38 - 0.45	0.41
Copper	mg/kg dw	3 - 3	100%	3.2 - 3.7	– - –	3.5
Lead	mg/kg dw	0 - 3	0%	– - –	0.48 - 0.5	0.49
Manganese	mg/kg dw	3 - 3	100%	96.3 - 192	– - –	132.1
Mercury	mg/kg dw	2 - 3	67%	0.052 - 0.064	0.052 - 0.052	0.056
Molybdenum	mg/kg dw	0 - 3	0%	– - –	0.14 - 0.17	0.157
Nickel	mg/kg dw	3 - 3	100%	0.63 - 5.7	– - –	2.38
Selenium	mg/kg dw	3 - 3	100%	1.7 - 2	– - –	1.83
Silver	mg/kg dw	0 - 3	0%	– - –	0.012 - 0.014	0.013
Strontium	mg/kg dw	3 - 3	100%	54.8 - 62	– - –	59.2
Thallium	mg/kg dw	0 - 3	0%	– - –	0.089 - 0.12	0.106
Vanadium	mg/kg dw	0 - 3	0%	– - –	0.2 - 0.23	0.217
Zinc	mg/kg dw	3 - 3	100%	87 - 88.9	– - –	87.7
Inorganic-cations/anions						
Calcium	mg/kg dw	3 - 3	100%	69300 - 78600	– - –	75300
Iron	mg/kg dw	3 - 3	100%	252 - 332	– - –	297.3
Magnesium	mg/kg dw	3 - 3	100%	1690 - 1840	– - –	1780
Potassium	mg/kg dw	3 - 3	100%	11800 - 12700	– - –	12300
Sodium	mg/kg dw	3 - 3	100%	5890 - 6150	– - –	6040

Note: Gizzard shad whole body minus gut concentrations presented in mg/kg dw, using a default site-specific percent moisture of 76 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-112. Gizzard Shad Whole Body Minus Gut (2010) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations	Detection Limits	Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min - Max	Min - Max	
Inorganics						
Aluminum	mg/kg dw	3 - 6	50%	265 - 597	17.84 - 19.16	239.8
Antimony	mg/kg dw	0 - 6	0%	– - –	0.059 - 0.07009	0.0651
Arsenic	mg/kg dw	6 - 6	100%	0.85 - 1.9	– - –	1.45
Barium	mg/kg dw	6 - 6	100%	13.89 - 25.1	– - –	18.4
Beryllium	mg/kg dw	0 - 6	0%	– - –	0.12 - 0.1402	0.133
Boron	mg/kg dw	1 - 6	17%	1.9 - 1.9	1.7 - 1.963	1.87
Cadmium	mg/kg dw	3 - 6	50%	0.044 - 0.065	0.03426 - 0.03645	0.0445
Chromium	mg/kg dw	3 - 6	50%	1.1 - 1.6	0.5556 - 0.6075	0.954
Cobalt	mg/kg dw	6 - 6	100%	0.1925 - 0.71	– - –	0.379
Copper	mg/kg dw	6 - 6	100%	3.1 - 6.019	– - –	4.49
Lead	mg/kg dw	6 - 6	100%	0.1549 - 0.84	– - –	0.452
Manganese	mg/kg dw	6 - 6	100%	143 - 169	– - –	154.4
Mercury	mg/kg dw	3 - 6	50%	0.068 - 0.087	0.05093 - 0.05607	0.0646
Molybdenum	mg/kg dw	1 - 6	17%	0.16 - 0.16	0.14 - 0.1682	0.158
Nickel	mg/kg dw	0 - 6	0%	– - –	0.4352 - 1.3	0.702
Selenium	mg/kg dw	6 - 6	100%	1.9 - 2.629	– - –	2.39
Silver	mg/kg dw	0 - 6	0%	– - –	0.012 - 0.01355	0.0129
Strontium	mg/kg dw	6 - 6	100%	38.97 - 45.37	– - –	43.1
Thallium	mg/kg dw	0 - 6	0%	– - –	0.059 - 0.06542	0.0618
Vanadium	mg/kg dw	6 - 6	100%	0.3333 - 1.7	– - –	0.762
Zinc	mg/kg dw	6 - 6	100%	73.7 - 113.1	– - –	92
Inorganic-cations/anions						
Calcium	mg/kg dw	6 - 6	100%	48131 - 63400	– - –	55600
Iron	mg/kg dw	6 - 6	100%	58.69 - 758	– - –	305.3
Magnesium	mg/kg dw	6 - 6	100%	1446 - 1870	– - –	1621
Potassium	mg/kg dw	6 - 6	100%	11268 - 15200	– - –	13000
Sodium	mg/kg dw	6 - 6	100%	4176 - 5410	– - –	4702
Polychlorinated Biphenyls (PCBs)						
PCB-1016	mg/kg dw	0 - 2	0%	– - –	0.00022 - 0.00022	0.00022225
PCB-1221	mg/kg dw	0 - 2	0%	– - –	0.00022 - 0.00022	0.00022225
PCB-1232	mg/kg dw	0 - 2	0%	– - –	0.00022 - 0.00022	0.00022225
PCB-1242	mg/kg dw	0 - 2	0%	– - –	0.00022 - 0.00022	0.00022225
PCB-1248	mg/kg dw	0 - 2	0%	– - –	0.00022 - 0.00022	0.00022225
PCB-1254	mg/kg dw	0 - 2	0%	– - –	0.00022 - 0.00022	0.00022225
PCB-1260	mg/kg dw	2 - 2	100%	0.00035 - 0.00052	– - –	0.00043365

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Table 2-112. Gizzard Shad Whole Body Minus Gut (2010) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Pesticides								
Aldrin	mg/kg dw	0 - 2	0%	–	–	1.1E-05	1.1E-05	0.00001111
alpha-Chlordane	mg/kg dw	2 - 2	100%	1.4E-05	1.9E-05	–	–	0.0000162
gamma-Chlordane	mg/kg dw	1 - 2	50%	1.2E-05	1.2E-05	1.1E-05	1.1E-05	0.00001177
4,4'-DDD	mg/kg dw	0 - 2	0%	–	–	2.2E-05	2.2E-05	0.000022225
4,4'-DDE	mg/kg dw	0 - 2	0%	–	–	2.2E-05	2.2E-05	0.000022225
4,4'-DDT	mg/kg dw	0 - 2	0%	–	–	2.2E-05	2.2E-05	0.000022225
alpha-BHC	mg/kg dw	0 - 2	0%	–	–	1.1E-05	1.1E-05	0.00001111
beta-BHC	mg/kg dw	0 - 2	0%	–	–	1.1E-05	1.1E-05	0.00001111
delta-BHC	mg/kg dw	0 - 2	0%	–	–	1.1E-05	1.1E-05	0.00001111
gamma-BHC (Lindane)	mg/kg dw	0 - 2	0%	–	–	1.1E-05	1.1E-05	0.00001111
Dieldrin	mg/kg dw	0 - 2	0%	–	–	2.2E-05	2.2E-05	0.000022225
Endosulfan I	mg/kg dw	0 - 2	0%	–	–	1.1E-05	1.1E-05	0.00001111
Endosulfan II	mg/kg dw	0 - 2	0%	–	–	2.2E-05	2.2E-05	0.000022225
Endosulfan Sulfate	mg/kg dw	0 - 2	0%	–	–	2.2E-05	2.2E-05	0.000022225
Endrin	mg/kg dw	0 - 2	0%	–	–	2.2E-05	2.2E-05	0.000022225
Endrin aldehyde	mg/kg dw	0 - 2	0%	–	–	2.2E-05	2.2E-05	0.000022225
Endrin Ketone	mg/kg dw	0 - 2	0%	–	–	2.2E-05	2.2E-05	0.000022225
Heptachlor	mg/kg dw	0 - 2	0%	–	–	1.1E-05	1.1E-05	0.00001111
Heptachlor Epoxide	mg/kg dw	0 - 2	0%	–	–	1.1E-05	1.1E-05	0.00001111
Methoxychlor	mg/kg dw	0 - 2	0%	–	–	0.00011	0.00011	0.0001111
Toxaphene	mg/kg dw	0 - 2	0%	–	–	0.00033	0.00034	0.00033335

Note: Gizzard shad whole body minus gut concentrations presented in mg/kg dw, using a default site-specific percent moisture of 76 percent where individual sample percent moisture value was rejected.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-113. Gizzard Shad Whole Body Minus Gut (2010) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations	Detection Limits	Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min Max	Min Max	
Inorganics						
Aluminum	mg/kg dw	3 - 6	50%	66.6 - 165	15.06 - 17.75	61.9
Antimony	mg/kg dw	0 - 6	0%	– - –	0.054 - 0.06494	0.0584
Arsenic	mg/kg dw	6 - 6	100%	0.67 - 1.617	– - –	1.21
Barium	mg/kg dw	6 - 6	100%	11.72 - 16.3	– - –	13.5
Beryllium	mg/kg dw	0 - 6	0%	– - –	0.13 - 0.2641	0.219
Boron	mg/kg dw	0 - 6	0%	– - –	1.548 - 3.3	2.2
Cadmium	mg/kg dw	2 - 6	33%	0.034 - 0.037	0.058 - 0.06926	0.0527
Chromium	mg/kg dw	2 - 6	33%	1.1 - 1.1	0.4603 - 0.95	0.781
Cobalt	mg/kg dw	6 - 6	100%	0.1558 - 0.31	– - –	0.199
Copper	mg/kg dw	6 - 6	100%	3.1 - 8.787	– - –	4.49
Lead	mg/kg dw	6 - 6	100%	0.1645 - 0.39	– - –	0.253
Manganese	mg/kg dw	6 - 6	100%	116.6 - 148	– - –	127.3
Mercury	mg/kg dw	3 - 6	50%	0.046 - 0.06	0.04184 - 0.05195	0.0506
Molybdenum	mg/kg dw	0 - 6	0%	– - –	0.1297 - 0.1558	0.141
Nickel	mg/kg dw	1 - 6	17%	0.94 - 0.94	0.364 - 0.78	0.605
Selenium	mg/kg dw	6 - 6	100%	1.7 - 2.723	– - –	2.13
Silver	mg/kg dw	0 - 6	0%	– - –	0.01088 - 0.013	0.0118
Strontium	mg/kg dw	6 - 6	100%	31 - 49.4	– - –	36.9
Thallium	mg/kg dw	0 - 6	0%	– - –	0.05021 - 0.061	0.0557
Vanadium	mg/kg dw	4 - 6	67%	0.251 - 0.47	0.68 - 0.72	0.445
Zinc	mg/kg dw	6 - 6	100%	62.5 - 94.47	– - –	79.3
Inorganic-cations/anions						
Calcium	mg/kg dw	6 - 6	100%	38851 - 64900	– - –	47600
Iron	mg/kg dw	6 - 6	100%	53.19 - 244	– - –	118.6
Magnesium	mg/kg dw	6 - 6	100%	1255 - 1810	– - –	1496
Potassium	mg/kg dw	6 - 6	100%	10170 - 13400	– - –	11700
Sodium	mg/kg dw	6 - 6	100%	3603 - 4510	– - –	3999
Polychlorinated Biphenyls (PCBs)						
PCB-1016	mg/kg dw	0 - 3	0%	– - –	0.00021 - 0.00023	0.000218533
PCB-1221	mg/kg dw	0 - 3	0%	– - –	0.00021 - 0.00023	0.000218533
PCB-1232	mg/kg dw	0 - 3	0%	– - –	0.00021 - 0.00023	0.000218533
PCB-1242	mg/kg dw	0 - 3	0%	– - –	0.00021 - 0.00023	0.000218533
PCB-1248	mg/kg dw	0 - 3	0%	– - –	0.00021 - 0.00023	0.000218533
PCB-1254	mg/kg dw	3 - 3	100%	0.00029 - 0.00033	– - –	0.000313333
PCB-1260	mg/kg dw	3 - 3	100%	0.00037 - 0.00059	– - –	0.000489467

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Table 2-113. Gizzard Shad Whole Body Minus Gut (2010) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Pesticides								
Aldrin	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	1.09233E-05
alpha-Chlordane	mg/kg dw	3 - 3	100%	2.6E-05	3.5E-05	-		3.13667E-05
gamma-Chlordane	mg/kg dw	3 - 3	100%	1.5E-05	1.8E-05	-		0.00001619
4,4'-DDD	mg/kg dw	0 - 3	0%	–	–	2.1E-05	2.3E-05	2.18533E-05
4,4'-DDE	mg/kg dw	0 - 3	0%	–	–	2.1E-05	2.3E-05	2.18533E-05
4,4'-DDT	mg/kg dw	2 - 3	67%	2.4E-05	0.00003	2.1E-05	2.1E-05	2.49933E-05
alpha-BHC	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	1.09233E-05
beta-BHC	mg/kg dw	1 - 3	33%	1.1E-05	1.1E-05	1.1E-05	1.1E-05	1.10667E-05
delta-BHC	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	1.09233E-05
gamma-BHC (Lindane)	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	1.09233E-05
Dieldrin	mg/kg dw	0 - 3	0%	–	–	2.1E-05	2.3E-05	2.18533E-05
Endosulfan I	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	1.09233E-05
Endosulfan II	mg/kg dw	0 - 3	0%	–	–	2.1E-05	2.3E-05	2.18533E-05
Endosulfan Sulfate	mg/kg dw	0 - 3	0%	–	–	2.1E-05	2.3E-05	2.18533E-05
Endrin	mg/kg dw	0 - 3	0%	–	–	2.1E-05	2.3E-05	2.18533E-05
Endrin aldehyde	mg/kg dw	0 - 3	0%	–	–	2.1E-05	2.3E-05	2.18533E-05
Endrin Ketone	mg/kg dw	0 - 3	0%	–	–	2.1E-05	2.3E-05	2.18533E-05
Heptachlor	mg/kg dw	0 - 3	0%	–	–	1.1E-05	1.1E-05	1.09233E-05
Heptachlor Epoxide	mg/kg dw	1 - 3	33%	1.1E-05	1.1E-05	1.1E-05	1.1E-05	1.09233E-05
Methoxychlor	mg/kg dw	0 - 3	0%	–	–	0.00011	0.00011	0.000109233
Toxaphene	mg/kg dw	0 - 3	0%	–	–	0.00032	0.00034	0.000327767

Note: Gizzard shad whole body minus gut concentrations presented in mg/kg dw, using a default site-specific percent moisture of 76 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-114. Gizzard Shad Whole Body Minus Gut (2010) Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	6 - 9	67%	23.32	58.02	16.7	87.7	39.2
Antimony	mg/kg dw	0 - 9	0%	–	–	0.05761	0.06787	0.0614
Arsenic	mg/kg dw	9 - 9	100%	1.034	1.659	–	–	1.31
Barium	mg/kg dw	8 - 9	89%	12.56	18.8	0.19	0.19	13.4
Beryllium	mg/kg dw	0 - 9	0%	–	–	0.1152	0.1403	0.124
Boron	mg/kg dw	0 - 9	0%	–	–	1.646	1.946	1.75
Cadmium	mg/kg dw	1 - 9	11%	0.04977	0.04977	0.03	0.034	0.0337
Chromium	mg/kg dw	0 - 9	0%	–	–	0.4938	0.5882	0.532
Cobalt	mg/kg dw	8 - 9	89%	0.1862	0.2469	0.059	0.059	0.198
Copper	mg/kg dw	9 - 9	100%	1.5	4.395	–	–	3.25
Lead	mg/kg dw	8 - 9	89%	0.2217	0.3663	0.12	0.12	0.263
Manganese	mg/kg dw	9 - 9	100%	1.1	182	–	–	134.9
Mercury	mg/kg dw	6 - 9	67%	0.04741	0.18	0.04803	0.0543	0.0709
Molybdenum	mg/kg dw	0 - 9	0%	–	–	0.1399	0.1629	0.149
Nickel	mg/kg dw	0 - 9	0%	–	–	0.3827	0.4525	0.41
Selenium	mg/kg dw	9 - 9	100%	2	2.941	–	–	2.22
Silver	mg/kg dw	0 - 9	0%	–	–	0.01152	0.01357	0.0123
Strontium	mg/kg dw	9 - 9	100%	0.36	50.61	–	–	39
Thallium	mg/kg dw	0 - 9	0%	–	–	0.0535	0.06335	0.0575
Vanadium	mg/kg dw	8 - 9	89%	0.2825	0.38	0.19	0.19	0.322
Zinc	mg/kg dw	9 - 9	100%	46.7	103.1	–	–	81.4
Inorganic-cations/anions								
Calcium	mg/kg dw	9 - 9	100%	638	73684	–	–	54100
Iron	mg/kg dw	9 - 9	100%	71	150	–	–	97.1
Magnesium	mg/kg dw	9 - 9	100%	1300	1880	–	–	1544
Potassium	mg/kg dw	9 - 9	100%	10437	17400	–	–	12200
Sodium	mg/kg dw	9 - 9	100%	1420	5370	–	–	4300
Polychlorinated Biphenyls (PCBs)								
PCB-1016	mg/kg dw	0 - 6	0%	–	–	0.00019	0.00022	0.000205467
PCB-1221	mg/kg dw	0 - 6	0%	–	–	0.00019	0.00022	0.000205467
PCB-1232	mg/kg dw	0 - 6	0%	–	–	0.00019	0.00022	0.000205467
PCB-1242	mg/kg dw	0 - 6	0%	–	–	0.00019	0.00022	0.000205467
PCB-1248	mg/kg dw	0 - 6	0%	–	–	0.00019	0.00022	0.000205467
PCB-1254	mg/kg dw	5 - 6	83%	0.00021	0.00026	0.00021	0.00021	0.000226533
PCB-1260	mg/kg dw	6 - 6	100%	0.00024	0.00074	–	–	0.000412183

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Table 2-114. Gizzard Shad Whole Body Minus Gut (2010) Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Pesticides								
Aldrin	mg/kg dw	0 - 6	0%	–	–	9.4E-06	1.1E-05	0.000010274
alpha-Chlordane	mg/kg dw	6 - 6	100%	2.2E-05	3.4E-05	–	–	0.000026995
gamma-Chlordane	mg/kg dw	6 - 6	100%	1.2E-05	0.00002	–	–	1.61033E-05
4,4'-DDD	mg/kg dw	0 - 6	0%	–	–	1.9E-05	2.2E-05	2.05467E-05
4,4'-DDE	mg/kg dw	2 - 6	33%	2.5E-05	2.8E-05	1.9E-05	2.2E-05	2.25317E-05
4,4'-DDT	mg/kg dw	0 - 6	0%	–	–	1.9E-05	2.2E-05	2.05467E-05
alpha-BHC	mg/kg dw	0 - 6	0%	–	–	9.4E-06	1.1E-05	0.000010274
beta-BHC	mg/kg dw	0 - 6	0%	–	–	9.4E-06	1.1E-05	0.000010274
delta-BHC	mg/kg dw	0 - 6	0%	–	–	9.4E-06	1.1E-05	0.000010274
gamma-BHC (Lindane)	mg/kg dw	0 - 6	0%	–	–	9.4E-06	1.1E-05	0.000010274
Dieldrin	mg/kg dw	2 - 6	33%	2.2E-05	2.3E-05	1.9E-05	2.1E-05	0.00002111
Endosulfan I	mg/kg dw	0 - 6	0%	–	–	9.4E-06	1.1E-05	0.000010274
Endosulfan II	mg/kg dw	0 - 6	0%	–	–	1.9E-05	2.2E-05	2.05467E-05
Endosulfan Sulfate	mg/kg dw	0 - 6	0%	–	–	1.9E-05	2.2E-05	2.05467E-05
Endrin	mg/kg dw	0 - 6	0%	–	–	1.9E-05	2.2E-05	2.05467E-05
Endrin aldehyde	mg/kg dw	0 - 6	0%	–	–	1.9E-05	2.2E-05	2.05467E-05
Endrin Ketone	mg/kg dw	0 - 6	0%	–	–	1.9E-05	2.2E-05	2.05467E-05
Heptachlor	mg/kg dw	0 - 6	0%	–	–	9.4E-06	1.1E-05	0.000010274
Heptachlor Epoxide	mg/kg dw	3 - 6	50%	1.4E-05	2.3E-05	9.4E-06	1E-05	1.43723E-05
Methoxychlor	mg/kg dw	0 - 6	0%	–	–	9.4E-05	0.00011	0.00010274
Toxaphene	mg/kg dw	0 - 6	0%	–	–	0.00028	0.00033	0.000308183

Note: Gizzard shad whole body minus gut concentrations presented in mg/kg dw, using a default site-specific percent moisture of 76 percent where individual sample percent moisture value was rejected.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-115. Gizzard Shad Whole Body Minus Gut (2010) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	9 - 9	100%	24.79	601	–	–	133.9
Antimony	mg/kg dw	0 - 9	0%	–	–	0.05882	0.07246	0.0645
Arsenic	mg/kg dw	9 - 9	100%	0.84	1.723	–	–	1.37
Barium	mg/kg dw	9 - 9	100%	11.76	24.9	–	–	16.1
Beryllium	mg/kg dw	0 - 9	0%	–	–	0.2483	0.546	0.354
Boron	mg/kg dw	0 - 9	0%	–	–	1.723	3.8	2.47
Cadmium	mg/kg dw	4 - 9	44%	0.037	0.077	0.06387	0.07585	0.0605
Chromium	mg/kg dw	1 - 9	11%	1.5	1.5	0.5455	1.2	0.8
Cobalt	mg/kg dw	9 - 9	100%	0.16	0.53	–	–	0.248
Copper	mg/kg dw	9 - 9	100%	2.563	8.636	–	–	5.14
Lead	mg/kg dw	9 - 9	100%	0.1955	0.91	–	–	0.362
Manganese	mg/kg dw	9 - 9	100%	94.12	182.7	–	–	141.9
Mercury	mg/kg dw	4 - 9	44%	0.019	0.067	0.05042	0.05797	0.0505
Molybdenum	mg/kg dw	0 - 9	0%	–	–	0.1471	0.1739	0.158
Nickel	mg/kg dw	4 - 9	44%	0.5455	1.2	0.4076	0.89	0.696
Selenium	mg/kg dw	9 - 9	100%	1.7	3.1	–	–	2.37
Silver	mg/kg dw	0 - 9	0%	–	–	0.012	0.01401	0.0129
Strontium	mg/kg dw	9 - 9	100%	31.48	46.5	–	–	39.1
Thallium	mg/kg dw	0 - 9	0%	–	–	0.05882	0.11	0.0762
Vanadium	mg/kg dw	7 - 9	78%	0.2731	1.8	0.41	0.42	0.525
Zinc	mg/kg dw	9 - 9	100%	71.43	134.2	–	–	95.7
Inorganic-cations/anions								
Calcium	mg/kg dw	9 - 9	100%	40231	60800	–	–	46800
Iron	mg/kg dw	8 - 9	89%	70.17	627	107	107	167
Magnesium	mg/kg dw	9 - 9	100%	1253	1740	–	–	1450
Potassium	mg/kg dw	9 - 9	100%	8889	13000	–	–	10800
Sodium	mg/kg dw	9 - 9	100%	3601	5270	–	–	4285
Polychlorinated Biphenyls (PCBs)								
PCB-1016	mg/kg dw	0 - 6	0%	–	–	0.00019	0.00097	0.000347567
PCB-1221	mg/kg dw	0 - 6	0%	–	–	0.00019	0.00097	0.000347567
PCB-1232	mg/kg dw	0 - 6	0%	–	–	0.00019	0.00097	0.000347567
PCB-1242	mg/kg dw	0 - 6	0%	–	–	0.00019	0.00097	0.000347567
PCB-1248	mg/kg dw	0 - 6	0%	–	–	0.00019	0.00097	0.000347567
PCB-1254	mg/kg dw	4 - 6	67%	0.0002	0.00053	0.00027	0.00097	0.00045415
PCB-1260	mg/kg dw	5 - 6	83%	0.00022	0.00063	0.00097	0.00097	0.000559833

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Table 2-115. Gizzard Shad Whole Body Minus Gut (2010) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Pesticides								
Aldrin	mg/kg dw	0 - 6	0%	–	–	9.3E-06	1.1E-05	1.07398E-05
alpha-Chlordane	mg/kg dw	6 - 6	100%	1.4E-05	3.7E-05	–	–	2.43317E-05
gamma-Chlordane	mg/kg dw	3 - 6	50%	1.1E-05	1.6E-05	1.1E-05	1.1E-05	0.000012015
4,4'-DDD	mg/kg dw	0 - 6	0%	–	–	1.9E-05	2.3E-05	2.14817E-05
4,4'-DDE	mg/kg dw	1 - 6	17%	2.4E-05	2.4E-05	1.9E-05	2.3E-05	0.00002204
4,4'-DDT	mg/kg dw	2 - 6	33%	2.9E-05	3.2E-05	1.9E-05	2.3E-05	2.43083E-05
alpha-BHC	mg/kg dw	0 - 6	0%	–	–	9.3E-06	1.1E-05	1.07398E-05
beta-BHC	mg/kg dw	0 - 6	0%	–	–	9.3E-06	1.1E-05	1.07398E-05
delta-BHC	mg/kg dw	0 - 6	0%	–	–	9.3E-06	1.1E-05	1.07398E-05
gamma-BHC (Lindane)	mg/kg dw	0 - 6	0%	–	–	9.3E-06	1.1E-05	1.07398E-05
Dieldrin	mg/kg dw	0 - 6	0%	–	–	1.9E-05	2.3E-05	2.14817E-05
Endosulfan I	mg/kg dw	0 - 6	0%	–	–	9.3E-06	1.1E-05	1.07398E-05
Endosulfan II	mg/kg dw	0 - 6	0%	–	–	1.9E-05	2.3E-05	2.14817E-05
Endosulfan Sulfate	mg/kg dw	0 - 6	0%	–	–	1.9E-05	2.3E-05	2.14817E-05
Endrin	mg/kg dw	0 - 6	0%	–	–	1.9E-05	2.3E-05	2.14817E-05
Endrin aldehyde	mg/kg dw	0 - 6	0%	–	–	1.9E-05	2.3E-05	2.14817E-05
Endrin Ketone	mg/kg dw	0 - 6	0%	–	–	1.9E-05	2.3E-05	2.14817E-05
Heptachlor	mg/kg dw	0 - 6	0%	–	–	9.3E-06	1.1E-05	1.07398E-05
Heptachlor Epoxide	mg/kg dw	1 - 6	17%	1.8E-05	1.8E-05	9.3E-06	1.1E-05	1.18665E-05
Methoxychlor	mg/kg dw	0 - 6	0%	–	–	9.3E-05	0.00011	0.000107398
Toxaphene	mg/kg dw	0 - 6	0%	–	–	0.00028	0.00034	0.000322217

Note: Gizzard shad whole body minus gut concentrations presented in mg/kg dw, using a default site-specific percent moisture of 76 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-116. Gizzard Shad Whole Body Minus Gut (2010) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations	Detection Limits	Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min - Max	Min - Max	
Inorganics						
Aluminum	mg/kg dw	9 - 9	100%	30.93 - 219.5	– - –	113.8
Antimony	mg/kg dw	0 - 9	0%	– - –	0.052 - 0.06667	0.0587
Arsenic	mg/kg dw	9 - 9	100%	0.7203 - 1.867	– - –	1.16
Barium	mg/kg dw	9 - 9	100%	8.678 - 16.2	– - –	13.4
Beryllium	mg/kg dw	0 - 9	0%	– - –	0.1144 - 0.2434	0.17
Boron	mg/kg dw	0 - 9	0%	– - –	1.653 - 3.3	2.22
Cadmium	mg/kg dw	0 - 9	0%	– - –	0.03008 - 0.06281	0.0444
Chromium	mg/kg dw	0 - 9	0%	– - –	0.5085 - 1	0.68
Cobalt	mg/kg dw	9 - 9	100%	0.1525 - 0.3	– - –	0.227
Copper	mg/kg dw	9 - 9	100%	2.863 - 8.898	– - –	4.18
Lead	mg/kg dw	9 - 9	100%	0.2107 - 0.6356	– - –	0.392
Manganese	mg/kg dw	9 - 9	100%	72.88 - 152	– - –	113.8
Mercury	mg/kg dw	6 - 9	67%	0.049 - 0.05932	0.046 - 0.05333	0.0525
Molybdenum	mg/kg dw	0 - 9	0%	– - –	0.13 - 0.16	0.144
Nickel	mg/kg dw	1 - 9	11%	0.6996 - 0.6996	0.3856 - 0.78	0.553
Selenium	mg/kg dw	9 - 9	100%	1.5 - 2.428	– - –	1.94
Silver	mg/kg dw	0 - 9	0%	– - –	0.01 - 0.01289	0.0118
Strontium	mg/kg dw	9 - 9	100%	25.21 - 49.78	– - –	36.5
Thallium	mg/kg dw	0 - 9	0%	– - –	0.05 - 0.1218	0.0693
Vanadium	mg/kg dw	9 - 9	100%	0.2231 - 0.73	– - –	0.478
Zinc	mg/kg dw	9 - 9	100%	59.92 - 106.7	– - –	72.4
Inorganic-cations/anions						
Calcium	mg/kg dw	9 - 9	100%	40620 - 69900	– - –	55800
Iron	mg/kg dw	9 - 9	100%	91.56 - 357	– - –	192.5
Magnesium	mg/kg dw	9 - 9	100%	1281 - 1810	– - –	1537
Potassium	mg/kg dw	9 - 9	100%	9610 - 11687	– - –	10700
Sodium	mg/kg dw	9 - 9	100%	3488 - 4164	– - –	3773
Polychlorinated Biphenyls (PCBs)						
PCB-1016	mg/kg dw	0 - 6	0%	– - –	0.0002 - 0.00022	0.0002066
PCB-1221	mg/kg dw	0 - 6	0%	– - –	0.0002 - 0.00022	0.0002066
PCB-1232	mg/kg dw	0 - 6	0%	– - –	0.0002 - 0.00022	0.0002066
PCB-1242	mg/kg dw	0 - 6	0%	– - –	0.0002 - 0.00022	0.0002066
PCB-1248	mg/kg dw	0 - 6	0%	– - –	0.0002 - 0.00022	0.0002066
PCB-1254	mg/kg dw	3 - 6	50%	0.00023 - 0.00033	0.0002 - 0.00022	0.00024055
PCB-1260	mg/kg dw	6 - 6	100%	0.0003 - 0.00053	– - –	0.000420333

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Table 2-116. Gizzard Shad Whole Body Minus Gut (2010) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Pesticides								
Aldrin	mg/kg dw	0 - 6	0%	–	–	9.8E-06	1.1E-05	1.03305E-05
alpha-Chlordane	mg/kg dw	6 - 6	100%	1.7E-05	3.8E-05	–	–	0.00002783
gamma-Chlordane	mg/kg dw	3 - 6	50%	1.2E-05	1.6E-05	9.8E-06	1.1E-05	1.19538E-05
4,4'-DDD	mg/kg dw	0 - 6	0%	–	–	2E-05	2.2E-05	0.00002066
4,4'-DDE	mg/kg dw	3 - 6	50%	2.2E-05	3E-05	2E-05	2.2E-05	2.39833E-05
4,4'-DDT	mg/kg dw	0 - 6	0%	–	–	2E-05	2.2E-05	0.00002066
alpha-BHC	mg/kg dw	0 - 6	0%	–	–	9.8E-06	1.1E-05	1.03305E-05
beta-BHC	mg/kg dw	0 - 6	0%	–	–	9.8E-06	1.1E-05	1.03305E-05
delta-BHC	mg/kg dw	0 - 6	0%	–	–	9.8E-06	1.1E-05	1.03305E-05
gamma-BHC (Lindane)	mg/kg dw	0 - 6	0%	–	–	9.8E-06	1.1E-05	1.03305E-05
Dieldrin	mg/kg dw	0 - 6	0%	–	–	2E-05	2.2E-05	0.00002066
Endosulfan I	mg/kg dw	0 - 6	0%	–	–	9.8E-06	1.1E-05	1.03305E-05
Endosulfan II	mg/kg dw	0 - 6	0%	–	–	2E-05	2.2E-05	0.00002066
Endosulfan Sulfate	mg/kg dw	0 - 6	0%	–	–	2E-05	2.2E-05	0.00002066
Endrin	mg/kg dw	0 - 6	0%	–	–	2E-05	2.2E-05	0.00002066
Endrin aldehyde	mg/kg dw	0 - 6	0%	–	–	2E-05	2.2E-05	0.00002066
Endrin Ketone	mg/kg dw	0 - 6	0%	–	–	2E-05	2.2E-05	0.00002066
Heptachlor	mg/kg dw	0 - 6	0%	–	–	9.8E-06	1.1E-05	1.03305E-05
Heptachlor Epoxide	mg/kg dw	0 - 6	0%	–	–	9.8E-06	1.1E-05	1.03305E-05
Methoxychlor	mg/kg dw	0 - 6	0%	–	–	9.8E-05	0.00011	0.000103305
Toxaphene	mg/kg dw	0 - 6	0%	–	–	0.0003	0.00033	0.0003099

Note: Gizzard shad whole body minus gut concentrations presented in mg/kg dw, using a default site-specific percent moisture of 76 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-117. Mayfly Adult Whole Body (2009) Dataset: Emory River - Reference (Above ERM 6.0)

Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Concentration [b]
Inorganics								
Aluminum	mg/kg dw	0 - 8	0%	–	–	0.85	3.6	1.83
Antimony	mg/kg dw	0 - 8	0%	–	–	0.018	0.019	0.0189
Arsenic	mg/kg dw	8 - 8	100%	0.11	0.22	–	–	0.163
Barium	mg/kg dw	8 - 8	100%	0.83	1.6	–	–	1.15
Beryllium	mg/kg dw	0 - 8	0%	–	–	0.0032	0.0033	0.00325
Boron	mg/kg dw	3 - 8	38%	0.86	1.4	0.39	0.63	0.769
Cadmium	mg/kg dw	8 - 8	100%	0.55	0.76	–	–	0.685
Chromium	mg/kg dw	8 - 8	100%	0.19	0.41	–	–	0.243
Cobalt	mg/kg dw	8 - 8	100%	1.6	1.9	–	–	1.76
Copper	mg/kg dw	8 - 8	100%	14.2	22.5	–	–	18.6
Lead	mg/kg dw	0 - 8	0%	–	–	0.01	0.04	0.017
Manganese	mg/kg dw	8 - 8	100%	1.9	3.7	–	–	2.73
Mercury	mg/kg dw	8 - 8	100%	0.056	0.07	–	–	0.0628
Molybdenum	mg/kg dw	8 - 8	100%	0.32	0.39	–	–	0.361
Nickel	mg/kg dw	8 - 8	100%	0.059	0.11	–	–	0.0866
Selenium	mg/kg dw	8 - 8	100%	3.3	3.7	–	–	3.46
Silver	mg/kg dw	8 - 8	100%	0.17	0.24	–	–	0.203
Strontium	mg/kg dw	8 - 8	100%	0.48	1	–	–	0.719
Thallium	mg/kg dw	0 - 8	0%	–	–	0.014	0.015	0.0145
Vanadium	mg/kg dw	7 - 8	88%	0.056	0.077	0.053	0.053	0.0666
Zinc	mg/kg dw	8 - 8	100%	84.5	217	–	–	143
Inorganic-cations/anions								
Calcium	mg/kg dw	8 - 8	100%	930	1480	–	–	1220
Iron	mg/kg dw	8 - 8	100%	100	162	–	–	133
Magnesium	mg/kg dw	8 - 8	100%	953	1800	–	–	1340
Potassium	mg/kg dw	8 - 8	100%	9310	11800	–	–	10700
Sodium	mg/kg dw	8 - 8	100%	4090	4480	–	–	4326

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-118. Mayfly Adult Whole Body (2009) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)

Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	2 - 2	100%	6.4 - 9.6	– - –	8
Antimony	mg/kg dw	0 - 2	0%	– - –	0.019 - 0.032	0.0255
Arsenic	mg/kg dw	2 - 2	100%	0.31 - 0.38	– - –	0.345
Barium	mg/kg dw	2 - 2	100%	1.1 - 1.3	– - –	1.2
Beryllium	mg/kg dw	0 - 2	0%	– - –	0.0031 - 0.0032	0.00315
Boron	mg/kg dw	0 - 2	0%	– - –	0.59 - 0.7	0.645
Cadmium	mg/kg dw	2 - 2	100%	0.32 - 0.37	– - –	0.345
Chromium	mg/kg dw	2 - 2	100%	0.44 - 0.45	– - –	0.445
Cobalt	mg/kg dw	2 - 2	100%	0.65 - 0.72	– - –	0.685
Copper	mg/kg dw	2 - 2	100%	29.4 - 31.3	– - –	30.4
Lead	mg/kg dw	2 - 2	100%	0.082 - 0.23	– - –	0.156
Manganese	mg/kg dw	2 - 2	100%	2.2 - 2.4	– - –	2.3
Mercury	mg/kg dw	2 - 2	100%	0.055 - 0.06	– - –	0.0575
Molybdenum	mg/kg dw	2 - 2	100%	0.51 - 0.78	– - –	0.645
Nickel	mg/kg dw	2 - 2	100%	0.08 - 0.086	– - –	0.083
Selenium	mg/kg dw	2 - 2	100%	6.5 - 6.5	– - –	6.5
Silver	mg/kg dw	2 - 2	100%	0.012 - 0.013	– - –	0.0125
Strontium	mg/kg dw	2 - 2	100%	0.83 - 1.1	– - –	0.965
Thallium	mg/kg dw	0 - 2	0%	– - –	0.046 - 0.048	0.047
Vanadium	mg/kg dw	2 - 2	100%	0.34 - 0.37	– - –	0.355
Zinc	mg/kg dw	2 - 2	100%	77.1 - 88.2	– - –	82.7
Inorganic-cations/anions						
Calcium	mg/kg dw	2 - 2	100%	665 - 731	– - –	698
Iron	mg/kg dw	2 - 2	100%	217 - 219	– - –	218
Magnesium	mg/kg dw	2 - 2	100%	875 - 885	– - –	880
Potassium	mg/kg dw	2 - 2	100%	13600 - 13600	– - –	13600
Sodium	mg/kg dw	2 - 2	100%	3770 - 3820	– - –	3795

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-119. Mayfly Adult Whole Body (2009) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	2 - 2	100%	6.5 - 15.6	– - –	11.1
Antimony	mg/kg dw	0 - 2	0%	– - –	0.019 - 0.019	0.019
Arsenic	mg/kg dw	2 - 2	100%	0.21 - 0.23	– - –	0.22
Barium	mg/kg dw	2 - 2	100%	1.2 - 1.3	– - –	1.25
Beryllium	mg/kg dw	0 - 2	0%	– - –	0.0033 - 0.0033	0.0033
Boron	mg/kg dw	0 - 2	0%	– - –	0.55 - 0.63	0.59
Cadmium	mg/kg dw	2 - 2	100%	0.26 - 0.34	– - –	0.3
Chromium	mg/kg dw	2 - 2	100%	0.36 - 0.39	– - –	0.375
Cobalt	mg/kg dw	2 - 2	100%	0.94 - 1	– - –	0.97
Copper	mg/kg dw	2 - 2	100%	26.7 - 28.6	– - –	27.7
Lead	mg/kg dw	1 - 2	50%	0.13 - 0.13	0.044 - 0.044	0.087
Manganese	mg/kg dw	2 - 2	100%	2.1 - 2.5	– - –	2.3
Mercury	mg/kg dw	2 - 2	100%	0.05 - 0.053	– - –	0.0515
Molybdenum	mg/kg dw	2 - 2	100%	0.4 - 0.42	– - –	0.41
Nickel	mg/kg dw	2 - 2	100%	0.082 - 0.12	– - –	0.101
Selenium	mg/kg dw	2 - 2	100%	4.2 - 4.2	– - –	4.2
Silver	mg/kg dw	2 - 2	100%	0.034 - 0.04	– - –	0.037
Strontium	mg/kg dw	2 - 2	100%	0.82 - 0.84	– - –	0.83
Thallium	mg/kg dw	0 - 2	0%	– - –	0.033 - 0.034	0.0335
Vanadium	mg/kg dw	2 - 2	100%	0.14 - 0.16	– - –	0.15
Zinc	mg/kg dw	2 - 2	100%	92.2 - 92.3	– - –	92.3
Inorganic-cations/anions						
Calcium	mg/kg dw	1 - 2	50%	754 - 754	1000 - 1000	877
Iron	mg/kg dw	2 - 2	100%	210 - 212	– - –	211
Magnesium	mg/kg dw	2 - 2	100%	964 - 971	– - –	968
Potassium	mg/kg dw	2 - 2	100%	12200 - 12400	– - –	12300
Sodium	mg/kg dw	2 - 2	100%	3710 - 4010	– - –	3860

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-120. Mayfly Adult Whole Body (2009) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	4 - 4	100%	43.9 - 63.4	– - –	52.8
Antimony	mg/kg dw	0 - 4	0%	– - –	0.018 - 0.019	0.0185
Arsenic	mg/kg dw	4 - 4	100%	0.14 - 0.15	– - –	0.148
Barium	mg/kg dw	4 - 4	100%	1.3 - 1.6	– - –	1.43
Beryllium	mg/kg dw	0 - 4	0%	– - –	0.0031 - 0.0033	0.0032
Boron	mg/kg dw	3 - 4	75%	0.82 - 0.98	0.66 - 0.66	0.843
Cadmium	mg/kg dw	4 - 4	100%	0.12 - 0.15	– - –	0.13
Chromium	mg/kg dw	4 - 4	100%	0.25 - 0.34	– - –	0.298
Cobalt	mg/kg dw	4 - 4	100%	0.63 - 0.67	– - –	0.65
Copper	mg/kg dw	4 - 4	100%	27.4 - 28.1	– - –	27.9
Lead	mg/kg dw	4 - 4	100%	0.12 - 0.19	– - –	0.153
Manganese	mg/kg dw	4 - 4	100%	6.3 - 9.3	– - –	8.03
Mercury	mg/kg dw	4 - 4	100%	0.07 - 0.074	– - –	0.073
Molybdenum	mg/kg dw	4 - 4	100%	0.37 - 0.4	– - –	0.385
Nickel	mg/kg dw	4 - 4	100%	0.15 - 0.21	– - –	0.175
Selenium	mg/kg dw	4 - 4	100%	4.7 - 5	– - –	4.83
Silver	mg/kg dw	4 - 4	100%	0.053 - 0.056	– - –	0.0545
Strontium	mg/kg dw	4 - 4	100%	0.75 - 0.88	– - –	0.803
Thallium	mg/kg dw	0 - 4	0%	– - –	0.014 - 0.015	0.0143
Vanadium	mg/kg dw	4 - 4	100%	0.1 - 0.13	– - –	0.113
Zinc	mg/kg dw	4 - 4	100%	85.4 - 88.8	– - –	87.3
Inorganic-cations/anions						
Calcium	mg/kg dw	4 - 4	100%	788 - 858	– - –	817
Iron	mg/kg dw	4 - 4	100%	251 - 269	– - –	258
Magnesium	mg/kg dw	4 - 4	100%	788 - 813	– - –	805
Potassium	mg/kg dw	4 - 4	100%	12400 - 12900	– - –	12600
Sodium	mg/kg dw	4 - 4	100%	3790 - 4010	– - –	3933

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-121. Mayfly Adult Whole Body (2009) Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	4 - 8	50%	9 - 17	2.6 - 5.2	7.76
Antimony	mg/kg dw	0 - 8	0%	– - –	0.018 - 0.031	0.0201
Arsenic	mg/kg dw	8 - 8	100%	0.18 - 0.43	– - –	0.308
Barium	mg/kg dw	8 - 8	100%	0.73 - 1.5	– - –	1.07
Beryllium	mg/kg dw	0 - 8	0%	– - –	0.0031 - 0.0078	0.0038
Boron	mg/kg dw	8 - 8	100%	0.34 - 1.5	– - –	0.913
Cadmium	mg/kg dw	8 - 8	100%	0.13 - 0.31	– - –	0.19
Chromium	mg/kg dw	8 - 8	100%	0.21 - 0.36	– - –	0.271
Cobalt	mg/kg dw	8 - 8	100%	0.42 - 0.66	– - –	0.5
Copper	mg/kg dw	8 - 8	100%	14.8 - 25.3	– - –	20.5
Lead	mg/kg dw	2 - 8	25%	0.099 - 0.16	0.033 - 0.069	0.0754
Manganese	mg/kg dw	8 - 8	100%	2.2 - 5	– - –	3.13
Mercury	mg/kg dw	8 - 8	100%	0.061 - 0.11	– - –	0.0843
Molybdenum	mg/kg dw	8 - 8	100%	0.42 - 0.55	– - –	0.499
Nickel	mg/kg dw	8 - 8	100%	0.044 - 0.099	– - –	0.0619
Selenium	mg/kg dw	8 - 8	100%	3 - 4	– - –	3.31
Silver	mg/kg dw	0 - 8	0%	– - –	0.0084 - 0.022	0.0154
Strontium	mg/kg dw	8 - 8	100%	0.72 - 1.3	– - –	0.961
Thallium	mg/kg dw	0 - 8	0%	– - –	0.029 - 0.03	0.0299
Vanadium	mg/kg dw	6 - 8	75%	0.067 - 0.14	1.1 - 1.1	0.345
Zinc	mg/kg dw	8 - 8	100%	92.8 - 198	– - –	140
Inorganic-cations/anions						
Calcium	mg/kg dw	8 - 8	100%	876 - 1320	– - –	1068
Iron	mg/kg dw	8 - 8	100%	112 - 175	– - –	146
Magnesium	mg/kg dw	8 - 8	100%	972 - 1770	– - –	1319
Potassium	mg/kg dw	8 - 8	100%	9380 - 11100	– - –	10300
Sodium	mg/kg dw	8 - 8	100%	3930 - 4730	– - –	4321

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-122. Mayfly Adult Whole Body (2009) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	1 - 4	25%	8.9 - 8.9	1.1 - 4.7	4.3
Antimony	mg/kg dw	0 - 4	0%	– - –	0.018 - 0.028	0.0208
Arsenic	mg/kg dw	4 - 4	100%	0.17 - 0.31	– - –	0.26
Barium	mg/kg dw	4 - 4	100%	0.5 - 1.1	– - –	0.81
Beryllium	mg/kg dw	0 - 4	0%	– - –	0.0031 - 0.0048	0.00355
Boron	mg/kg dw	4 - 4	100%	0.14 - 1.5	– - –	0.835
Cadmium	mg/kg dw	4 - 4	100%	0.22 - 1	– - –	0.608
Chromium	mg/kg dw	4 - 4	100%	0.23 - 0.75	– - –	0.445
Cobalt	mg/kg dw	4 - 4	100%	0.72 - 1	– - –	0.82
Copper	mg/kg dw	4 - 4	100%	13.8 - 32.8	– - –	26.2
Lead	mg/kg dw	2 - 4	50%	0.077 - 0.088	0.062 - 0.089	0.079
Manganese	mg/kg dw	4 - 4	100%	2 - 4.9	– - –	2.88
Mercury	mg/kg dw	1 - 4	25%	0.038 - 0.038	0.019 - 0.036	0.0315
Molybdenum	mg/kg dw	4 - 4	100%	0.39 - 0.48	– - –	0.43
Nickel	mg/kg dw	4 - 4	100%	0.079 - 0.15	– - –	0.107
Selenium	mg/kg dw	4 - 4	100%	3.4 - 5.2	– - –	4.48
Silver	mg/kg dw	0 - 4	0%	– - –	0.0098 - 0.012	0.0107
Strontium	mg/kg dw	4 - 4	100%	0.62 - 0.97	– - –	0.815
Thallium	mg/kg dw	0 - 4	0%	– - –	0.014 - 0.027	0.0205
Vanadium	mg/kg dw	4 - 4	100%	0.1 - 0.44	– - –	0.293
Zinc	mg/kg dw	4 - 4	100%	78.2 - 217	– - –	120
Inorganic-cations/anions						
Calcium	mg/kg dw	4 - 4	100%	804 - 1270	– - –	1028
Iron	mg/kg dw	4 - 4	100%	83 - 233	– - –	175
Magnesium	mg/kg dw	4 - 4	100%	901 - 1930	– - –	1184
Potassium	mg/kg dw	4 - 4	100%	9190 - 13000	– - –	11800
Sodium	mg/kg dw	4 - 4	100%	3420 - 4300	– - –	3995

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-123. Mayfly Adult Whole Body (2009) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	1 - 1	100%	4.8 - 4.8	– - –	4.8
Antimony	mg/kg dw	0 - 1	0%	– - –	0.019 - 0.019	0.019
Arsenic	mg/kg dw	1 - 1	100%	0.29 - 0.29	– - –	0.29
Barium	mg/kg dw	1 - 1	100%	0.71 - 0.71	– - –	0.71
Beryllium	mg/kg dw	0 - 1	0%	– - –	0.0033 - 0.0033	0.0033
Boron	mg/kg dw	1 - 1	100%	0.8 - 0.8	– - –	0.8
Cadmium	mg/kg dw	1 - 1	100%	0.68 - 0.68	– - –	0.68
Chromium	mg/kg dw	1 - 1	100%	0.5 - 0.5	– - –	0.5
Cobalt	mg/kg dw	1 - 1	100%	0.83 - 0.83	– - –	0.83
Copper	mg/kg dw	1 - 1	100%	31.9 - 31.9	– - –	31.9
Lead	mg/kg dw	0 - 1	0%	– - –	0.032 - 0.032	0.032
Manganese	mg/kg dw	1 - 1	100%	2.1 - 2.1	– - –	2.1
Mercury	mg/kg dw	0 - 1	0%	– - –	0.025 - 0.025	0.025
Molybdenum	mg/kg dw	1 - 1	100%	0.47 - 0.47	– - –	0.47
Nickel	mg/kg dw	1 - 1	100%	0.14 - 0.14	– - –	0.14
Selenium	mg/kg dw	1 - 1	100%	5.4 - 5.4	– - –	5.4
Silver	mg/kg dw	0 - 1	0%	– - –	0.0089 - 0.0089	0.0089
Strontium	mg/kg dw	1 - 1	100%	0.82 - 0.82	– - –	0.82
Thallium	mg/kg dw	0 - 1	0%	– - –	0.024 - 0.024	0.024
Vanadium	mg/kg dw	1 - 1	100%	0.31 - 0.31	– - –	0.31
Zinc	mg/kg dw	1 - 1	100%	89.5 - 89.5	– - –	89.5
Inorganic-cations/anions						
Calcium	mg/kg dw	1 - 1	100%	1040 - 1040	– - –	1040
Iron	mg/kg dw	1 - 1	100%	201 - 201	– - –	201
Magnesium	mg/kg dw	1 - 1	100%	879 - 879	– - –	879
Potassium	mg/kg dw	1 - 1	100%	12500 - 12500	– - –	12500
Sodium	mg/kg dw	1 - 1	100%	4330 - 4330	– - –	4330

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-124. Mayfly Adult Whole Body (2009) Dataset: Tennessee River - Reach A (TRM 550.0 to TRM 566.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	1 - 4	25%	5.2 - 5.2	2.3 - 3.2	3.35
Antimony	mg/kg dw	0 - 4	0%	– - –	0.018 - 0.019	0.0185
Arsenic	mg/kg dw	4 - 4	100%	0.14 - 0.16	– - –	0.148
Barium	mg/kg dw	4 - 4	100%	0.57 - 0.81	– - –	0.645
Beryllium	mg/kg dw	0 - 4	0%	– - –	0.0031 - 0.0033	0.00318
Boron	mg/kg dw	1 - 4	25%	0.97 - 0.97	0.25 - 0.43	0.498
Cadmium	mg/kg dw	4 - 4	100%	0.32 - 0.39	– - –	0.355
Chromium	mg/kg dw	4 - 4	100%	0.16 - 0.27	– - –	0.203
Cobalt	mg/kg dw	4 - 4	100%	0.79 - 1	– - –	0.905
Copper	mg/kg dw	4 - 4	100%	28.6 - 30.1	– - –	29.4
Lead	mg/kg dw	0 - 4	0%	– - –	0.024 - 0.054	0.0385
Manganese	mg/kg dw	4 - 4	100%	1.9 - 4.9	– - –	2.78
Mercury	mg/kg dw	0 - 4	0%	– - –	0.027 - 0.032	0.029
Molybdenum	mg/kg dw	4 - 4	100%	0.27 - 0.33	– - –	0.31
Nickel	mg/kg dw	4 - 4	100%	0.063 - 0.1	– - –	0.0778
Selenium	mg/kg dw	4 - 4	100%	2.9 - 3.2	– - –	3.08
Silver	mg/kg dw	0 - 4	0%	– - –	0.017 - 0.019	0.0183
Strontium	mg/kg dw	4 - 4	100%	0.54 - 0.72	– - –	0.66
Thallium	mg/kg dw	0 - 4	0%	– - –	0.014 - 0.015	0.0143
Vanadium	mg/kg dw	4 - 4	100%	0.1 - 0.18	– - –	0.155
Zinc	mg/kg dw	4 - 4	100%	71 - 84.3	– - –	80.3
Inorganic-cations/anions						
Calcium	mg/kg dw	4 - 4	100%	648 - 880	– - –	785
Iron	mg/kg dw	4 - 4	100%	158 - 167	– - –	162
Magnesium	mg/kg dw	4 - 4	100%	937 - 982	– - –	961
Potassium	mg/kg dw	4 - 4	100%	11800 - 12200	– - –	12000
Sodium	mg/kg dw	4 - 4	100%	3270 - 3440	– - –	3378

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-125. Mayfly Adult Whole Body (2009) Dataset: Tennessee River - Reach B (TRM 566.0 to TRM 568.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	14 - 14	100%	1.5 - 7.7	– - –	4.67
Antimony	mg/kg dw	0 - 14	0%	– - –	0.017 - 0.024	0.019
Arsenic	mg/kg dw	14 - 14	100%	0.15 - 0.24	– - –	0.194
Barium	mg/kg dw	14 - 14	100%	0.54 - 1.6	– - –	0.946
Beryllium	mg/kg dw	0 - 14	0%	– - –	0.003 - 0.0041	0.00326
Boron	mg/kg dw	7 - 14	50%	0.6 - 1.2	0.25 - 0.6	0.606
Cadmium	mg/kg dw	14 - 14	100%	0.41 - 0.78	– - –	0.594
Chromium	mg/kg dw	14 - 14	100%	0.42 - 0.6	– - –	0.525
Cobalt	mg/kg dw	14 - 14	100%	0.55 - 0.87	– - –	0.737
Copper	mg/kg dw	14 - 14	100%	13.6 - 25	– - –	20
Lead	mg/kg dw	12 - 14	86%	0.011 - 0.035	0.0099 - 0.013	0.0192
Manganese	mg/kg dw	14 - 14	100%	2.2 - 5.2	– - –	3.13
Mercury	mg/kg dw	0 - 14	0%	– - –	0.049 - 0.13	0.0586
Molybdenum	mg/kg dw	14 - 14	100%	0.35 - 0.63	– - –	0.506
Nickel	mg/kg dw	14 - 14	100%	0.043 - 0.14	– - –	0.0752
Selenium	mg/kg dw	14 - 14	100%	2.7 - 3.9	– - –	3.08
Silver	mg/kg dw	14 - 14	100%	0.012 - 0.024	– - –	0.0174
Strontium	mg/kg dw	14 - 14	100%	0.61 - 1.5	– - –	0.981
Thallium	mg/kg dw	0 - 14	0%	– - –	0.021 - 0.044	0.0343
Vanadium	mg/kg dw	14 - 14	100%	0.13 - 0.28	– - –	0.211
Zinc	mg/kg dw	14 - 14	100%	79.6 - 229	– - –	133
Inorganic-cations/anions						
Calcium	mg/kg dw	14 - 14	100%	855 - 1610	– - –	1198
Iron	mg/kg dw	14 - 14	100%	107 - 182	– - –	150
Magnesium	mg/kg dw	14 - 14	100%	966 - 1990	– - –	1343
Potassium	mg/kg dw	14 - 14	100%	8850 - 11200	– - –	9866
Sodium	mg/kg dw	14 - 14	100%	3440 - 4870	– - –	4111

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg dw = Milligram per kilogram dry weight.

TRM = Tennessee River mile.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-126. Mayfly Adult Whole Body (2010) Dataset: Emory River - Reference (Above ERM 6.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Concentration [b]
Inorganics								
Aluminum	mg/kg dw	0 - 8	0%	–	–	0.85	3.6	1.83
Antimony	mg/kg dw	0 - 8	0%	–	–	0.018	0.019	0.0189
Arsenic	mg/kg dw	8 - 8	100%	0.11	0.22	–	–	0.163
Barium	mg/kg dw	8 - 8	100%	0.83	1.6	–	–	1.15
Beryllium	mg/kg dw	0 - 8	0%	–	–	0.0032	0.0033	0.00325
Boron	mg/kg dw	3 - 8	38%	0.86	1.4	0.39	0.63	0.769
Cadmium	mg/kg dw	8 - 8	100%	0.55	0.76	–	–	0.685
Chromium	mg/kg dw	8 - 8	100%	0.19	0.41	–	–	0.243
Cobalt	mg/kg dw	8 - 8	100%	1.6	1.9	–	–	1.76
Copper	mg/kg dw	8 - 8	100%	14.2	22.5	–	–	18.6
Lead	mg/kg dw	0 - 8	0%	–	–	0.01	0.04	0.017
Manganese	mg/kg dw	8 - 8	100%	1.9	3.7	–	–	2.73
Mercury	mg/kg dw	8 - 8	100%	0.056	0.07	–	–	0.0628
Molybdenum	mg/kg dw	8 - 8	100%	0.32	0.39	–	–	0.361
Nickel	mg/kg dw	8 - 8	100%	0.059	0.11	–	–	0.0866
Selenium	mg/kg dw	8 - 8	100%	3.3	3.7	–	–	3.46
Silver	mg/kg dw	8 - 8	100%	0.17	0.24	–	–	0.203
Strontium	mg/kg dw	8 - 8	100%	0.48	1	–	–	0.719
Thallium	mg/kg dw	0 - 8	0%	–	–	0.014	0.015	0.0145
Vanadium	mg/kg dw	7 - 8	88%	0.056	0.077	0.053	0.053	0.0666
Zinc	mg/kg dw	8 - 8	100%	84.5	217	–	–	143
Inorganic-cations/anions								
Calcium	mg/kg dw	8 - 8	100%	930	1480	–	–	1220
Iron	mg/kg dw	8 - 8	100%	100	162	–	–	133
Magnesium	mg/kg dw	8 - 8	100%	953	1800	–	–	1340
Potassium	mg/kg dw	8 - 8	100%	9310	11800	–	–	10700
Sodium	mg/kg dw	8 - 8	100%	4090	4480	–	–	4326

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-127. Mayfly Adult Whole Body (2010) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	6 - 18	33%	3.9 - 17.6	3.8 - 4.2	5.17
Antimony	mg/kg dw	1 - 18	6%	0.017 - 0.017	0.013 - 0.015	0.0145
Arsenic	mg/kg dw	18 - 18	100%	0.23 - 0.41	– - –	0.282
Barium	mg/kg dw	18 - 18	100%	0.71 - 1.7	– - –	1.23
Beryllium	mg/kg dw	0 - 18	0%	– - –	0.027 - 0.031	0.0292
Boron	mg/kg dw	18 - 18	100%	0.42 - 3.3	– - –	1.08
Cadmium	mg/kg dw	18 - 18	100%	0.033 - 0.24	– - –	0.127
Chromium	mg/kg dw	9 - 18	50%	0.13 - 0.29	0.3 - 1.8	0.528
Cobalt	mg/kg dw	18 - 18	100%	0.54 - 0.91	– - –	0.763
Copper	mg/kg dw	18 - 18	100%	10.6 - 26.7	– - –	19.5
Lead	mg/kg dw	0 - 18	0%	– - –	0.026 - 0.029	0.0276
Manganese	mg/kg dw	18 - 18	100%	1.9 - 6.4	– - –	2.93
Mercury	mg/kg dw	18 - 18	100%	0.038 - 0.069	– - –	0.0494
Molybdenum	mg/kg dw	18 - 18	100%	0.33 - 0.85	– - –	0.603
Nickel	mg/kg dw	1 - 18	6%	0.1 - 0.1	0.089 - 0.1	0.0966
Selenium	mg/kg dw	18 - 18	100%	5.6 - 8.2	– - –	7.11
Silver	mg/kg dw	18 - 18	100%	0.0067 - 0.017	– - –	0.0118
Strontium	mg/kg dw	18 - 18	100%	0.63 - 1.2	– - –	0.888
Thallium	mg/kg dw	0 - 18	0%	– - –	0.013 - 0.042	0.022
Vanadium	mg/kg dw	18 - 18	100%	0.069 - 0.2	– - –	0.155
Zinc	mg/kg dw	18 - 18	100%	87.6 - 220	– - –	136
Inorganic-cations/anions						
Calcium	mg/kg dw	18 - 18	100%	640 - 1380	– - –	996
Iron	mg/kg dw	18 - 18	100%	93.4 - 196	– - –	149
Magnesium	mg/kg dw	18 - 18	100%	920 - 2010	– - –	1263
Potassium	mg/kg dw	18 - 18	100%	9190 - 12500	– - –	10900
Sodium	mg/kg dw	18 - 18	100%	3550 - 4820	– - –	4116

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-128. Mayfly Adult Whole Body (2010) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	11 - 18	61%	4.3 - 27.1	3.7 - 4.1	6.41
Antimony	mg/kg dw	2 - 18	11%	0.017 - 0.044	0.014 - 0.015	0.0164
Arsenic	mg/kg dw	18 - 18	100%	0.35 - 0.62	– - –	0.466
Barium	mg/kg dw	18 - 18	100%	0.91 - 1.8	– - –	1.38
Beryllium	mg/kg dw	0 - 18	0%	– - –	0.028 - 0.062	0.0363
Boron	mg/kg dw	18 - 18	100%	0.48 - 2.3	– - –	1.25
Cadmium	mg/kg dw	18 - 18	100%	0.015 - 0.15	– - –	0.0761
Chromium	mg/kg dw	18 - 18	100%	0.14 - 0.23	– - –	0.177
Cobalt	mg/kg dw	18 - 18	100%	0.37 - 0.79	– - –	0.599
Copper	mg/kg dw	18 - 18	100%	12.3 - 27.7	– - –	18.7
Lead	mg/kg dw	0 - 18	0%	– - –	0.026 - 0.029	0.028
Manganese	mg/kg dw	18 - 18	100%	2 - 4.8	– - –	3.19
Mercury	mg/kg dw	18 - 18	100%	0.025 - 0.037	– - –	0.0304
Molybdenum	mg/kg dw	18 - 18	100%	0.34 - 1.4	– - –	0.718
Nickel	mg/kg dw	0 - 18	0%	– - –	0.091 - 0.1	0.0978
Selenium	mg/kg dw	18 - 18	100%	6.5 - 8.4	– - –	7.56
Silver	mg/kg dw	18 - 18	100%	0.005 - 0.018	– - –	0.0102
Strontium	mg/kg dw	18 - 18	100%	0.57 - 1.4	– - –	0.968
Thallium	mg/kg dw	0 - 18	0%	– - –	0.013 - 0.038	0.0232
Vanadium	mg/kg dw	18 - 18	100%	0.11 - 0.25	– - –	0.181
Zinc	mg/kg dw	18 - 18	100%	82.5 - 246	– - –	153
Inorganic-cations/anions						
Calcium	mg/kg dw	18 - 18	100%	724 - 1780	– - –	1113
Iron	mg/kg dw	18 - 18	100%	101 - 233	– - –	153
Magnesium	mg/kg dw	18 - 18	100%	951 - 2460	– - –	1554
Potassium	mg/kg dw	18 - 18	100%	8600 - 14500	– - –	11100
Sodium	mg/kg dw	18 - 18	100%	3520 - 4890	– - –	4037

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-129. Mayfly Adult Whole Body (2010) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Concentration [b]
Inorganics								
Aluminum	mg/kg dw	4 - 4	100%	43.9	63.4	–	–	52.8
Antimony	mg/kg dw	0 - 4	0%	–	–	0.018	0.019	0.0185
Arsenic	mg/kg dw	4 - 4	100%	0.14	0.15	–	–	0.148
Barium	mg/kg dw	4 - 4	100%	1.3	1.6	–	–	1.43
Beryllium	mg/kg dw	0 - 4	0%	–	–	0.0031	0.0033	0.0032
Boron	mg/kg dw	3 - 4	75%	0.82	0.98	0.66	0.66	0.843
Cadmium	mg/kg dw	4 - 4	100%	0.12	0.15	–	–	0.13
Chromium	mg/kg dw	4 - 4	100%	0.25	0.34	–	–	0.298
Cobalt	mg/kg dw	4 - 4	100%	0.63	0.67	–	–	0.65
Copper	mg/kg dw	4 - 4	100%	27.4	28.1	–	–	27.9
Lead	mg/kg dw	4 - 4	100%	0.12	0.19	–	–	0.153
Manganese	mg/kg dw	4 - 4	100%	6.3	9.3	–	–	8.03
Mercury	mg/kg dw	4 - 4	100%	0.07	0.074	–	–	0.073
Molybdenum	mg/kg dw	4 - 4	100%	0.37	0.4	–	–	0.385
Nickel	mg/kg dw	4 - 4	100%	0.15	0.21	–	–	0.175
Selenium	mg/kg dw	4 - 4	100%	4.7	5	–	–	4.83
Silver	mg/kg dw	4 - 4	100%	0.053	0.056	–	–	0.0545
Strontium	mg/kg dw	4 - 4	100%	0.75	0.88	–	–	0.803
Thallium	mg/kg dw	0 - 4	0%	–	–	0.014	0.015	0.0143
Vanadium	mg/kg dw	4 - 4	100%	0.1	0.13	–	–	0.113
Zinc	mg/kg dw	4 - 4	100%	85.4	88.8	–	–	87.3
Inorganic-cations/anions								
Calcium	mg/kg dw	4 - 4	100%	788	858	–	–	817
Iron	mg/kg dw	4 - 4	100%	251	269	–	–	258
Magnesium	mg/kg dw	4 - 4	100%	788	813	–	–	805
Potassium	mg/kg dw	4 - 4	100%	12400	12900	–	–	12600
Sodium	mg/kg dw	4 - 4	100%	3790	4010	–	–	3933

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-130. Mayfly Adult Whole Body (2010) Dataset: Clinch River - Reference (Above CRM 4.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	1 - 6	17%	5.2 - 5.2	3.9 - 4.2	4.23
Antimony	mg/kg dw	0 - 6	0%	– - –	0.014 - 0.015	0.0147
Arsenic	mg/kg dw	6 - 6	100%	0.11 - 0.14	– - –	0.123
Barium	mg/kg dw	6 - 6	100%	0.54 - 0.68	– - –	0.625
Beryllium	mg/kg dw	0 - 6	0%	– - –	0.029 - 0.031	0.03
Boron	mg/kg dw	6 - 6	100%	0.44 - 0.77	– - –	0.532
Cadmium	mg/kg dw	6 - 6	100%	0.3 - 0.4	– - –	0.353
Chromium	mg/kg dw	1 - 6	17%	12.7 - 12.7	0.55 - 1.3	2.86
Cobalt	mg/kg dw	6 - 6	100%	0.76 - 0.82	– - –	0.792
Copper	mg/kg dw	6 - 6	100%	26.3 - 27.9	– - –	27.3
Lead	mg/kg dw	0 - 6	0%	– - –	0.027 - 0.029	0.0282
Manganese	mg/kg dw	6 - 6	100%	2 - 2.9	– - –	2.28
Mercury	mg/kg dw	6 - 6	100%	0.1 - 0.13	– - –	0.113
Molybdenum	mg/kg dw	6 - 6	100%	0.34 - 0.37	– - –	0.352
Nickel	mg/kg dw	0 - 6	0%	– - –	0.095 - 0.1	0.098
Selenium	mg/kg dw	6 - 6	100%	3.7 - 4.1	– - –	3.88
Silver	mg/kg dw	6 - 6	100%	0.024 - 0.028	– - –	0.0263
Strontium	mg/kg dw	6 - 6	100%	0.58 - 0.74	– - –	0.698
Thallium	mg/kg dw	0 - 6	0%	– - –	0.013 - 0.014	0.0137
Vanadium	mg/kg dw	6 - 6	100%	0.12 - 0.14	– - –	0.128
Zinc	mg/kg dw	6 - 6	100%	88 - 98.7	– - –	93.8
Inorganic-cations/anions						
Calcium	mg/kg dw	6 - 6	100%	878 - 1090	– - –	980
Iron	mg/kg dw	6 - 6	100%	177 - 185	– - –	180
Magnesium	mg/kg dw	6 - 6	100%	921 - 946	– - –	937
Potassium	mg/kg dw	6 - 6	100%	12100 - 12400	– - –	12200
Sodium	mg/kg dw	6 - 6	100%	3900 - 4090	– - –	4037

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-131. Mayfly Adult Whole Body (2010) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 6	0%	–	–	3.6	3.9	3.8
Antimony	mg/kg dw	0 - 6	0%	–	–	0.013	0.014	0.0137
Arsenic	mg/kg dw	6 - 6	100%	0.16	0.26	–	–	0.193
Barium	mg/kg dw	6 - 6	100%	0.39	0.72	–	–	0.567
Beryllium	mg/kg dw	0 - 6	0%	–	–	0.027	0.029	0.028
Boron	mg/kg dw	5 - 6	83%	0.48	0.78	0.4	0.4	0.635
Cadmium	mg/kg dw	6 - 6	100%	0.58	0.7	–	–	0.623
Chromium	mg/kg dw	6 - 6	100%	0.23	0.32	–	–	0.262
Cobalt	mg/kg dw	6 - 6	100%	0.82	1	–	–	0.912
Copper	mg/kg dw	6 - 6	100%	17	27.5	–	–	22.3
Lead	mg/kg dw	0 - 6	0%	–	–	0.025	0.027	0.0263
Manganese	mg/kg dw	6 - 6	100%	1.8	3.7	–	–	2.72
Mercury	mg/kg dw	6 - 6	100%	0.041	0.055	–	–	0.049
Molybdenum	mg/kg dw	6 - 6	100%	0.32	0.5	–	–	0.405
Nickel	mg/kg dw	0 - 6	0%	–	–	0.089	0.096	0.0928
Selenium	mg/kg dw	6 - 6	100%	5.2	6.7	–	–	5.88
Silver	mg/kg dw	6 - 6	100%	0.0064	0.0098	–	–	0.00797
Strontium	mg/kg dw	6 - 6	100%	0.44	0.83	–	–	0.632
Thallium	mg/kg dw	0 - 6	0%	–	–	0.013	0.026	0.018
Vanadium	mg/kg dw	6 - 6	100%	0.16	0.25	–	–	0.198
Zinc	mg/kg dw	6 - 6	100%	80.1	205	–	–	138
Inorganic-cations/anions								
Calcium	mg/kg dw	6 - 6	100%	764	1310	–	–	1078
Iron	mg/kg dw	6 - 6	100%	104	177	–	–	141
Magnesium	mg/kg dw	6 - 6	100%	993	1910	–	–	1429
Potassium	mg/kg dw	6 - 6	100%	10100	12700	–	–	11400
Sodium	mg/kg dw	6 - 6	100%	3610	4000	–	–	3807

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-132. Mayfly Adult Whole Body (2010) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)

Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Concentration [b]
Inorganics								
Aluminum	mg/kg dw	0 - 9	0%	–	–	3.7	5	4.07
Antimony	mg/kg dw	0 - 9	0%	–	–	0.013	0.018	0.0147
Arsenic	mg/kg dw	9 - 9	100%	0.19	0.28	–	–	0.232
Barium	mg/kg dw	9 - 9	100%	0.56	0.92	–	–	0.718
Beryllium	mg/kg dw	0 - 9	0%	–	–	0.027	0.037	0.0297
Boron	mg/kg dw	8 - 9	89%	0.46	1.4	0.38	0.38	0.803
Cadmium	mg/kg dw	9 - 9	100%	0.2	0.37	–	–	0.29
Chromium	mg/kg dw	7 - 9	78%	0.21	0.29	0.39	0.68	0.309
Cobalt	mg/kg dw	9 - 9	100%	0.67	0.89	–	–	0.771
Copper	mg/kg dw	9 - 9	100%	11.8	28.5	–	–	18.5
Lead	mg/kg dw	0 - 9	0%	–	–	0.026	0.035	0.0282
Manganese	mg/kg dw	9 - 9	100%	2	3.4	–	–	2.79
Mercury	mg/kg dw	9 - 9	100%	0.056	0.08	–	–	0.065
Molybdenum	mg/kg dw	9 - 9	100%	0.41	0.69	–	–	0.521
Nickel	mg/kg dw	1 - 9	11%	0.33	0.33	0.092	0.12	0.125
Selenium	mg/kg dw	9 - 9	100%	5.8	6.6	–	–	6.22
Silver	mg/kg dw	9 - 9	100%	0.0071	0.016	–	–	0.0114
Strontium	mg/kg dw	9 - 9	100%	0.61	0.94	–	–	0.709
Thallium	mg/kg dw	0 - 9	0%	–	–	0.017	0.041	0.0232
Vanadium	mg/kg dw	9 - 9	100%	0.17	0.25	–	–	0.207
Zinc	mg/kg dw	9 - 9	100%	91.4	212	–	–	165
Inorganic-cations/anions								
Calcium	mg/kg dw	9 - 9	100%	920	1490	–	–	1299
Iron	mg/kg dw	9 - 9	100%	94.6	189	–	–	132
Magnesium	mg/kg dw	9 - 9	100%	1000	1940	–	–	1573
Potassium	mg/kg dw	9 - 9	100%	9040	13000	–	–	10800
Sodium	mg/kg dw	9 - 9	100%	3710	4350	–	–	4060

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-133. Mayfly Adult Whole Body (2010) Dataset: Tennessee River - Reference (Above TRM 568.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Concentration [b]
Inorganics								
Aluminum	mg/kg dw	3 - 9	33%	6.2	7.7	3.7	4.1	4.84
Antimony	mg/kg dw	1 - 9	11%	0.025	0.025	0.013	0.015	0.0152
Arsenic	mg/kg dw	9 - 9	100%	0.09	0.26	–	–	0.173
Barium	mg/kg dw	9 - 9	100%	0.78	1.4	–	–	1.01
Beryllium	mg/kg dw	0 - 9	0%	–	–	0.027	0.061	0.0388
Boron	mg/kg dw	8 - 9	89%	0.69	1.5	0.4	0.4	0.94
Cadmium	mg/kg dw	9 - 9	100%	0.25	0.42	–	–	0.333
Chromium	mg/kg dw	9 - 9	100%	0.22	0.28	–	–	0.239
Cobalt	mg/kg dw	9 - 9	100%	0.77	1.2	–	–	0.98
Copper	mg/kg dw	9 - 9	100%	13.8	27.1	–	–	22
Lead	mg/kg dw	1 - 9	11%	0.11	0.11	0.026	0.029	0.0366
Manganese	mg/kg dw	9 - 9	100%	2	6.7	–	–	3.49
Mercury	mg/kg dw	9 - 9	100%	0.018	0.04	–	–	0.029
Molybdenum	mg/kg dw	9 - 9	100%	0.33	0.47	–	–	0.406
Nickel	mg/kg dw	1 - 9	11%	0.15	0.15	0.09	0.1	0.102
Selenium	mg/kg dw	9 - 9	100%	1.5	2	–	–	1.77
Silver	mg/kg dw	9 - 9	100%	0.029	0.069	–	–	0.0517
Strontium	mg/kg dw	9 - 9	100%	0.58	1.3	–	–	0.882
Thallium	mg/kg dw	0 - 9	0%	–	–	0.013	0.014	0.0136
Vanadium	mg/kg dw	9 - 9	100%	0.095	0.14	–	–	0.109
Zinc	mg/kg dw	9 - 9	100%	94.4	216	–	–	133
Inorganic-cations/anions								
Calcium	mg/kg dw	9 - 9	100%	978	1870	–	–	1363
Iron	mg/kg dw	9 - 9	100%	92.2	182	–	–	147
Magnesium	mg/kg dw	9 - 9	100%	919	2330	–	–	1467
Potassium	mg/kg dw	9 - 9	100%	10200	13300	–	–	11700
Sodium	mg/kg dw	9 - 9	100%	3970	5750	–	–	4748

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg dw = Milligram per kilogram dry weight.

TRM = Tennessee River mile.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-134. Mayfly Adult Whole Body (2010) Dataset: Tennessee River - Reach A (TRM 550.0 to TRM 566.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	0 - 9	0%	– - –	3.5 - 4.2	3.91
Antimony	mg/kg dw	0 - 9	0%	– - –	0.013 - 0.015	0.0142
Arsenic	mg/kg dw	9 - 9	100%	0.089 - 0.21	– - –	0.136
Barium	mg/kg dw	9 - 9	100%	0.42 - 0.97	– - –	0.719
Beryllium	mg/kg dw	0 - 9	0%	– - –	0.026 - 0.031	0.029
Boron	mg/kg dw	3 - 9	33%	0.93 - 1.3	0.37 - 0.42	0.623
Cadmium	mg/kg dw	9 - 9	100%	0.22 - 0.76	– - –	0.437
Chromium	mg/kg dw	9 - 9	100%	0.2 - 0.44	– - –	0.29
Cobalt	mg/kg dw	9 - 9	100%	0.79 - 0.98	– - –	0.903
Copper	mg/kg dw	9 - 9	100%	10.3 - 28.8	– - –	20.6
Lead	mg/kg dw	0 - 9	0%	– - –	0.025 - 0.029	0.0272
Manganese	mg/kg dw	9 - 9	100%	2.1 - 5.6	– - –	3.4
Mercury	mg/kg dw	9 - 9	100%	0.028 - 0.053	– - –	0.0418
Molybdenum	mg/kg dw	9 - 9	100%	0.39 - 0.54	– - –	0.471
Nickel	mg/kg dw	0 - 9	0%	– - –	0.087 - 0.1	0.0953
Selenium	mg/kg dw	9 - 9	100%	2.9 - 4.1	– - –	3.38
Silver	mg/kg dw	9 - 9	100%	0.012 - 0.038	– - –	0.0254
Strontium	mg/kg dw	9 - 9	100%	0.54 - 1	– - –	0.818
Thallium	mg/kg dw	0 - 9	0%	– - –	0.012 - 0.021	0.0164
Vanadium	mg/kg dw	9 - 9	100%	0.11 - 0.23	– - –	0.16
Zinc	mg/kg dw	9 - 9	100%	91.8 - 224	– - –	133
Inorganic-cations/anions						
Calcium	mg/kg dw	9 - 9	100%	1060 - 1540	– - –	1257
Iron	mg/kg dw	9 - 9	100%	69.4 - 180	– - –	134
Magnesium	mg/kg dw	9 - 9	100%	928 - 2100	– - –	1278
Potassium	mg/kg dw	9 - 9	100%	8260 - 12400	– - –	10300
Sodium	mg/kg dw	9 - 9	100%	3450 - 4840	– - –	4030

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg dw = Milligram per kilogram dry weight.

TRM = Tennessee River mile.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-135. Mayfly Adult Whole Body (2010) Dataset: Tennessee River - Reach B (TRM 566.0 to TRM 568.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	0 - 18	0%	– - –	3.9 - 4.3	4.11
Antimony	mg/kg dw	0 - 18	0%	– - –	0.014 - 0.015	0.0148
Arsenic	mg/kg dw	18 - 18	100%	0.11 - 0.23	– - –	0.149
Barium	mg/kg dw	18 - 18	100%	0.4 - 0.83	– - –	0.67
Beryllium	mg/kg dw	0 - 18	0%	– - –	0.028 - 0.064	0.0459
Boron	mg/kg dw	4 - 18	22%	0.44 - 0.66	0.4 - 0.44	0.451
Cadmium	mg/kg dw	18 - 18	100%	0.11 - 0.38	– - –	0.244
Chromium	mg/kg dw	18 - 18	100%	0.14 - 0.28	– - –	0.201
Cobalt	mg/kg dw	18 - 18	100%	0.75 - 1.1	– - –	0.923
Copper	mg/kg dw	18 - 18	100%	11.3 - 28.2	– - –	20.4
Lead	mg/kg dw	0 - 18	0%	– - –	0.027 - 0.03	0.0286
Manganese	mg/kg dw	18 - 18	100%	1.9 - 5.3	– - –	2.91
Mercury	mg/kg dw	18 - 18	100%	0.026 - 0.057	– - –	0.0424
Molybdenum	mg/kg dw	18 - 18	100%	0.34 - 0.66	– - –	0.502
Nickel	mg/kg dw	0 - 18	0%	– - –	0.094 - 0.1	0.0989
Selenium	mg/kg dw	18 - 18	100%	3.3 - 5.3	– - –	3.91
Silver	mg/kg dw	12 - 18	67%	0.0078 - 0.023	0.0052 - 0.015	0.0146
Strontium	mg/kg dw	18 - 18	100%	0.55 - 1.1	– - –	0.788
Thallium	mg/kg dw	0 - 18	0%	– - –	0.013 - 0.033	0.0197
Vanadium	mg/kg dw	18 - 18	100%	0.08 - 0.21	– - –	0.15
Zinc	mg/kg dw	18 - 18	100%	89.1 - 213	– - –	132
Inorganic-cations/anions						
Calcium	mg/kg dw	18 - 18	100%	850 - 1450	– - –	1133
Iron	mg/kg dw	18 - 18	100%	76.9 - 184	– - –	135
Magnesium	mg/kg dw	18 - 18	100%	932 - 1950	– - –	1264
Potassium	mg/kg dw	18 - 18	100%	7990 - 12800	– - –	10300
Sodium	mg/kg dw	18 - 18	100%	3230 - 4950	– - –	4049

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg dw = Milligram per kilogram dry weight.

TRM = Tennessee River mile.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-136. Mayfly Nymph Whole Body (2009) Dataset: Emory River - Reference (Above ERM 6.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	7 - 7	100%	3280 - 6650	– - –	5219
Antimony	mg/kg dw	1 - 7	14%	0.13 - 0.13	0.036 - 0.12	0.0776
Arsenic	mg/kg dw	7 - 7	100%	2.5 - 4.6	– - –	3.51
Barium	mg/kg dw	7 - 7	100%	32.2 - 67.5	– - –	50.1
Beryllium	mg/kg dw	3 - 7	43%	0.33 - 0.36	0.16 - 0.28	0.274
Boron	mg/kg dw	2 - 7	29%	4 - 5.4	2.9 - 5.8	4.13
Cadmium	mg/kg dw	7 - 7	100%	0.39 - 2.1	– - –	1.19
Chromium	mg/kg dw	3 - 7	43%	8.2 - 9.3	3.8 - 5.5	6.47
Cobalt	mg/kg dw	7 - 7	100%	4.1 - 7.8	– - –	5.89
Copper	mg/kg dw	7 - 7	100%	9.6 - 13.7	– - –	11.6
Lead	mg/kg dw	7 - 7	100%	3.5 - 6.4	– - –	5.34
Manganese	mg/kg dw	7 - 7	100%	419 - 1300	– - –	795
Mercury	mg/kg dw	6 - 7	86%	0.047 - 0.084	0.059 - 0.059	0.0666
Molybdenum	mg/kg dw	3 - 7	43%	0.69 - 0.73	0.51 - 0.59	0.623
Nickel	mg/kg dw	7 - 7	100%	4.1 - 11.5	– - –	7.89
Selenium	mg/kg dw	7 - 7	100%	1.9 - 3.4	– - –	2.54
Silver	mg/kg dw	3 - 7	43%	0.15 - 0.16	0.03 - 0.048	0.0899
Strontium	mg/kg dw	7 - 7	100%	4.1 - 8	– - –	6.24
Thallium	mg/kg dw	0 - 7	0%	– - –	0.038 - 0.074	0.059
Vanadium	mg/kg dw	7 - 7	100%	5.6 - 12.5	– - –	9.57
Zinc	mg/kg dw	7 - 7	100%	167 - 289	– - –	213
Inorganic-cations/anions						
Calcium	mg/kg dw	7 - 7	100%	1470 - 1830	– - –	1664
Iron	mg/kg dw	7 - 7	100%	5060 - 10300	– - –	7804
Magnesium	mg/kg dw	7 - 7	100%	1200 - 1430	– - –	1310
Potassium	mg/kg dw	7 - 7	100%	6130 - 7430	– - –	6781
Sodium	mg/kg dw	7 - 7	100%	3800 - 6410	– - –	5263

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-137. Mayfly Nymph Whole Body (2009) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	5 - 5	100%	7520 - 9600	– - –	8782
Antimony	mg/kg dw	5 - 5	100%	0.41 - 0.54	– - –	0.456
Arsenic	mg/kg dw	5 - 5	100%	29.2 - 48.2	– - –	40.1
Barium	mg/kg dw	5 - 5	100%	113 - 144	– - –	131
Beryllium	mg/kg dw	5 - 5	100%	0.83 - 1.2	– - –	1.09
Boron	mg/kg dw	2 - 5	40%	7.6 - 11.9	13.3 - 14.8	12.4
Cadmium	mg/kg dw	5 - 5	100%	0.42 - 0.96	– - –	0.656
Chromium	mg/kg dw	3 - 5	60%	10.4 - 13.5	12.1 - 12.1	12.2
Cobalt	mg/kg dw	5 - 5	100%	6.4 - 7.9	– - –	7.36
Copper	mg/kg dw	5 - 5	100%	21.4 - 25.5	– - –	24.3
Lead	mg/kg dw	5 - 5	100%	7.2 - 9.3	– - –	8.78
Manganese	mg/kg dw	5 - 5	100%	374 - 452	– - –	419
Mercury	mg/kg dw	5 - 5	100%	0.11 - 0.14	– - –	0.122
Molybdenum	mg/kg dw	5 - 5	100%	3.2 - 4.1	– - –	3.64
Nickel	mg/kg dw	5 - 5	100%	11 - 14.5	– - –	13.2
Selenium	mg/kg dw	5 - 5	100%	6.3 - 6.5	– - –	6.42
Silver	mg/kg dw	4 - 5	80%	0.042 - 0.062	0.073 - 0.073	0.0574
Strontium	mg/kg dw	5 - 5	100%	39.5 - 63.2	– - –	54.3
Thallium	mg/kg dw	5 - 5	100%	0.35 - 0.66	– - –	0.506
Vanadium	mg/kg dw	5 - 5	100%	20.5 - 28.8	– - –	26
Zinc	mg/kg dw	5 - 5	100%	143 - 179	– - –	159
Inorganic-cations/anions						
Calcium	mg/kg dw	5 - 5	100%	2740 - 3290	– - –	3078
Iron	mg/kg dw	5 - 5	100%	8010 - 9780	– - –	8890
Magnesium	mg/kg dw	5 - 5	100%	1470 - 1570	– - –	1522
Potassium	mg/kg dw	5 - 5	100%	6080 - 7890	– - –	7000
Sodium	mg/kg dw	5 - 5	100%	3720 - 4930	– - –	4374

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-138. Mayfly Nymph Whole Body (2009) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	5 - 5	100%	5530 - 9180	– - –	7068
Antimony	mg/kg dw	3 - 5	60%	0.18 - 0.28	0.18 - 0.21	0.212
Arsenic	mg/kg dw	5 - 5	100%	9.4 - 16.9	– - –	14.3
Barium	mg/kg dw	5 - 5	100%	51.3 - 91.5	– - –	66.7
Beryllium	mg/kg dw	4 - 5	80%	0.48 - 0.87	0.67 - 0.67	0.65
Boron	mg/kg dw	3 - 5	60%	4.9 - 6.3	4.9 - 11.1	6.48
Cadmium	mg/kg dw	5 - 5	100%	0.21 - 1.2	– - –	0.572
Chromium	mg/kg dw	3 - 5	60%	6.7 - 9.6	8.9 - 11.2	8.78
Cobalt	mg/kg dw	5 - 5	100%	6.5 - 8.7	– - –	7.34
Copper	mg/kg dw	5 - 5	100%	16.8 - 20.2	– - –	17.8
Lead	mg/kg dw	5 - 5	100%	5.6 - 10.4	– - –	7.36
Manganese	mg/kg dw	5 - 5	100%	354 - 710	– - –	466
Mercury	mg/kg dw	2 - 5	40%	0.062 - 0.088	0.053 - 0.07	0.0666
Molybdenum	mg/kg dw	3 - 5	60%	1.4 - 1.7	0.99 - 1.3	1.4
Nickel	mg/kg dw	5 - 5	100%	9.3 - 14.9	– - –	11.6
Selenium	mg/kg dw	5 - 5	100%	3.9 - 5.4	– - –	4.58
Silver	mg/kg dw	3 - 5	60%	0.04 - 0.047	0.054 - 0.057	0.0486
Strontium	mg/kg dw	5 - 5	100%	16.1 - 28.4	– - –	22.8
Thallium	mg/kg dw	5 - 5	100%	0.17 - 0.26	– - –	0.216
Vanadium	mg/kg dw	5 - 5	100%	12.3 - 21.7	– - –	16.4
Zinc	mg/kg dw	5 - 5	100%	140 - 249	– - –	193
Inorganic-cations/anions						
Calcium	mg/kg dw	5 - 5	100%	1990 - 2600	– - –	2276
Iron	mg/kg dw	5 - 5	100%	6350 - 10300	– - –	8266
Magnesium	mg/kg dw	5 - 5	100%	1360 - 1590	– - –	1478
Potassium	mg/kg dw	5 - 5	100%	6130 - 8120	– - –	7196
Sodium	mg/kg dw	5 - 5	100%	4080 - 6730	– - –	5288

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-139. Mayfly Nymph Whole Body (2009) Dataset: Clinch River - Reference (Above CRM 4.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	4 - 4	100%	6300 - 7290	– - –	6748
Antimony	mg/kg dw	0 - 4	0%	– - –	0.064 - 0.074	0.0675
Arsenic	mg/kg dw	4 - 4	100%	4.3 - 5.4	– - –	4.8
Barium	mg/kg dw	4 - 4	100%	47.2 - 57.5	– - –	51.3
Beryllium	mg/kg dw	2 - 4	50%	0.35 - 0.38	0.26 - 0.33	0.33
Boron	mg/kg dw	4 - 4	100%	5.4 - 7.3	– - –	5.98
Cadmium	mg/kg dw	4 - 4	100%	0.82 - 1.2	– - –	1.02
Chromium	mg/kg dw	4 - 4	100%	7.9 - 9.5	– - –	8.6
Cobalt	mg/kg dw	4 - 4	100%	4.7 - 5.5	– - –	5.15
Copper	mg/kg dw	4 - 4	100%	16.3 - 18.3	– - –	17.2
Lead	mg/kg dw	4 - 4	100%	8.1 - 9.5	– - –	8.63
Manganese	mg/kg dw	4 - 4	100%	885 - 1000	– - –	933
Mercury	mg/kg dw	4 - 4	100%	0.62 - 0.92	– - –	0.753
Molybdenum	mg/kg dw	0 - 4	0%	– - –	0.69 - 0.86	0.758
Nickel	mg/kg dw	4 - 4	100%	8.4 - 10.1	– - –	9.18
Selenium	mg/kg dw	4 - 4	100%	3.7 - 4.2	– - –	3.95
Silver	mg/kg dw	4 - 4	100%	0.044 - 0.062	– - –	0.0533
Strontium	mg/kg dw	4 - 4	100%	8.7 - 11	– - –	9.65
Thallium	mg/kg dw	3 - 4	75%	0.096 - 0.12	0.12 - 0.12	0.108
Vanadium	mg/kg dw	4 - 4	100%	10.3 - 12.5	– - –	11.5
Zinc	mg/kg dw	4 - 4	100%	171 - 212	– - –	190
Inorganic-cations/anions						
Calcium	mg/kg dw	4 - 4	100%	2760 - 3060	– - –	2893
Iron	mg/kg dw	4 - 4	100%	7530 - 9250	– - –	8200
Magnesium	mg/kg dw	4 - 4	100%	1690 - 1840	– - –	1778
Potassium	mg/kg dw	4 - 4	100%	6380 - 7290	– - –	6928
Sodium	mg/kg dw	4 - 4	100%	4450 - 5300	– - –	4783

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-140. Mayfly Nymph Whole Body (2009) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	4 - 4	100%	7450	8790	–	–	7920
Antimony	mg/kg dw	4 - 4	100%	0.21	0.24	–	–	0.225
Arsenic	mg/kg dw	4 - 4	100%	12	15.2	–	–	13.8
Barium	mg/kg dw	4 - 4	100%	78.4	91.5	–	–	83.3
Beryllium	mg/kg dw	4 - 4	100%	0.67	0.87	–	–	0.74
Boron	mg/kg dw	4 - 4	100%	6.7	8.4	–	–	7.45
Cadmium	mg/kg dw	4 - 4	100%	1.3	2.6	–	–	1.85
Chromium	mg/kg dw	4 - 4	100%	9.8	11.5	–	–	10.4
Cobalt	mg/kg dw	4 - 4	100%	6.7	7.6	–	–	7
Copper	mg/kg dw	4 - 4	100%	27.1	33	–	–	30.1
Lead	mg/kg dw	4 - 4	100%	8.4	10.1	–	–	9.05
Manganese	mg/kg dw	4 - 4	100%	1010	1160	–	–	1093
Mercury	mg/kg dw	4 - 4	100%	0.35	0.39	–	–	0.368
Molybdenum	mg/kg dw	3 - 4	75%	1.6	2	1.6	1.6	1.73
Nickel	mg/kg dw	4 - 4	100%	11	12.9	–	–	11.8
Selenium	mg/kg dw	4 - 4	100%	5.3	5.4	–	–	5.38
Silver	mg/kg dw	4 - 4	100%	0.046	0.05	–	–	0.0483
Strontium	mg/kg dw	4 - 4	100%	30.1	36.9	–	–	33.1
Thallium	mg/kg dw	4 - 4	100%	0.27	0.37	–	–	0.308
Vanadium	mg/kg dw	4 - 4	100%	18.2	21.6	–	–	19.4
Zinc	mg/kg dw	4 - 4	100%	192	249	–	–	219
Inorganic-cations/anions								
Calcium	mg/kg dw	4 - 4	100%	2920	3140	–	–	3013
Iron	mg/kg dw	4 - 4	100%	8130	9410	–	–	8625
Magnesium	mg/kg dw	4 - 4	100%	1660	1850	–	–	1760
Potassium	mg/kg dw	4 - 4	100%	6840	7370	–	–	7115
Sodium	mg/kg dw	4 - 4	100%	4890	5700	–	–	5315

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-141. Mayfly Nymph Whole Body Minus Gut (2009) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	2 - 2	100%	1750 - 7470	– - –	4610
Antimony	mg/kg dw	1 - 2	50%	0.57 - 0.57	0.21 - 0.21	0.39
Arsenic	mg/kg dw	2 - 2	100%	13.6 - 28.9	– - –	21.3
Barium	mg/kg dw	2 - 2	100%	34.9 - 124	– - –	79.5
Beryllium	mg/kg dw	2 - 2	100%	0.22 - 1	– - –	0.61
Boron	mg/kg dw	2 - 2	100%	4.9 - 10.4	– - –	7.65
Cadmium	mg/kg dw	2 - 2	100%	0.79 - 0.94	– - –	0.865
Chromium	mg/kg dw	2 - 2	100%	2.9 - 10.6	– - –	6.75
Cobalt	mg/kg dw	2 - 2	100%	2.5 - 6.4	– - –	4.45
Copper	mg/kg dw	2 - 2	100%	23.2 - 33	– - –	28.1
Lead	mg/kg dw	2 - 2	100%	3.1 - 10	– - –	6.55
Manganese	mg/kg dw	2 - 2	100%	184 - 355	– - –	270
Mercury	mg/kg dw	2 - 2	100%	0.06 - 0.12	– - –	0.09
Molybdenum	mg/kg dw	2 - 2	100%	3.9 - 4.7	– - –	4.3
Nickel	mg/kg dw	2 - 2	100%	3.4 - 11.2	– - –	7.3
Selenium	mg/kg dw	2 - 2	100%	5.9 - 5.9	– - –	5.9
Silver	mg/kg dw	2 - 2	100%	0.013 - 0.048	– - –	0.0305
Strontium	mg/kg dw	2 - 2	100%	17 - 55.2	– - –	36.1
Thallium	mg/kg dw	1 - 2	50%	0.48 - 0.48	0.14 - 0.14	0.31
Vanadium	mg/kg dw	2 - 2	100%	6.4 - 24.7	– - –	15.6
Zinc	mg/kg dw	2 - 2	100%	207 - 212	– - –	210
Inorganic-cations/anions						
Calcium	mg/kg dw	2 - 2	100%	2030 - 3070	– - –	2550
Iron	mg/kg dw	2 - 2	100%	1980 - 7500	– - –	4740
Magnesium	mg/kg dw	2 - 2	100%	1110 - 1390	– - –	1250
Potassium	mg/kg dw	2 - 2	100%	5740 - 6700	– - –	6220
Sodium	mg/kg dw	2 - 2	100%	3210 - 4710	– - –	3960

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-142. Mayfly Nymph Whole Body Minus Gut (2009) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	2 - 2	100%	1520 - 1580	– - –	1550
Antimony	mg/kg dw	0 - 2	0%	– - –	0.1 - 0.11	0.105
Arsenic	mg/kg dw	2 - 2	100%	3.9 - 5.1	– - –	4.5
Barium	mg/kg dw	2 - 2	100%	21.8 - 23.5	– - –	22.7
Beryllium	mg/kg dw	2 - 2	100%	0.13 - 0.15	– - –	0.14
Boron	mg/kg dw	2 - 2	100%	3.2 - 3.4	– - –	3.3
Cadmium	mg/kg dw	2 - 2	100%	1.3 - 3.7	– - –	2.5
Chromium	mg/kg dw	2 - 2	100%	2.1 - 2.6	– - –	2.35
Cobalt	mg/kg dw	2 - 2	100%	2.4 - 2.6	– - –	2.5
Copper	mg/kg dw	2 - 2	100%	39.1 - 39.3	– - –	39.2
Lead	mg/kg dw	2 - 2	100%	3.8 - 3.9	– - –	3.85
Manganese	mg/kg dw	2 - 2	100%	273 - 452	– - –	363
Mercury	mg/kg dw	0 - 2	0%	– - –	0.079 - 0.086	0.0825
Molybdenum	mg/kg dw	2 - 2	100%	1.6 - 2.9	– - –	2.25
Nickel	mg/kg dw	2 - 2	100%	2.9 - 3.1	– - –	3
Selenium	mg/kg dw	2 - 2	100%	4.4 - 5.1	– - –	4.75
Silver	mg/kg dw	2 - 2	100%	0.021 - 0.022	– - –	0.0215
Strontium	mg/kg dw	2 - 2	100%	9.7 - 10.3	– - –	10
Thallium	mg/kg dw	0 - 2	0%	– - –	0.091 - 0.13	0.111
Vanadium	mg/kg dw	2 - 2	100%	4.3 - 4.6	– - –	4.45
Zinc	mg/kg dw	2 - 2	100%	259 - 379	– - –	319
Inorganic-cations/anions						
Calcium	mg/kg dw	2 - 2	100%	1870 - 1980	– - –	1925
Iron	mg/kg dw	2 - 2	100%	1750 - 1820	– - –	1785
Magnesium	mg/kg dw	2 - 2	100%	1100 - 1130	– - –	1115
Potassium	mg/kg dw	2 - 2	100%	6130 - 6320	– - –	6225
Sodium	mg/kg dw	2 - 2	100%	2670 - 3050	– - –	2860

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-143. Mayfly Nymph Whole Body (2010) Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	6 - 6	100%	4090 - 6380	– - –	4942
Antimony	mg/kg dw	6 - 6	100%	0.057 - 0.085	– - –	0.0737
Arsenic	mg/kg dw	6 - 6	100%	2.8 - 4.5	– - –	3.45
Barium	mg/kg dw	6 - 6	100%	43.2 - 58.6	– - –	50.8
Beryllium	mg/kg dw	6 - 6	100%	0.19 - 0.29	– - –	0.235
Boron	mg/kg dw	6 - 6	100%	2.5 - 4	– - –	3.17
Cadmium	mg/kg dw	6 - 6	100%	0.35 - 2.4	– - –	1.12
Chromium	mg/kg dw	6 - 6	100%	4.5 - 6.8	– - –	5.38
Cobalt	mg/kg dw	6 - 6	100%	4.1 - 7.2	– - –	5.6
Copper	mg/kg dw	6 - 6	100%	9.5 - 12.8	– - –	10.9
Lead	mg/kg dw	6 - 6	100%	4.5 - 6.8	– - –	5.4
Manganese	mg/kg dw	6 - 6	100%	378 - 1380	– - –	862
Mercury	mg/kg dw	6 - 6	100%	0.052 - 0.066	– - –	0.0588
Molybdenum	mg/kg dw	6 - 6	100%	0.5 - 0.72	– - –	0.613
Nickel	mg/kg dw	6 - 6	100%	5.3 - 7.4	– - –	6.7
Selenium	mg/kg dw	6 - 6	100%	2.6 - 4.2	– - –	3.38
Silver	mg/kg dw	6 - 6	100%	0.03 - 0.16	– - –	0.09
Strontium	mg/kg dw	6 - 6	100%	4.5 - 6.7	– - –	5.63
Thallium	mg/kg dw	0 - 6	0%	– - –	0.052 - 0.073	0.0602
Vanadium	mg/kg dw	6 - 6	100%	6.7 - 9.4	– - –	7.67
Zinc	mg/kg dw	6 - 6	100%	167 - 316	– - –	228
Inorganic-cations/anions						
Calcium	mg/kg dw	6 - 6	100%	1550 - 1710	– - –	1637
Iron	mg/kg dw	6 - 6	100%	5930 - 8430	– - –	6968
Magnesium	mg/kg dw	6 - 6	100%	1030 - 1310	– - –	1193
Potassium	mg/kg dw	6 - 6	100%	5580 - 6200	– - –	5832
Sodium	mg/kg dw	6 - 6	100%	4040 - 4770	– - –	4347

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-144. Mayfly Nymph Whole Body (2010) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	3 - 3	100%	7540 - 8540	– - –	8090
Antimony	mg/kg dw	3 - 3	100%	0.26 - 0.53	– - –	0.413
Arsenic	mg/kg dw	3 - 3	100%	33.5 - 97	– - –	61.7
Barium	mg/kg dw	3 - 3	100%	91.3 - 140	– - –	123
Beryllium	mg/kg dw	3 - 3	100%	0.77 - 0.96	– - –	0.877
Boron	mg/kg dw	3 - 3	100%	5.4 - 8.7	– - –	7.1
Cadmium	mg/kg dw	3 - 3	100%	0.24 - 1.1	– - –	0.633
Chromium	mg/kg dw	3 - 3	100%	10.8 - 12	– - –	11.3
Cobalt	mg/kg dw	3 - 3	100%	7.4 - 8.1	– - –	7.67
Copper	mg/kg dw	3 - 3	100%	19.5 - 21.2	– - –	20.4
Lead	mg/kg dw	3 - 3	100%	8.6 - 10.3	– - –	9.6
Manganese	mg/kg dw	3 - 3	100%	482 - 535	– - –	507
Mercury	mg/kg dw	3 - 3	100%	0.095 - 0.14	– - –	0.112
Molybdenum	mg/kg dw	3 - 3	100%	1.6 - 2.9	– - –	2.3
Nickel	mg/kg dw	3 - 3	100%	12.4 - 13.3	– - –	12.9
Selenium	mg/kg dw	3 - 3	100%	6.3 - 11.9	– - –	10
Silver	mg/kg dw	0 - 3	0%	– - –	0.04 - 0.112	0.0663
Strontium	mg/kg dw	3 - 3	100%	27.5 - 57.2	– - –	45.7
Thallium	mg/kg dw	3 - 3	100%	0.23 - 0.56	– - –	0.437
Vanadium	mg/kg dw	3 - 3	100%	19.1 - 25.5	– - –	22.5
Zinc	mg/kg dw	3 - 3	100%	137 - 155	– - –	146
Inorganic-cations/anions						
Calcium	mg/kg dw	3 - 3	100%	2350 - 2650	– - –	2470
Iron	mg/kg dw	3 - 3	100%	8760 - 11600	– - –	10100
Magnesium	mg/kg dw	3 - 3	100%	1190 - 1370	– - –	1293
Potassium	mg/kg dw	2 - 3	67%	6220 - 6710	8370 - 8370	7100
Sodium	mg/kg dw	3 - 3	100%	4220 - 4910	– - –	4600

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-145. Mayfly Nymph Whole Body (2010) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	3 - 3	100%	9050 - 10300	– - –	9693
Antimony	mg/kg dw	3 - 3	100%	0.2 - 0.22	– - –	0.213
Arsenic	mg/kg dw	3 - 3	100%	13.1 - 17.6	– - –	14.9
Barium	mg/kg dw	3 - 3	100%	84.9 - 93	– - –	89.6
Beryllium	mg/kg dw	3 - 3	100%	0.74 - 0.88	– - –	0.797
Boron	mg/kg dw	2 - 3	67%	5 - 5.4	5.8 - 5.8	5.4
Cadmium	mg/kg dw	3 - 3	100%	0.45 - 0.68	– - –	0.577
Chromium	mg/kg dw	3 - 3	100%	10.9 - 12.4	– - –	11.6
Cobalt	mg/kg dw	3 - 3	100%	8.9 - 9.8	– - –	9.23
Copper	mg/kg dw	3 - 3	100%	17.8 - 19.4	– - –	18.8
Lead	mg/kg dw	3 - 3	100%	8.8 - 9.7	– - –	9.13
Manganese	mg/kg dw	3 - 3	100%	454 - 520	– - –	491
Mercury	mg/kg dw	3 - 3	100%	0.076 - 0.078	– - –	0.0773
Molybdenum	mg/kg dw	3 - 3	100%	1.2 - 1.4	– - –	1.27
Nickel	mg/kg dw	3 - 3	100%	14.1 - 15.6	– - –	14.8
Selenium	mg/kg dw	3 - 3	100%	6.6 - 7.2	– - –	7
Silver	mg/kg dw	2 - 3	67%	0.037 - 0.048	0.124 - 0.124	0.0697
Strontium	mg/kg dw	3 - 3	100%	22.1 - 25	– - –	23.6
Thallium	mg/kg dw	3 - 3	100%	0.21 - 0.26	– - –	0.237
Vanadium	mg/kg dw	3 - 3	100%	17.3 - 19.7	– - –	18.6
Zinc	mg/kg dw	3 - 3	100%	174 - 187	– - –	180
Inorganic-cations/anions						
Calcium	mg/kg dw	3 - 3	100%	2200 - 2240	– - –	2217
Iron	mg/kg dw	3 - 3	100%	10200 - 11400	– - –	11000
Magnesium	mg/kg dw	3 - 3	100%	1490 - 1600	– - –	1553
Potassium	mg/kg dw	0 - 3	0%	– - –	7500 - 10200	9003
Sodium	mg/kg dw	3 - 3	100%	5770 - 6950	– - –	6210

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-146. Mayfly Nymph Whole Body (2010) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	3 - 3	100%	5330 - 6340	– - –	5667
Antimony	mg/kg dw	3 - 3	100%	0.11 - 0.12	– - –	0.117
Arsenic	mg/kg dw	3 - 3	100%	6.8 - 8.1	– - –	7.37
Barium	mg/kg dw	3 - 3	100%	54.2 - 63	– - –	57.2
Beryllium	mg/kg dw	3 - 3	100%	0.4 - 0.5	– - –	0.433
Boron	mg/kg dw	3 - 3	100%	2.8 - 3.3	– - –	3
Cadmium	mg/kg dw	2 - 3	67%	0.19 - 0.25	0.17 - 0.17	0.203
Chromium	mg/kg dw	3 - 3	100%	6.2 - 7.2	– - –	6.53
Cobalt	mg/kg dw	3 - 3	100%	5.1 - 6.1	– - –	5.47
Copper	mg/kg dw	3 - 3	100%	11.5 - 13.1	– - –	12.1
Lead	mg/kg dw	3 - 3	100%	5.9 - 6.3	– - –	6.1
Manganese	mg/kg dw	3 - 3	100%	246 - 407	– - –	302
Mercury	mg/kg dw	3 - 3	100%	0.066 - 0.071	– - –	0.068
Molybdenum	mg/kg dw	3 - 3	100%	0.71 - 0.76	– - –	0.743
Nickel	mg/kg dw	3 - 3	100%	8.3 - 9.6	– - –	8.77
Selenium	mg/kg dw	3 - 3	100%	3.8 - 5	– - –	4.57
Silver	mg/kg dw	0 - 3	0%	– - –	0.033 - 0.047	0.0397
Strontium	mg/kg dw	3 - 3	100%	11.8 - 12.7	– - –	12.2
Thallium	mg/kg dw	0 - 3	0%	– - –	0.11 - 0.12	0.113
Vanadium	mg/kg dw	3 - 3	100%	9.5 - 10.7	– - –	9.97
Zinc	mg/kg dw	3 - 3	100%	153 - 217	– - –	188
Inorganic-cations/anions						
Calcium	mg/kg dw	3 - 3	100%	1860 - 1930	– - –	1890
Iron	mg/kg dw	3 - 3	100%	6850 - 9220	– - –	7670
Magnesium	mg/kg dw	3 - 3	100%	1270 - 1340	– - –	1307
Potassium	mg/kg dw	3 - 3	100%	6250 - 7190	– - –	6640
Sodium	mg/kg dw	3 - 3	100%	4490 - 5960	– - –	5120

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-147. Mayfly Nymph Whole Body (2010) Dataset: Clinch River - Reference (Above CRM 4.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	3 - 3	100%	6610 - 7620	– - –	7150
Antimony	mg/kg dw	3 - 3	100%	0.091 - 0.098	– - –	0.094
Arsenic	mg/kg dw	3 - 3	100%	4.7 - 5.2	– - –	4.97
Barium	mg/kg dw	3 - 3	100%	56.4 - 59.8	– - –	57.7
Beryllium	mg/kg dw	3 - 3	100%	0.33 - 0.36	– - –	0.343
Boron	mg/kg dw	3 - 3	100%	5.7 - 7.9	– - –	6.7
Cadmium	mg/kg dw	3 - 3	100%	0.74 - 0.95	– - –	0.87
Chromium	mg/kg dw	3 - 3	100%	9 - 9.9	– - –	9.37
Cobalt	mg/kg dw	3 - 3	100%	5.7 - 6.2	– - –	5.97
Copper	mg/kg dw	3 - 3	100%	18.3 - 19.3	– - –	18.9
Lead	mg/kg dw	3 - 3	100%	9.2 - 9.8	– - –	9.5
Manganese	mg/kg dw	3 - 3	100%	905 - 1040	– - –	969
Mercury	mg/kg dw	3 - 3	100%	0.81 - 1.2	– - –	1.04
Molybdenum	mg/kg dw	3 - 3	100%	0.67 - 0.79	– - –	0.747
Nickel	mg/kg dw	3 - 3	100%	9.6 - 10.4	– - –	9.9
Selenium	mg/kg dw	3 - 3	100%	4.2 - 4.6	– - –	4.47
Silver	mg/kg dw	0 - 3	0%	– - –	0.057 - 0.095	0.071
Strontium	mg/kg dw	3 - 3	100%	8.9 - 9.4	– - –	9.17
Thallium	mg/kg dw	0 - 3	0%	– - –	0.094 - 0.11	0.105
Vanadium	mg/kg dw	3 - 3	100%	10.9 - 11.9	– - –	11.3
Zinc	mg/kg dw	3 - 3	100%	168 - 197	– - –	184
Inorganic-cations/anions						
Calcium	mg/kg dw	3 - 3	100%	3030 - 3240	– - –	3113
Iron	mg/kg dw	3 - 3	100%	8640 - 9230	– - –	8930
Magnesium	mg/kg dw	3 - 3	100%	1860 - 1970	– - –	1927
Potassium	mg/kg dw	3 - 3	100%	6900 - 7940	– - –	7457
Sodium	mg/kg dw	3 - 3	100%	5180 - 5910	– - –	5467

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-148. Mayfly Nymph Whole Body (2010) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	3 - 3	100%	6930 - 10900	– - –	8970
Antimony	mg/kg dw	3 - 3	100%	0.19 - 0.27	– - –	0.233
Arsenic	mg/kg dw	3 - 3	100%	12.6 - 14.6	– - –	13.5
Barium	mg/kg dw	3 - 3	100%	75.9 - 104	– - –	93.2
Beryllium	mg/kg dw	3 - 3	100%	0.55 - 0.84	– - –	0.727
Boron	mg/kg dw	3 - 3	100%	6.6 - 9	– - –	8.17
Cadmium	mg/kg dw	3 - 3	100%	1.1 - 2.1	– - –	1.53
Chromium	mg/kg dw	3 - 3	100%	8.7 - 13.4	– - –	11.3
Cobalt	mg/kg dw	3 - 3	100%	5.7 - 8.3	– - –	7.23
Copper	mg/kg dw	3 - 3	100%	18.6 - 23.4	– - –	21.7
Lead	mg/kg dw	3 - 3	100%	6.7 - 10.5	– - –	8.8
Manganese	mg/kg dw	3 - 3	100%	733 - 959	– - –	861
Mercury	mg/kg dw	3 - 3	100%	0.27 - 0.31	– - –	0.29
Molybdenum	mg/kg dw	3 - 3	100%	1.5 - 1.6	– - –	1.57
Nickel	mg/kg dw	3 - 3	100%	9.6 - 14.1	– - –	12.1
Selenium	mg/kg dw	3 - 3	100%	6.5 - 6.6	– - –	6.57
Silver	mg/kg dw	3 - 3	100%	0.054 - 0.08	– - –	0.067
Strontium	mg/kg dw	3 - 3	100%	22.9 - 31	– - –	27.6
Thallium	mg/kg dw	0 - 3	0%	– - –	0.2 - 0.33	0.257
Vanadium	mg/kg dw	3 - 3	100%	13.6 - 20.7	– - –	17.9
Zinc	mg/kg dw	3 - 3	100%	175 - 194	– - –	186
Inorganic-cations/anions						
Calcium	mg/kg dw	3 - 3	100%	2880 - 3030	– - –	2963
Iron	mg/kg dw	3 - 3	100%	7180 - 11900	– - –	9540
Magnesium	mg/kg dw	3 - 3	100%	1570 - 1800	– - –	1677
Potassium	mg/kg dw	3 - 3	100%	5520 - 6750	– - –	6007
Sodium	mg/kg dw	3 - 3	100%	3620 - 4680	– - –	4090

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-149. Mayfly Nymph Whole Body (2010) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	3 - 3	100%	8440 - 9120	– - –	8870
Antimony	mg/kg dw	3 - 3	100%	0.23 - 0.25	– - –	0.24
Arsenic	mg/kg dw	3 - 3	100%	13.6 - 16.4	– - –	14.6
Barium	mg/kg dw	3 - 3	100%	92.5 - 96.9	– - –	94.7
Beryllium	mg/kg dw	3 - 3	100%	0.72 - 0.77	– - –	0.74
Boron	mg/kg dw	3 - 3	100%	6.2 - 7.2	– - –	6.8
Cadmium	mg/kg dw	3 - 3	100%	0.76 - 1.2	– - –	1.02
Chromium	mg/kg dw	3 - 3	100%	10.8 - 11.7	– - –	11.3
Cobalt	mg/kg dw	3 - 3	100%	7.3 - 7.7	– - –	7.47
Copper	mg/kg dw	3 - 3	100%	20.4 - 21	– - –	20.7
Lead	mg/kg dw	3 - 3	100%	8.6 - 8.9	– - –	8.73
Manganese	mg/kg dw	3 - 3	100%	759 - 807	– - –	783
Mercury	mg/kg dw	3 - 3	100%	0.26 - 0.3	– - –	0.287
Molybdenum	mg/kg dw	3 - 3	100%	1.5 - 1.6	– - –	1.57
Nickel	mg/kg dw	3 - 3	100%	11.9 - 12.4	– - –	12.2
Selenium	mg/kg dw	3 - 3	100%	6.6 - 7.4	– - –	7.03
Silver	mg/kg dw	3 - 3	100%	0.061 - 0.065	– - –	0.0633
Strontium	mg/kg dw	3 - 3	100%	26.1 - 31.1	– - –	28.6
Thallium	mg/kg dw	0 - 3	0%	– - –	0.28 - 0.31	0.297
Vanadium	mg/kg dw	3 - 3	100%	17.1 - 18.9	– - –	18.2
Zinc	mg/kg dw	3 - 3	100%	172 - 182	– - –	178
Inorganic-cations/anions						
Calcium	mg/kg dw	3 - 3	100%	2760 - 2950	– - –	2830
Iron	mg/kg dw	3 - 3	100%	9160 - 9560	– - –	9317
Magnesium	mg/kg dw	3 - 3	100%	1600 - 1670	– - –	1637
Potassium	mg/kg dw	1 - 3	33%	6110 - 6110	7980 - 8310	7467
Sodium	mg/kg dw	3 - 3	100%	3900 - 4390	– - –	4170

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-150. Mayfly Nymph Whole Body (2010) Dataset: Tennessee River - Reference (Above TRM 568.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	3 - 3	100%	6710 - 9420	– - –	8160
Antimony	mg/kg dw	3 - 3	100%	0.078 - 0.1	– - –	0.0897
Arsenic	mg/kg dw	3 - 3	100%	4.4 - 6	– - –	5.4
Barium	mg/kg dw	3 - 3	100%	58.1 - 87	– - –	72.9
Beryllium	mg/kg dw	3 - 3	100%	0.29 - 0.4	– - –	0.347
Boron	mg/kg dw	3 - 3	100%	2.2 - 3.4	– - –	2.97
Cadmium	mg/kg dw	3 - 3	100%	1.1 - 1.3	– - –	1.2
Chromium	mg/kg dw	3 - 3	100%	7.5 - 10.6	– - –	9.1
Cobalt	mg/kg dw	3 - 3	100%	4.4 - 6	– - –	5.27
Copper	mg/kg dw	3 - 3	100%	12 - 15	– - –	13.6
Lead	mg/kg dw	3 - 3	100%	8.3 - 12.1	– - –	10.3
Manganese	mg/kg dw	3 - 3	100%	861 - 1540	– - –	1264
Mercury	mg/kg dw	3 - 3	100%	0.051 - 0.066	– - –	0.058
Molybdenum	mg/kg dw	3 - 3	100%	0.51 - 0.69	– - –	0.587
Nickel	mg/kg dw	3 - 3	100%	5.7 - 8	– - –	6.93
Selenium	mg/kg dw	3 - 3	100%	4 - 4.8	– - –	4.5
Silver	mg/kg dw	0 - 3	0%	– - –	0.055 - 0.069	0.0623
Strontium	mg/kg dw	3 - 3	100%	7.2 - 8.9	– - –	8.27
Thallium	mg/kg dw	0 - 3	0%	– - –	0.083 - 0.11	0.0977
Vanadium	mg/kg dw	3 - 3	100%	10.7 - 15.1	– - –	13
Zinc	mg/kg dw	3 - 3	100%	211 - 214	– - –	212
Inorganic-cations/anions						
Calcium	mg/kg dw	3 - 3	100%	1930 - 2280	– - –	2130
Iron	mg/kg dw	3 - 3	100%	8290 - 12000	– - –	10200
Magnesium	mg/kg dw	3 - 3	100%	1440 - 1750	– - –	1597
Potassium	mg/kg dw	3 - 3	100%	5840 - 6170	– - –	5987
Sodium	mg/kg dw	3 - 3	100%	3230 - 3620	– - –	3403

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
TRM = Tennessee River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-151. Mayfly Nymph Whole Body (2010) Dataset: Tennessee River - Reach A (TRM 550.0 to TRM 566.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	3 - 3	100%	8060 - 10900	– - –	9787
Antimony	mg/kg dw	3 - 3	100%	0.15 - 0.16	– - –	0.157
Arsenic	mg/kg dw	3 - 3	100%	9.3 - 11	– - –	10.3
Barium	mg/kg dw	3 - 3	100%	66.1 - 86.2	– - –	79
Beryllium	mg/kg dw	3 - 3	100%	0.44 - 0.66	– - –	0.553
Boron	mg/kg dw	2 - 3	67%	5.3 - 5.6	3.8 - 3.8	4.9
Cadmium	mg/kg dw	3 - 3	100%	0.76 - 1.6	– - –	1.1
Chromium	mg/kg dw	3 - 3	100%	9.3 - 12.2	– - –	11.1
Cobalt	mg/kg dw	3 - 3	100%	6.7 - 7.8	– - –	7.43
Copper	mg/kg dw	3 - 3	100%	19.7 - 21.7	– - –	20.9
Lead	mg/kg dw	3 - 3	100%	8 - 10.4	– - –	9.5
Manganese	mg/kg dw	3 - 3	100%	1190 - 1500	– - –	1373
Mercury	mg/kg dw	3 - 3	100%	0.14 - 0.17	– - –	0.16
Molybdenum	mg/kg dw	3 - 3	100%	0.93 - 0.97	– - –	0.943
Nickel	mg/kg dw	3 - 3	100%	8.4 - 10.8	– - –	9.9
Selenium	mg/kg dw	3 - 3	100%	4.9 - 5.9	– - –	5.47
Silver	mg/kg dw	3 - 3	100%	0.043 - 0.077	– - –	0.0613
Strontium	mg/kg dw	3 - 3	100%	17.3 - 20.9	– - –	19.5
Thallium	mg/kg dw	3 - 3	100%	0.13 - 0.16	– - –	0.147
Vanadium	mg/kg dw	3 - 3	100%	14 - 18.3	– - –	16.6
Zinc	mg/kg dw	3 - 3	100%	218 - 292	– - –	251
Inorganic-cations/anions						
Calcium	mg/kg dw	3 - 3	100%	2370 - 2710	– - –	2560
Iron	mg/kg dw	3 - 3	100%	9040 - 11700	– - –	10800
Magnesium	mg/kg dw	3 - 3	100%	1840 - 1930	– - –	1897
Potassium	mg/kg dw	1 - 3	33%	7040 - 7040	7120 - 7430	7197
Sodium	mg/kg dw	3 - 3	100%	4920 - 5720	– - –	5357

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg dw = Milligram per kilogram dry weight.

TRM = Tennessee River mile.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-152. Mayfly Nymph Whole Body (2010) Dataset: Tennessee River - Reach B (TRM 566.0 to TRM 568.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	3 - 3	100%	9250 - 10700	– - –	9810
Antimony	mg/kg dw	3 - 3	100%	0.16 - 0.18	– - –	0.17
Arsenic	mg/kg dw	3 - 3	100%	9.1 - 10.4	– - –	9.63
Barium	mg/kg dw	3 - 3	100%	73.1 - 87.6	– - –	81.2
Beryllium	mg/kg dw	3 - 3	100%	0.42 - 0.62	– - –	0.51
Boron	mg/kg dw	3 - 3	100%	6.6 - 7.4	– - –	6.97
Cadmium	mg/kg dw	3 - 3	100%	0.96 - 1.7	– - –	1.39
Chromium	mg/kg dw	3 - 3	100%	10.6 - 12.1	– - –	11.2
Cobalt	mg/kg dw	3 - 3	100%	6.3 - 7.2	– - –	6.63
Copper	mg/kg dw	3 - 3	100%	20.2 - 21.4	– - –	20.8
Lead	mg/kg dw	3 - 3	100%	8.9 - 10.1	– - –	9.33
Manganese	mg/kg dw	3 - 3	100%	979 - 1460	– - –	1276
Mercury	mg/kg dw	3 - 3	100%	0.11 - 0.13	– - –	0.123
Molybdenum	mg/kg dw	3 - 3	100%	0.88 - 1.3	– - –	1.09
Nickel	mg/kg dw	3 - 3	100%	9.3 - 10.6	– - –	9.77
Selenium	mg/kg dw	3 - 3	100%	5.6 - 6	– - –	5.8
Silver	mg/kg dw	1 - 3	33%	0.039 - 0.039	0.128 - 0.136	0.101
Strontium	mg/kg dw	3 - 3	100%	19.5 - 22.4	– - –	20.7
Thallium	mg/kg dw	1 - 3	33%	0.19 - 0.19	0.15 - 0.16	0.167
Vanadium	mg/kg dw	3 - 3	100%	16.2 - 18.4	– - –	17
Zinc	mg/kg dw	3 - 3	100%	193 - 240	– - –	221
Inorganic-cations/anions						
Calcium	mg/kg dw	3 - 3	100%	2470 - 2710	– - –	2583
Iron	mg/kg dw	3 - 3	100%	10300 - 11400	– - –	10700
Magnesium	mg/kg dw	3 - 3	100%	1720 - 1900	– - –	1810
Potassium	mg/kg dw	0 - 3	0%	– - –	8950 - 10200	9590
Sodium	mg/kg dw	3 - 3	100%	5290 - 6170	– - –	5620

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg dw = Milligram per kilogram dry weight.

TRM = Tennessee River mile.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-153. Mayfly Nymph Whole Body Minus Gut (2010) Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Concentration [b]
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	502	1380	–	–	857
Antimony	mg/kg dw	1 - 3	33%	0.024	0.024	0.022	0.022	0.0227
Arsenic	mg/kg dw	3 - 3	100%	0.85	1.1	–	–	0.95
Barium	mg/kg dw	3 - 3	100%	9.3	16.4	–	–	11.8
Beryllium	mg/kg dw	1 - 3	33%	0.072	0.072	0.044	0.045	0.0537
Boron	mg/kg dw	3 - 3	100%	1.9	2.2	–	–	2.03
Cadmium	mg/kg dw	3 - 3	100%	0.46	0.91	–	–	0.747
Chromium	mg/kg dw	3 - 3	100%	0.69	1.5	–	–	1
Cobalt	mg/kg dw	3 - 3	100%	1.4	2.2	–	–	1.8
Copper	mg/kg dw	3 - 3	100%	30.1	33.1	–	–	31.7
Lead	mg/kg dw	3 - 3	100%	2	2.8	–	–	2.37
Manganese	mg/kg dw	3 - 3	100%	102	214	–	–	146
Mercury	mg/kg dw	3 - 3	100%	0.039	0.048	–	–	0.0433
Molybdenum	mg/kg dw	3 - 3	100%	0.52	0.55	–	–	0.537
Nickel	mg/kg dw	3 - 3	100%	1.1	2.1	–	–	1.47
Selenium	mg/kg dw	3 - 3	100%	2.2	2.7	–	–	2.4
Silver	mg/kg dw	3 - 3	100%	0.042	0.051	–	–	0.0477
Strontium	mg/kg dw	3 - 3	100%	2.7	3.8	–	–	3.4
Thallium	mg/kg dw	0 - 3	0%	–	–	0.017	0.021	0.0197
Vanadium	mg/kg dw	3 - 3	100%	0.85	2.1	–	–	1.35
Zinc	mg/kg dw	3 - 3	100%	243	255	–	–	251
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	1440	1750	–	–	1600
Iron	mg/kg dw	3 - 3	100%	810	2010	–	–	1297
Magnesium	mg/kg dw	3 - 3	100%	1080	1140	–	–	1100
Potassium	mg/kg dw	3 - 3	100%	8300	8910	–	–	8583
Sodium	mg/kg dw	3 - 3	100%	3810	4350	–	–	4127

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-154. Mayfly Nymph Whole Body Minus Gut (2010) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	3 - 3	100%	1220 - 2140	– - –	1660
Antimony	mg/kg dw	3 - 3	100%	0.13 - 0.23	– - –	0.19
Arsenic	mg/kg dw	3 - 3	100%	18.2 - 41.6	– - –	31.5
Barium	mg/kg dw	3 - 3	100%	34 - 42.7	– - –	39.1
Beryllium	mg/kg dw	3 - 3	100%	0.14 - 0.25	– - –	0.193
Boron	mg/kg dw	3 - 3	100%	2.4 - 4	– - –	3.37
Cadmium	mg/kg dw	3 - 3	100%	0.24 - 0.73	– - –	0.49
Chromium	mg/kg dw	3 - 3	100%	1.8 - 3.3	– - –	2.53
Cobalt	mg/kg dw	3 - 3	100%	1.5 - 2.4	– - –	1.9
Copper	mg/kg dw	3 - 3	100%	31.8 - 41.3	– - –	36.6
Lead	mg/kg dw	3 - 3	100%	4 - 7.2	– - –	5.83
Manganese	mg/kg dw	3 - 3	100%	177 - 216	– - –	193
Mercury	mg/kg dw	3 - 3	100%	0.041 - 0.049	– - –	0.0453
Molybdenum	mg/kg dw	3 - 3	100%	2.4 - 3.2	– - –	2.87
Nickel	mg/kg dw	3 - 3	100%	2.3 - 3.6	– - –	2.93
Selenium	mg/kg dw	3 - 3	100%	6.9 - 8.7	– - –	8
Silver	mg/kg dw	2 - 3	67%	0.032 - 0.039	0.022 - 0.022	0.031
Strontium	mg/kg dw	3 - 3	100%	16.5 - 18.7	– - –	17.7
Thallium	mg/kg dw	0 - 3	0%	– - –	0.058 - 0.15	0.101
Vanadium	mg/kg dw	3 - 3	100%	3.9 - 7.4	– - –	5.93
Zinc	mg/kg dw	3 - 3	100%	179 - 189	– - –	184
Inorganic-cations/anions						
Calcium	mg/kg dw	3 - 3	100%	1990 - 2290	– - –	2153
Iron	mg/kg dw	3 - 3	100%	1940 - 3430	– - –	2893
Magnesium	mg/kg dw	3 - 3	100%	1110 - 1180	– - –	1157
Potassium	mg/kg dw	3 - 3	100%	8590 - 9210	– - –	8817
Sodium	mg/kg dw	3 - 3	100%	5770 - 6270	– - –	5947

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-155. Mayfly Nymph Whole Body Minus Gut (2010) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	3 - 3	100%	424 - 525	– - –	480
Antimony	mg/kg dw	3 - 3	100%	0.035 - 0.04	– - –	0.037
Arsenic	mg/kg dw	3 - 3	100%	2.1 - 3.4	– - –	2.93
Barium	mg/kg dw	3 - 3	100%	20.1 - 21.7	– - –	20.8
Beryllium	mg/kg dw	1 - 3	33%	0.048 - 0.048	0.073 - 0.11	0.077
Boron	mg/kg dw	3 - 3	100%	0.95 - 2.7	– - –	1.75
Cadmium	mg/kg dw	3 - 3	100%	0.54 - 0.96	– - –	0.693
Chromium	mg/kg dw	3 - 3	100%	0.68 - 0.86	– - –	0.787
Cobalt	mg/kg dw	3 - 3	100%	1 - 1.7	– - –	1.27
Copper	mg/kg dw	3 - 3	100%	23.3 - 29	– - –	26
Lead	mg/kg dw	3 - 3	100%	1.6 - 1.9	– - –	1.77
Manganese	mg/kg dw	3 - 3	100%	107 - 129	– - –	121
Mercury	mg/kg dw	3 - 3	100%	0.047 - 0.053	– - –	0.0497
Molybdenum	mg/kg dw	3 - 3	100%	1.1 - 1.2	– - –	1.13
Nickel	mg/kg dw	3 - 3	100%	0.95 - 1.2	– - –	1.08
Selenium	mg/kg dw	3 - 3	100%	4.8 - 5.9	– - –	5.5
Silver	mg/kg dw	3 - 3	100%	0.034 - 0.037	– - –	0.035
Strontium	mg/kg dw	3 - 3	100%	9.8 - 10.4	– - –	10
Thallium	mg/kg dw	0 - 3	0%	– - –	0.02 - 0.043	0.0317
Vanadium	mg/kg dw	3 - 3	100%	1.3 - 1.5	– - –	1.4
Zinc	mg/kg dw	3 - 3	100%	218 - 229	– - –	225
Inorganic-cations/anions						
Calcium	mg/kg dw	3 - 3	100%	2030 - 2180	– - –	2127
Iron	mg/kg dw	3 - 3	100%	728 - 968	– - –	868
Magnesium	mg/kg dw	3 - 3	100%	1170 - 1220	– - –	1197
Potassium	mg/kg dw	3 - 3	100%	9110 - 9630	– - –	9333
Sodium	mg/kg dw	3 - 3	100%	6170 - 6850	– - –	6447

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-156. Mayfly Nymph Whole Body Minus Gut (2010) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	3 - 3	100%	675 - 1400	– - –	1062
Antimony	mg/kg dw	3 - 3	100%	0.029 - 0.04	– - –	0.0363
Arsenic	mg/kg dw	3 - 3	100%	2.6 - 3.6	– - –	3.1
Barium	mg/kg dw	3 - 3	100%	17.8 - 23.4	– - –	20.3
Beryllium	mg/kg dw	1 - 3	33%	0.049 - 0.049	0.53 - 0.61	0.396
Boron	mg/kg dw	1 - 3	33%	2.4 - 2.4	3.7 - 4.2	3.43
Cadmium	mg/kg dw	3 - 3	100%	0.07 - 0.14	– - –	0.1
Chromium	mg/kg dw	3 - 3	100%	0.82 - 1.7	– - –	1.31
Cobalt	mg/kg dw	3 - 3	100%	1.4 - 1.6	– - –	1.53
Copper	mg/kg dw	3 - 3	100%	32.5 - 37.6	– - –	35.8
Lead	mg/kg dw	3 - 3	100%	2.6 - 3.4	– - –	3.07
Manganese	mg/kg dw	3 - 3	100%	99.6 - 244	– - –	158
Mercury	mg/kg dw	3 - 3	100%	0.055 - 0.063	– - –	0.0583
Molybdenum	mg/kg dw	3 - 3	100%	0.71 - 1.1	– - –	0.87
Nickel	mg/kg dw	3 - 3	100%	1.3 - 2.4	– - –	1.93
Selenium	mg/kg dw	3 - 3	100%	3.3 - 4.1	– - –	3.73
Silver	mg/kg dw	3 - 3	100%	0.035 - 0.041	– - –	0.038
Strontium	mg/kg dw	3 - 3	100%	5.7 - 8.6	– - –	7.33
Thallium	mg/kg dw	0 - 3	0%	– - –	0.028 - 0.054	0.0433
Vanadium	mg/kg dw	3 - 3	100%	1.7 - 2.7	– - –	2.3
Zinc	mg/kg dw	3 - 3	100%	232 - 259	– - –	243
Inorganic-cations/anions						
Calcium	mg/kg dw	3 - 3	100%	1800 - 2040	– - –	1923
Iron	mg/kg dw	3 - 3	100%	1990 - 2480	– - –	2297
Magnesium	mg/kg dw	3 - 3	100%	1130 - 1340	– - –	1253
Potassium	mg/kg dw	3 - 3	100%	9120 - 9840	– - –	9493
Sodium	mg/kg dw	3 - 3	100%	5910 - 6660	– - –	6227

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-157. Mayfly Nymph Whole Body Minus Gut (2010) Dataset: Clinch River - Reference (Above CRM 4.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	3 - 3	100%	258 - 374	– - –	316
Antimony	mg/kg dw	0 - 3	0%	– - –	0.02 - 0.021	0.0207
Arsenic	mg/kg dw	3 - 3	100%	1.5 - 2.2	– - –	1.93
Barium	mg/kg dw	3 - 3	100%	6.1 - 6.8	– - –	6.43
Beryllium	mg/kg dw	0 - 3	0%	– - –	0.042 - 0.079	0.0663
Boron	mg/kg dw	3 - 3	100%	2.6 - 6.7	– - –	4.83
Cadmium	mg/kg dw	3 - 3	100%	0.97 - 2.1	– - –	1.39
Chromium	mg/kg dw	3 - 3	100%	0.52 - 0.7	– - –	0.627
Cobalt	mg/kg dw	3 - 3	100%	0.93 - 1.7	– - –	1.19
Copper	mg/kg dw	3 - 3	100%	35.8 - 40.4	– - –	37.8
Lead	mg/kg dw	3 - 3	100%	2.8 - 3.2	– - –	3
Manganese	mg/kg dw	3 - 3	100%	91.8 - 138	– - –	113
Mercury	mg/kg dw	3 - 3	100%	0.13 - 0.16	– - –	0.15
Molybdenum	mg/kg dw	3 - 3	100%	0.89 - 0.92	– - –	0.907
Nickel	mg/kg dw	3 - 3	100%	1.1 - 1.2	– - –	1.13
Selenium	mg/kg dw	3 - 3	100%	4 - 4.5	– - –	4.2
Silver	mg/kg dw	3 - 3	100%	0.027 - 0.037	– - –	0.0307
Strontium	mg/kg dw	3 - 3	100%	4 - 5.3	– - –	4.77
Thallium	mg/kg dw	0 - 3	0%	– - –	0.02 - 0.04	0.0333
Vanadium	mg/kg dw	3 - 3	100%	0.58 - 0.82	– - –	0.7
Zinc	mg/kg dw	3 - 3	100%	245 - 324	– - –	276
Inorganic-cations/anions						
Calcium	mg/kg dw	3 - 3	100%	2300 - 2380	– - –	2333
Iron	mg/kg dw	3 - 3	100%	412 - 593	– - –	522
Magnesium	mg/kg dw	3 - 3	100%	1260 - 1310	– - –	1287
Potassium	mg/kg dw	3 - 3	100%	8700 - 9920	– - –	9290
Sodium	mg/kg dw	3 - 3	100%	3380 - 5380	– - –	4627

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-158. Mayfly Nymph Whole Body Minus Gut (2010) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	453	914	–	–	663
Antimony	mg/kg dw	2 - 3	67%	0.042	0.052	0.029	0.029	0.041
Arsenic	mg/kg dw	3 - 3	100%	2	4.7	–	–	3.73
Barium	mg/kg dw	3 - 3	100%	12.2	20.7	–	–	16.6
Beryllium	mg/kg dw	2 - 3	67%	0.051	0.082	0.058	0.058	0.0637
Boron	mg/kg dw	3 - 3	100%	2.7	5.4	–	–	4
Cadmium	mg/kg dw	3 - 3	100%	0.59	1.8	–	–	1.09
Chromium	mg/kg dw	3 - 3	100%	0.87	1.4	–	–	1.08
Cobalt	mg/kg dw	3 - 3	100%	1.1	1.4	–	–	1.23
Copper	mg/kg dw	3 - 3	100%	32.4	34.1	–	–	33
Lead	mg/kg dw	3 - 3	100%	2.3	3.1	–	–	2.67
Manganese	mg/kg dw	3 - 3	100%	136	213	–	–	174
Mercury	mg/kg dw	3 - 3	100%	0.069	0.087	–	–	0.0807
Molybdenum	mg/kg dw	3 - 3	100%	1.3	1.9	–	–	1.7
Nickel	mg/kg dw	3 - 3	100%	1.2	1.8	–	–	1.5
Selenium	mg/kg dw	3 - 3	100%	6.9	7.4	–	–	7.13
Silver	mg/kg dw	3 - 3	100%	0.028	0.036	–	–	0.0323
Strontium	mg/kg dw	3 - 3	100%	7.3	9.7	–	–	8.67
Thallium	mg/kg dw	0 - 3	0%	–	–	0.03	0.039	0.0357
Vanadium	mg/kg dw	3 - 3	100%	1.3	2.3	–	–	1.77
Zinc	mg/kg dw	3 - 3	100%	184	224	–	–	201
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	1980	2410	–	–	2227
Iron	mg/kg dw	3 - 3	100%	536	1100	–	–	810
Magnesium	mg/kg dw	3 - 3	100%	1170	1220	–	–	1200
Potassium	mg/kg dw	3 - 3	100%	9200	9410	–	–	9337
Sodium	mg/kg dw	3 - 3	100%	4970	5510	–	–	5213

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-159. Mayfly Nymph Whole Body Minus Gut (2010) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	737	1450	–	–	1132
Antimony	mg/kg dw	3 - 3	100%	0.046	0.075	–	–	0.0643
Arsenic	mg/kg dw	3 - 3	100%	3.7	5.3	–	–	4.5
Barium	mg/kg dw	3 - 3	100%	18.8	24.5	–	–	22.3
Beryllium	mg/kg dw	3 - 3	100%	0.058	0.13	–	–	0.103
Boron	mg/kg dw	3 - 3	100%	2.2	4.1	–	–	3.33
Cadmium	mg/kg dw	3 - 3	100%	1.1	1.4	–	–	1.23
Chromium	mg/kg dw	3 - 3	100%	1.2	2.2	–	–	1.77
Cobalt	mg/kg dw	3 - 3	100%	1.4	1.8	–	–	1.6
Copper	mg/kg dw	3 - 3	100%	30	35.1	–	–	31.8
Lead	mg/kg dw	3 - 3	100%	2.5	3.3	–	–	2.97
Manganese	mg/kg dw	3 - 3	100%	186	215	–	–	201
Mercury	mg/kg dw	3 - 3	100%	0.084	0.099	–	–	0.0903
Molybdenum	mg/kg dw	3 - 3	100%	1.4	1.6	–	–	1.53
Nickel	mg/kg dw	3 - 3	100%	1.6	2.5	–	–	2.13
Selenium	mg/kg dw	3 - 3	100%	7.6	8.3	–	–	7.9
Silver	mg/kg dw	3 - 3	100%	0.022	0.05	–	–	0.0337
Strontium	mg/kg dw	3 - 3	100%	9	12.3	–	–	11.1
Thallium	mg/kg dw	0 - 3	0%	–	–	0.034	0.061	0.052
Vanadium	mg/kg dw	3 - 3	100%	2	3.6	–	–	2.9
Zinc	mg/kg dw	3 - 3	100%	197	205	–	–	201
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	2400	2530	–	–	2480
Iron	mg/kg dw	3 - 3	100%	908	1520	–	–	1236
Magnesium	mg/kg dw	3 - 3	100%	1130	1300	–	–	1230
Potassium	mg/kg dw	3 - 3	100%	8980	9050	–	–	9013
Sodium	mg/kg dw	3 - 3	100%	4250	5290	–	–	4670

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-160. Mayfly Nymph Whole Body Minus Gut (2010) Dataset: Tennessee River - Reference (Above TRM 568.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	3 - 3	100%	767 - 1730	– - –	1169
Antimony	mg/kg dw	3 - 3	100%	0.025 - 0.036	– - –	0.03
Arsenic	mg/kg dw	3 - 3	100%	1.1 - 1.8	– - –	1.43
Barium	mg/kg dw	3 - 3	100%	10 - 15.6	– - –	12
Beryllium	mg/kg dw	1 - 3	33%	0.069 - 0.069	0.043 - 0.053	0.055
Boron	mg/kg dw	3 - 3	100%	1.6 - 2.4	– - –	1.93
Cadmium	mg/kg dw	3 - 3	100%	1.5 - 2.1	– - –	1.77
Chromium	mg/kg dw	3 - 3	100%	1.1 - 2.1	– - –	1.53
Cobalt	mg/kg dw	3 - 3	100%	1.3 - 1.7	– - –	1.57
Copper	mg/kg dw	3 - 3	100%	24.9 - 28.2	– - –	26.8
Lead	mg/kg dw	3 - 3	100%	3.6 - 4.7	– - –	4.3
Manganese	mg/kg dw	3 - 3	100%	153 - 321	– - –	218
Mercury	mg/kg dw	3 - 3	100%	0.032 - 0.04	– - –	0.037
Molybdenum	mg/kg dw	3 - 3	100%	0.5 - 0.56	– - –	0.523
Nickel	mg/kg dw	3 - 3	100%	1.1 - 1.8	– - –	1.4
Selenium	mg/kg dw	3 - 3	100%	2 - 2.3	– - –	2.2
Silver	mg/kg dw	3 - 3	100%	0.045 - 0.051	– - –	0.0473
Strontium	mg/kg dw	3 - 3	100%	3.9 - 4.7	– - –	4.37
Thallium	mg/kg dw	0 - 3	0%	– - –	0.02 - 0.027	0.024
Vanadium	mg/kg dw	3 - 3	100%	1.3 - 2.7	– - –	1.9
Zinc	mg/kg dw	3 - 3	100%	306 - 354	– - –	323
Inorganic-cations/anions						
Calcium	mg/kg dw	3 - 3	100%	2090 - 2360	– - –	2227
Iron	mg/kg dw	3 - 3	100%	965 - 2270	– - –	1532
Magnesium	mg/kg dw	3 - 3	100%	1110 - 1150	– - –	1130
Potassium	mg/kg dw	3 - 3	100%	7970 - 9190	– - –	8383
Sodium	mg/kg dw	3 - 3	100%	3720 - 4170	– - –	3897

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg dw = Milligram per kilogram dry weight.

TRM = Tennessee River mile.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-161. Mayfly Nymph Whole Body Minus Gut (2010) Dataset: Tennessee River - Reach B (TRM 566.0 to TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	313	780	–	–	561
Antimony	mg/kg dw	3 - 3	100%	0.022	0.029	–	–	0.0243
Arsenic	mg/kg dw	3 - 3	100%	1.6	2.2	–	–	1.83
Barium	mg/kg dw	3 - 3	100%	7	10.4	–	–	8.57
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.083	0.096	0.0887
Boron	mg/kg dw	3 - 3	100%	2.6	4.7	–	–	3.33
Cadmium	mg/kg dw	3 - 3	100%	1.5	3	–	–	2.33
Chromium	mg/kg dw	3 - 3	100%	0.64	1.2	–	–	0.98
Cobalt	mg/kg dw	3 - 3	100%	1.4	1.6	–	–	1.5
Copper	mg/kg dw	3 - 3	100%	27.7	32.7	–	–	29.9
Lead	mg/kg dw	3 - 3	100%	2.3	2.9	–	–	2.7
Manganese	mg/kg dw	3 - 3	100%	75.9	153	–	–	106
Mercury	mg/kg dw	3 - 3	100%	0.036	0.045	–	–	0.0407
Molybdenum	mg/kg dw	3 - 3	100%	0.61	0.82	–	–	0.74
Nickel	mg/kg dw	3 - 3	100%	0.82	1.3	–	–	1.07
Selenium	mg/kg dw	3 - 3	100%	3.3	3.9	–	–	3.63
Silver	mg/kg dw	1 - 3	33%	0.03	0.03	0.024	0.027	0.027
Strontium	mg/kg dw	3 - 3	100%	4.5	5.2	–	–	4.9
Thallium	mg/kg dw	0 - 3	0%	–	–	0.019	0.032	0.0243
Vanadium	mg/kg dw	3 - 3	100%	0.72	1.5	–	–	1.14
Zinc	mg/kg dw	3 - 3	100%	275	353	–	–	315
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	1850	2140	–	–	2007
Iron	mg/kg dw	3 - 3	100%	399	913	–	–	682
Magnesium	mg/kg dw	3 - 3	100%	1170	1190	–	–	1180
Potassium	mg/kg dw	3 - 3	100%	8730	9060	–	–	8927
Sodium	mg/kg dw	3 - 3	100%	3590	4850	–	–	4047

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-162. Snail Whole Body (2010) Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	3 - 3	100%	1310 - 1800	– - –	1553
Antimony	mg/kg dw	3 - 3	100%	0.026 - 0.26	– - –	0.106
Arsenic	mg/kg dw	3 - 3	100%	6.1 - 8.6	– - –	7.73
Barium	mg/kg dw	3 - 3	100%	39.6 - 52.4	– - –	47.5
Beryllium	mg/kg dw	3 - 3	100%	0.095 - 0.12	– - –	0.105
Boron	mg/kg dw	3 - 3	100%	2.8 - 5.2	– - –	3.9
Cadmium	mg/kg dw	3 - 3	100%	0.75 - 1	– - –	0.867
Chromium	mg/kg dw	3 - 3	100%	2.3 - 10.1	– - –	5
Cobalt	mg/kg dw	3 - 3	100%	8.4 - 12.3	– - –	10.9
Copper	mg/kg dw	3 - 3	100%	95.4 - 127	– - –	109
Lead	mg/kg dw	3 - 3	100%	1.4 - 11.3	– - –	4.77
Manganese	mg/kg dw	3 - 3	100%	544 - 686	– - –	592
Mercury	mg/kg dw	3 - 3	100%	0.091 - 0.16	– - –	0.134
Molybdenum	mg/kg dw	3 - 3	100%	0.52 - 0.69	– - –	0.597
Nickel	mg/kg dw	3 - 3	100%	18.8 - 32.7	– - –	27.1
Selenium	mg/kg dw	3 - 3	100%	2.5 - 3.8	– - –	3.23
Silver	mg/kg dw	3 - 3	100%	0.96 - 1.2	– - –	1.05
Strontium	mg/kg dw	3 - 3	100%	35.6 - 43.1	– - –	38.6
Thallium	mg/kg dw	0 - 3	0%	– - –	0.096 - 0.14	0.119
Vanadium	mg/kg dw	3 - 3	100%	2.4 - 3.8	– - –	3.07
Zinc	mg/kg dw	3 - 3	100%	144 - 166	– - –	152
Inorganic-cations/anions						
Calcium	mg/kg dw	3 - 3	100%	29800 - 35500	– - –	31800
Iron	mg/kg dw	3 - 3	100%	2090 - 3090	– - –	2523
Magnesium	mg/kg dw	3 - 3	100%	10900 - 12100	– - –	11300
Potassium	mg/kg dw	3 - 3	100%	3600 - 4030	– - –	3850
Sodium	mg/kg dw	3 - 3	100%	2020 - 3440	– - –	2783

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-163. Snail Whole Body (2010) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	1960	2240	–	–	2123
Antimony	mg/kg dw	3 - 3	100%	0.066	0.091	–	–	0.0783
Arsenic	mg/kg dw	3 - 3	100%	11.9	13.9	–	–	12.7
Barium	mg/kg dw	3 - 3	100%	36.7	42.4	–	–	39.8
Beryllium	mg/kg dw	3 - 3	100%	0.13	0.16	–	–	0.143
Boron	mg/kg dw	3 - 3	100%	2.7	3.4	–	–	3.13
Cadmium	mg/kg dw	3 - 3	100%	1.3	1.8	–	–	1.53
Chromium	mg/kg dw	3 - 3	100%	3.3	4.6	–	–	3.83
Cobalt	mg/kg dw	3 - 3	100%	11.2	17.3	–	–	13.5
Copper	mg/kg dw	3 - 3	100%	102	175	–	–	135
Lead	mg/kg dw	3 - 3	100%	1.5	2	–	–	1.77
Manganese	mg/kg dw	3 - 3	100%	293	505	–	–	428
Mercury	mg/kg dw	3 - 3	100%	0.095	0.13	–	–	0.112
Molybdenum	mg/kg dw	3 - 3	100%	0.45	0.73	–	–	0.56
Nickel	mg/kg dw	3 - 3	100%	23.6	30.7	–	–	26.2
Selenium	mg/kg dw	3 - 3	100%	4.9	5.7	–	–	5.33
Silver	mg/kg dw	3 - 3	100%	0.068	0.1	–	–	0.079
Strontium	mg/kg dw	3 - 3	100%	46.8	55.6	–	–	51
Thallium	mg/kg dw	3 - 3	100%	0.51	0.63	–	–	0.567
Vanadium	mg/kg dw	3 - 3	100%	3.9	5.8	–	–	4.87
Zinc	mg/kg dw	3 - 3	100%	148	204	–	–	170
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	29500	41100	–	–	36700
Iron	mg/kg dw	3 - 3	100%	1660	2120	–	–	1920
Magnesium	mg/kg dw	3 - 3	100%	11400	17400	–	–	15000
Potassium	mg/kg dw	3 - 3	100%	4890	4980	–	–	4930
Sodium	mg/kg dw	3 - 3	100%	2470	2980	–	–	2640

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-164. Snail Whole Body (2010) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	2690	4630	–	–	3690
Antimony	mg/kg dw	2 - 3	67%	0.073	0.1	0.063	0.063	0.0787
Arsenic	mg/kg dw	3 - 3	100%	10.5	13.6	–	–	11.9
Barium	mg/kg dw	3 - 3	100%	36.4	66.7	–	–	50.2
Beryllium	mg/kg dw	3 - 3	100%	0.17	0.31	–	–	0.223
Boron	mg/kg dw	3 - 3	100%	6.4	9.5	–	–	8.13
Cadmium	mg/kg dw	3 - 3	100%	0.63	1.5	–	–	1.08
Chromium	mg/kg dw	3 - 3	100%	4.5	6.9	–	–	5.53
Cobalt	mg/kg dw	3 - 3	100%	6.6	18.1	–	–	11.8
Copper	mg/kg dw	3 - 3	100%	102	121	–	–	113
Lead	mg/kg dw	3 - 3	100%	2.3	4.1	–	–	3.3
Manganese	mg/kg dw	3 - 3	100%	345	817	–	–	530
Mercury	mg/kg dw	3 - 3	100%	0.074	0.12	–	–	0.098
Molybdenum	mg/kg dw	3 - 3	100%	0.52	0.74	–	–	0.603
Nickel	mg/kg dw	3 - 3	100%	14.2	35.9	–	–	26.1
Selenium	mg/kg dw	3 - 3	100%	3.3	4.2	–	–	3.73
Silver	mg/kg dw	3 - 3	100%	0.21	0.31	–	–	0.253
Strontium	mg/kg dw	3 - 3	100%	41.6	47.8	–	–	45.2
Thallium	mg/kg dw	3 - 3	100%	0.38	0.4	–	–	0.39
Vanadium	mg/kg dw	3 - 3	100%	5.1	8.4	–	–	6.43
Zinc	mg/kg dw	3 - 3	100%	88.5	140	–	–	117
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	27800	38800	–	–	34200
Iron	mg/kg dw	3 - 3	100%	2710	4620	–	–	3440
Magnesium	mg/kg dw	3 - 3	100%	8680	13400	–	–	11400
Potassium	mg/kg dw	3 - 3	100%	4600	5760	–	–	5300
Sodium	mg/kg dw	3 - 3	100%	1910	2560	–	–	2273

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-165. Snail Whole Body (2010) Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Concentration [b]
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	220	1060	–	–	579
Antimony	mg/kg dw	3 - 3	100%	0.019	0.037	–	–	0.0267
Arsenic	mg/kg dw	3 - 3	100%	12.6	14.1	–	–	13.5
Barium	mg/kg dw	3 - 3	100%	24.9	44.7	–	–	31.9
Beryllium	mg/kg dw	1 - 3	33%	0.056	0.056	0.058	0.58	0.231
Boron	mg/kg dw	3 - 3	100%	1.8	1.9	–	–	1.87
Cadmium	mg/kg dw	3 - 3	100%	0.97	2	–	–	1.42
Chromium	mg/kg dw	3 - 3	100%	2.5	3.7	–	–	3.13
Cobalt	mg/kg dw	3 - 3	100%	6	8.8	–	–	7.13
Copper	mg/kg dw	3 - 3	100%	147	165	–	–	155
Lead	mg/kg dw	3 - 3	100%	0.44	3.3	–	–	1.56
Manganese	mg/kg dw	3 - 3	100%	148	322	–	–	248
Mercury	mg/kg dw	3 - 3	100%	0.25	0.29	–	–	0.273
Molybdenum	mg/kg dw	3 - 3	100%	0.81	0.85	–	–	0.827
Nickel	mg/kg dw	3 - 3	100%	15.1	18.8	–	–	17
Selenium	mg/kg dw	3 - 3	100%	4.3	4.8	–	–	4.53
Silver	mg/kg dw	3 - 3	100%	0.14	0.19	–	–	0.17
Strontium	mg/kg dw	3 - 3	100%	50.6	63	–	–	55.6
Thallium	mg/kg dw	2 - 3	67%	0.29	0.38	0.22	0.22	0.297
Vanadium	mg/kg dw	3 - 3	100%	0.92	3.2	–	–	1.81
Zinc	mg/kg dw	3 - 3	100%	134	140	–	–	136
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	39100	54800	–	–	45600
Iron	mg/kg dw	3 - 3	100%	666	1300	–	–	919
Magnesium	mg/kg dw	3 - 3	100%	13800	14900	–	–	14200
Potassium	mg/kg dw	3 - 3	100%	4130	4510	–	–	4337
Sodium	mg/kg dw	3 - 3	100%	2520	3020	–	–	2717

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-166. Snail Whole Body (2010) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	185	590	–	–	439
Antimony	mg/kg dw	3 - 3	100%	0.031	0.048	–	–	0.04
Arsenic	mg/kg dw	3 - 3	100%	11.6	20.1	–	–	16.6
Barium	mg/kg dw	3 - 3	100%	24.5	40.6	–	–	32.1
Beryllium	mg/kg dw	2 - 3	67%	0.047	0.053	0.04	0.04	0.0467
Boron	mg/kg dw	3 - 3	100%	1.5	3	–	–	2.37
Cadmium	mg/kg dw	3 - 3	100%	1.7	5	–	–	3.83
Chromium	mg/kg dw	3 - 3	100%	3.2	7.1	–	–	5.3
Cobalt	mg/kg dw	3 - 3	100%	11	16.1	–	–	13
Copper	mg/kg dw	3 - 3	100%	102	166	–	–	139
Lead	mg/kg dw	3 - 3	100%	0.64	6.8	–	–	2.73
Manganese	mg/kg dw	3 - 3	100%	340	814	–	–	579
Mercury	mg/kg dw	3 - 3	100%	0.19	0.24	–	–	0.22
Molybdenum	mg/kg dw	3 - 3	100%	0.67	0.98	–	–	0.823
Nickel	mg/kg dw	3 - 3	100%	24	44.1	–	–	35.5
Selenium	mg/kg dw	3 - 3	100%	4.3	7.9	–	–	6.63
Silver	mg/kg dw	3 - 3	100%	0.097	0.37	–	–	0.242
Strontium	mg/kg dw	3 - 3	100%	50	65.2	–	–	57.3
Thallium	mg/kg dw	3 - 3	100%	0.42	0.57	–	–	0.5
Vanadium	mg/kg dw	3 - 3	100%	1.8	3	–	–	2.27
Zinc	mg/kg dw	3 - 3	100%	127	236	–	–	192
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	43000	49300	–	–	46400
Iron	mg/kg dw	3 - 3	100%	858	1460	–	–	1084
Magnesium	mg/kg dw	3 - 3	100%	13300	15500	–	–	14700
Potassium	mg/kg dw	3 - 3	100%	4050	4850	–	–	4503
Sodium	mg/kg dw	3 - 3	100%	2330	3790	–	–	3150

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-167. Snail Whole Body (2010) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	235	2050	–	–	1185
Antimony	mg/kg dw	2 - 3	67%	0.048	0.08	0.029	0.029	0.0523
Arsenic	mg/kg dw	3 - 3	100%	13.8	15.2	–	–	14.7
Barium	mg/kg dw	3 - 3	100%	17.6	42.3	–	–	29.7
Beryllium	mg/kg dw	2 - 3	67%	0.075	0.16	0.03	0.03	0.0883
Boron	mg/kg dw	3 - 3	100%	2.1	3.3	–	–	2.6
Cadmium	mg/kg dw	3 - 3	100%	1.4	2	–	–	1.73
Chromium	mg/kg dw	3 - 3	100%	3.3	4.3	–	–	3.77
Cobalt	mg/kg dw	3 - 3	100%	5.1	8.5	–	–	7.23
Copper	mg/kg dw	3 - 3	100%	134	170	–	–	155
Lead	mg/kg dw	3 - 3	100%	0.43	2.6	–	–	1.44
Manganese	mg/kg dw	3 - 3	100%	219	450	–	–	360
Mercury	mg/kg dw	3 - 3	100%	0.1	0.16	–	–	0.133
Molybdenum	mg/kg dw	3 - 3	100%	0.81	1.1	–	–	0.907
Nickel	mg/kg dw	3 - 3	100%	14.4	19	–	–	17.1
Selenium	mg/kg dw	3 - 3	100%	4.7	6.8	–	–	5.6
Silver	mg/kg dw	3 - 3	100%	0.1	0.13	–	–	0.11
Strontium	mg/kg dw	3 - 3	100%	42.2	59.4	–	–	48.9
Thallium	mg/kg dw	3 - 3	100%	0.4	0.59	–	–	0.483
Vanadium	mg/kg dw	3 - 3	100%	1.8	5.4	–	–	3.47
Zinc	mg/kg dw	3 - 3	100%	165	178	–	–	171
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	35200	48100	–	–	40100
Iron	mg/kg dw	3 - 3	100%	483	2000	–	–	1274
Magnesium	mg/kg dw	3 - 3	100%	11700	14900	–	–	12900
Potassium	mg/kg dw	3 - 3	100%	4500	4770	–	–	4653
Sodium	mg/kg dw	3 - 3	100%	2360	2600	–	–	2507

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-168. Snail Whole Body Minus Gut (2009) Dataset: Emory River - Reference (Above ERM 6.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations	Detection Limits	Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min Max	Min Max	
Inorganics						
Aluminum	mg/kg dw	4 - 4	100%	7.5 - 24.3	– - –	15.6
Antimony	mg/kg dw	0 - 4	0%	– - –	0.019 - 0.019	0.019
Arsenic	mg/kg dw	4 - 4	100%	6.1 - 7.6	– - –	6.73
Barium	mg/kg dw	4 - 4	100%	14.1 - 23.1	– - –	18
Beryllium	mg/kg dw	0 - 4	0%	– - –	0.005 - 0.0095	0.00718
Boron	mg/kg dw	4 - 4	100%	0.59 - 1.6	– - –	1.05
Cadmium	mg/kg dw	4 - 4	100%	0.47 - 0.63	– - –	0.528
Chromium	mg/kg dw	4 - 4	100%	0.43 - 0.59	– - –	0.498
Cobalt	mg/kg dw	4 - 4	100%	4.4 - 6.1	– - –	5
Copper	mg/kg dw	4 - 4	100%	97 - 121	– - –	106
Lead	mg/kg dw	4 - 4	100%	0.31 - 0.67	– - –	0.47
Manganese	mg/kg dw	4 - 4	100%	149 - 249	– - –	195
Mercury	mg/kg dw	4 - 4	100%	0.046 - 0.075	– - –	0.058
Molybdenum	mg/kg dw	4 - 4	100%	0.32 - 0.49	– - –	0.428
Nickel	mg/kg dw	4 - 4	100%	11.6 - 18.8	– - –	14.3
Selenium	mg/kg dw	4 - 4	100%	2.8 - 3.3	– - –	3
Silver	mg/kg dw	4 - 4	100%	0.51 - 0.94	– - –	0.743
Strontium	mg/kg dw	4 - 4	100%	22.1 - 33.5	– - –	26
Thallium	mg/kg dw	0 - 4	0%	– - –	0.016 - 0.037	0.0255
Vanadium	mg/kg dw	4 - 4	100%	0.1 - 0.22	– - –	0.138
Zinc	mg/kg dw	4 - 4	100%	96.3 - 115	– - –	106
Inorganic-cations/anions						
Calcium	mg/kg dw	4 - 4	100%	17600 - 25500	– - –	20700
Iron	mg/kg dw	4 - 4	100%	222 - 421	– - –	325
Magnesium	mg/kg dw	4 - 4	100%	8850 - 10100	– - –	9508
Potassium	mg/kg dw	4 - 4	100%	3250 - 3510	– - –	3373
Sodium	mg/kg dw	4 - 4	100%	1210 - 1380	– - –	1285

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-169. Snail Whole Body Minus Gut (2009) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	4 - 4	100%	31.9	92.2	–	–	56.8
Antimony	mg/kg dw	0 - 4	0%	–	–	0.018	0.024	0.0195
Arsenic	mg/kg dw	4 - 4	100%	7.8	12	–	–	10.2
Barium	mg/kg dw	4 - 4	100%	14.4	24.1	–	–	18.6
Beryllium	mg/kg dw	4 - 4	100%	0.0079	0.03	–	–	0.019
Boron	mg/kg dw	2 - 4	50%	1.3	1.8	0.91	1.1	1.28
Cadmium	mg/kg dw	4 - 4	100%	0.96	1.3	–	–	1.14
Chromium	mg/kg dw	4 - 4	100%	0.67	1.8	–	–	1.19
Cobalt	mg/kg dw	4 - 4	100%	6.5	16	–	–	11.2
Copper	mg/kg dw	4 - 4	100%	84.4	118	–	–	108
Lead	mg/kg dw	4 - 4	100%	0.26	0.48	–	–	0.348
Manganese	mg/kg dw	4 - 4	100%	103	449	–	–	246
Mercury	mg/kg dw	4 - 4	100%	0.037	0.081	–	–	0.0605
Molybdenum	mg/kg dw	4 - 4	100%	0.36	0.8	–	–	0.6
Nickel	mg/kg dw	4 - 4	100%	13.6	37.4	–	–	24.6
Selenium	mg/kg dw	4 - 4	100%	4.7	6.1	–	–	5.45
Silver	mg/kg dw	3 - 4	75%	0.031	0.099	0.022	0.022	0.0615
Strontium	mg/kg dw	4 - 4	100%	33.6	52.7	–	–	41.9
Thallium	mg/kg dw	4 - 4	100%	0.29	0.39	–	–	0.345
Vanadium	mg/kg dw	4 - 4	100%	0.33	1.5	–	–	0.84
Zinc	mg/kg dw	4 - 4	100%	130	246	–	–	179
Inorganic-cations/anions								
Calcium	mg/kg dw	4 - 4	100%	25600	38300	–	–	31200
Iron	mg/kg dw	4 - 4	100%	243	597	–	–	457
Magnesium	mg/kg dw	4 - 4	100%	9220	13200	–	–	10900
Potassium	mg/kg dw	4 - 4	100%	3770	4140	–	–	3900
Sodium	mg/kg dw	4 - 4	100%	900	1180	–	–	1015

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-170. Snail Whole Body Minus Gut (2009) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	4 - 4	100%	7.4	14.2	–	–	11.4
Antimony	mg/kg dw	0 - 4	0%	–	–	0.018	0.019	0.0185
Arsenic	mg/kg dw	4 - 4	100%	7.9	9	–	–	8.43
Barium	mg/kg dw	4 - 4	100%	13.4	26	–	–	19.6
Beryllium	mg/kg dw	0 - 4	0%	–	–	0.0045	0.0074	0.00638
Boron	mg/kg dw	4 - 4	100%	1.2	1.9	–	–	1.48
Cadmium	mg/kg dw	4 - 4	100%	0.73	0.8	–	–	0.765
Chromium	mg/kg dw	4 - 4	100%	0.53	1	–	–	0.68
Cobalt	mg/kg dw	4 - 4	100%	9.3	12.2	–	–	10.9
Copper	mg/kg dw	4 - 4	100%	71.1	94.2	–	–	86.5
Lead	mg/kg dw	4 - 4	100%	0.35	0.51	–	–	0.435
Manganese	mg/kg dw	4 - 4	100%	172	221	–	–	189
Mercury	mg/kg dw	4 - 4	100%	0.05	0.059	–	–	0.0533
Molybdenum	mg/kg dw	4 - 4	100%	0.47	0.53	–	–	0.513
Nickel	mg/kg dw	4 - 4	100%	22.4	25.7	–	–	23.8
Selenium	mg/kg dw	4 - 4	100%	3.7	3.9	–	–	3.78
Silver	mg/kg dw	4 - 4	100%	0.088	0.17	–	–	0.14
Strontium	mg/kg dw	4 - 4	100%	23.7	47.9	–	–	35.9
Thallium	mg/kg dw	4 - 4	100%	0.091	0.13	–	–	0.115
Vanadium	mg/kg dw	4 - 4	100%	0.13	0.2	–	–	0.153
Zinc	mg/kg dw	4 - 4	100%	89.2	113	–	–	105
Inorganic-cations/anions								
Calcium	mg/kg dw	4 - 4	100%	18500	40000	–	–	29400
Iron	mg/kg dw	4 - 4	100%	309	396	–	–	358
Magnesium	mg/kg dw	4 - 4	100%	8160	10200	–	–	9480
Potassium	mg/kg dw	4 - 4	100%	3330	3390	–	–	3365
Sodium	mg/kg dw	4 - 4	100%	1090	1450	–	–	1280

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-171. Snail Whole Body Minus Gut (2009) Dataset: Clinch River - Reference (Above CRM 4.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	4 - 4	100%	10.9	39.9	–	–	20.9
Antimony	mg/kg dw	0 - 4	0%	–	–	0.018	0.019	0.0183
Arsenic	mg/kg dw	4 - 4	100%	9.3	11.6	–	–	10.8
Barium	mg/kg dw	4 - 4	100%	10.5	19.3	–	–	14.7
Beryllium	mg/kg dw	3 - 4	75%	0.0037	0.0056	0.0031	0.0031	0.0043
Boron	mg/kg dw	2 - 4	50%	1.2	1.6	0.42	0.68	0.975
Cadmium	mg/kg dw	4 - 4	100%	0.79	1.3	–	–	1.08
Chromium	mg/kg dw	4 - 4	100%	0.92	2.8	–	–	1.78
Cobalt	mg/kg dw	4 - 4	100%	5.2	7.1	–	–	6.13
Copper	mg/kg dw	4 - 4	100%	95.4	149	–	–	119
Lead	mg/kg dw	4 - 4	100%	0.39	0.57	–	–	0.473
Manganese	mg/kg dw	4 - 4	100%	93.3	150	–	–	120
Mercury	mg/kg dw	4 - 4	100%	0.12	0.16	–	–	0.13
Molybdenum	mg/kg dw	4 - 4	100%	0.59	0.68	–	–	0.64
Nickel	mg/kg dw	4 - 4	100%	16.1	18.3	–	–	16.9
Selenium	mg/kg dw	4 - 4	100%	4	4.7	–	–	4.33
Silver	mg/kg dw	4 - 4	100%	0.14	0.2	–	–	0.168
Strontium	mg/kg dw	4 - 4	100%	29.9	40	–	–	34.4
Thallium	mg/kg dw	0 - 4	0%	–	–	0.17	0.18	0.173
Vanadium	mg/kg dw	4 - 4	100%	0.2	0.31	–	–	0.258
Zinc	mg/kg dw	4 - 4	100%	131	152	–	–	142
Inorganic-cations/anions								
Calcium	mg/kg dw	4 - 4	100%	23000	33500	–	–	27500
Iron	mg/kg dw	4 - 4	100%	360	460	–	–	411
Magnesium	mg/kg dw	4 - 4	100%	8250	10500	–	–	9118
Potassium	mg/kg dw	4 - 4	100%	3710	4280	–	–	3910
Sodium	mg/kg dw	4 - 4	100%	720	1010	–	–	860

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-172. Snail Whole Body Minus Gut (2009) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations	Detection Limits	Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min Max	Min Max	
Inorganics						
Aluminum	mg/kg dw	3 - 4	75%	11.4 - 37.2	6.9 - 6.9	17.4
Antimony	mg/kg dw	0 - 4	0%	– - –	0.018 - 0.019	0.0188
Arsenic	mg/kg dw	4 - 4	100%	9.9 - 11.7	– - –	10.6
Barium	mg/kg dw	4 - 4	100%	10.7 - 12.7	– - –	11.6
Beryllium	mg/kg dw	4 - 4	100%	0.0037 - 0.013	– - –	0.00735
Boron	mg/kg dw	2 - 4	50%	1.2 - 1.6	0.44 - 1	1.06
Cadmium	mg/kg dw	4 - 4	100%	0.95 - 1.7	– - –	1.19
Chromium	mg/kg dw	4 - 4	100%	0.74 - 2.5	– - –	1.22
Cobalt	mg/kg dw	4 - 4	100%	5.5 - 9.6	– - –	7.75
Copper	mg/kg dw	4 - 4	100%	75.3 - 110	– - –	97.6
Lead	mg/kg dw	4 - 4	100%	0.21 - 0.36	– - –	0.3
Manganese	mg/kg dw	4 - 4	100%	163 - 438	– - –	275
Mercury	mg/kg dw	4 - 4	100%	0.045 - 0.1	– - –	0.0728
Molybdenum	mg/kg dw	4 - 4	100%	0.64 - 0.92	– - –	0.743
Nickel	mg/kg dw	4 - 4	100%	14.6 - 27.4	– - –	18.7
Selenium	mg/kg dw	4 - 4	100%	3.9 - 6.3	– - –	4.95
Silver	mg/kg dw	4 - 4	100%	0.05 - 0.13	– - –	0.0753
Strontium	mg/kg dw	4 - 4	100%	28 - 31.6	– - –	30
Thallium	mg/kg dw	2 - 4	50%	0.27 - 0.29	0.16 - 0.21	0.233
Vanadium	mg/kg dw	4 - 4	100%	0.37 - 1.2	– - –	0.763
Zinc	mg/kg dw	4 - 4	100%	134 - 172	– - –	149
Inorganic-cations/anions						
Calcium	mg/kg dw	4 - 4	100%	23200 - 27400	– - –	25200
Iron	mg/kg dw	4 - 4	100%	292 - 487	– - –	375
Magnesium	mg/kg dw	4 - 4	100%	7640 - 10500	– - –	9333
Potassium	mg/kg dw	4 - 4	100%	3440 - 3740	– - –	3540
Sodium	mg/kg dw	4 - 4	100%	599 - 856	– - –	703

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-173. Snail Whole Body Minus Gut (2010) Dataset: Emory River - Reference (Above ERM 6.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	6 - 6	100%	6.4	10.9	–	–	8.7
Antimony	mg/kg dw	2 - 6	33%	0.017	0.038	0.015	0.019	0.0203
Arsenic	mg/kg dw	6 - 6	100%	7.2	13.5	–	–	9.93
Barium	mg/kg dw	6 - 6	100%	16.3	35.9	–	–	27.9
Beryllium	mg/kg dw	0 - 6	0%	–	–	0.061	0.076	0.0682
Boron	mg/kg dw	6 - 6	100%	1.4	3.3	–	–	2.32
Cadmium	mg/kg dw	6 - 6	100%	0.61	1.7	–	–	1.11
Chromium	mg/kg dw	6 - 6	100%	0.35	2.2	–	–	1.05
Cobalt	mg/kg dw	6 - 6	100%	1.7	22.4	–	–	9.4
Copper	mg/kg dw	6 - 6	100%	96.9	167	–	–	136
Lead	mg/kg dw	6 - 6	100%	0.18	0.99	–	–	0.36
Manganese	mg/kg dw	6 - 6	100%	119	585	–	–	372
Mercury	mg/kg dw	6 - 6	100%	0.099	0.25	–	–	0.175
Molybdenum	mg/kg dw	6 - 6	100%	0.4	0.7	–	–	0.575
Nickel	mg/kg dw	6 - 6	100%	7.8	71.1	–	–	29.3
Selenium	mg/kg dw	6 - 6	100%	3.2	6.4	–	–	4.35
Silver	mg/kg dw	6 - 6	100%	0.96	5.9	–	–	2.64
Strontium	mg/kg dw	6 - 6	100%	29.5	49.3	–	–	37.6
Thallium	mg/kg dw	0 - 6	0%	–	–	0.033	0.057	0.043
Vanadium	mg/kg dw	6 - 6	100%	0.15	0.44	–	–	0.282
Zinc	mg/kg dw	6 - 6	100%	115	171	–	–	145
Inorganic-cations/anions								
Calcium	mg/kg dw	6 - 6	100%	25600	42000	–	–	32200
Iron	mg/kg dw	6 - 6	100%	253	894	–	–	642
Magnesium	mg/kg dw	6 - 6	100%	10300	12500	–	–	11500
Potassium	mg/kg dw	6 - 6	100%	3470	4060	–	–	3823
Sodium	mg/kg dw	6 - 6	100%	1750	3680	–	–	2407

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-174. Snail Whole Body Minus Gut (2010) Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	19.5	35	–	–	27.8
Antimony	mg/kg dw	3 - 3	100%	0.021	0.034	–	–	0.0293
Arsenic	mg/kg dw	3 - 3	100%	11.6	14.7	–	–	13.2
Barium	mg/kg dw	3 - 3	100%	13.9	21.1	–	–	16.9
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.028	0.03	0.0293
Boron	mg/kg dw	3 - 3	100%	0.71	1.7	–	–	1.17
Cadmium	mg/kg dw	3 - 3	100%	1.2	1.6	–	–	1.4
Chromium	mg/kg dw	3 - 3	100%	0.93	3	–	–	2.01
Cobalt	mg/kg dw	3 - 3	100%	10.7	24.5	–	–	16.6
Copper	mg/kg dw	3 - 3	100%	103	152	–	–	135
Lead	mg/kg dw	3 - 3	100%	0.25	0.32	–	–	0.28
Manganese	mg/kg dw	3 - 3	100%	164	543	–	–	379
Mercury	mg/kg dw	3 - 3	100%	0.063	0.1	–	–	0.0873
Molybdenum	mg/kg dw	3 - 3	100%	0.37	0.75	–	–	0.587
Nickel	mg/kg dw	3 - 3	100%	22	52	–	–	36.6
Selenium	mg/kg dw	3 - 3	100%	4.5	6.1	–	–	5.53
Silver	mg/kg dw	3 - 3	100%	0.057	0.067	–	–	0.0613
Strontium	mg/kg dw	3 - 3	100%	25.8	34.6	–	–	29.9
Thallium	mg/kg dw	3 - 3	100%	0.32	0.44	–	–	0.37
Vanadium	mg/kg dw	3 - 3	100%	0.58	1.6	–	–	1.23
Zinc	mg/kg dw	3 - 3	100%	167	292	–	–	227
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	20800	28200	–	–	24900
Iron	mg/kg dw	3 - 3	100%	301	776	–	–	610
Magnesium	mg/kg dw	3 - 3	100%	9360	11200	–	–	10300
Potassium	mg/kg dw	3 - 3	100%	3380	3580	–	–	3497
Sodium	mg/kg dw	3 - 3	100%	599	849	–	–	747

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-175. Snail Whole Body Minus Gut (2010) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	12.2	108	–	–	49
Antimony	mg/kg dw	3 - 3	100%	0.018	0.021	–	–	0.0193
Arsenic	mg/kg dw	3 - 3	100%	10.4	13	–	–	11.7
Barium	mg/kg dw	3 - 3	100%	20.1	26.1	–	–	24.1
Beryllium	mg/kg dw	1 - 3	33%	0.035	0.035	0.027	0.027	0.0297
Boron	mg/kg dw	3 - 3	100%	1.7	2.1	–	–	1.83
Cadmium	mg/kg dw	3 - 3	100%	1.1	1.9	–	–	1.47
Chromium	mg/kg dw	3 - 3	100%	0.72	0.95	–	–	0.803
Cobalt	mg/kg dw	3 - 3	100%	8	9.5	–	–	8.8
Copper	mg/kg dw	3 - 3	100%	111	184	–	–	145
Lead	mg/kg dw	3 - 3	100%	0.36	0.4	–	–	0.38
Manganese	mg/kg dw	3 - 3	100%	220	291	–	–	253
Mercury	mg/kg dw	3 - 3	100%	0.083	0.085	–	–	0.0837
Molybdenum	mg/kg dw	3 - 3	100%	0.5	0.84	–	–	0.67
Nickel	mg/kg dw	3 - 3	100%	21.9	22.6	–	–	22.2
Selenium	mg/kg dw	3 - 3	100%	3.9	4.5	–	–	4.1
Silver	mg/kg dw	3 - 3	100%	0.31	0.65	–	–	0.47
Strontium	mg/kg dw	3 - 3	100%	34.1	45.9	–	–	40.9
Thallium	mg/kg dw	2 - 3	67%	0.25	0.28	0.25	0.25	0.26
Vanadium	mg/kg dw	3 - 3	100%	0.29	0.48	–	–	0.403
Zinc	mg/kg dw	3 - 3	100%	125	140	–	–	130
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	25800	36300	–	–	32600
Iron	mg/kg dw	3 - 3	100%	431	609	–	–	526
Magnesium	mg/kg dw	3 - 3	100%	9940	11900	–	–	11200
Potassium	mg/kg dw	3 - 3	100%	3450	3530	–	–	3493
Sodium	mg/kg dw	3 - 3	100%	790	1120	–	–	916

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-176. Snail Whole Body Minus Gut (2010) Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	27.6	182	–	–	121
Antimony	mg/kg dw	0 - 3	0%	–	–	0.015	0.019	0.0167
Arsenic	mg/kg dw	3 - 3	100%	10.3	10.8	–	–	10.6
Barium	mg/kg dw	3 - 3	100%	27	32.1	–	–	29.3
Beryllium	mg/kg dw	2 - 3	67%	0.031	0.038	0.033	0.033	0.034
Boron	mg/kg dw	3 - 3	100%	2.2	2.8	–	–	2.5
Cadmium	mg/kg dw	3 - 3	100%	1.1	1.5	–	–	1.27
Chromium	mg/kg dw	3 - 3	100%	0.46	1.1	–	–	0.72
Cobalt	mg/kg dw	3 - 3	100%	8.1	12.8	–	–	10.1
Copper	mg/kg dw	3 - 3	100%	118	132	–	–	126
Lead	mg/kg dw	3 - 3	100%	0.35	0.38	–	–	0.367
Manganese	mg/kg dw	3 - 3	100%	288	365	–	–	332
Mercury	mg/kg dw	3 - 3	100%	0.071	0.1	–	–	0.0847
Molybdenum	mg/kg dw	3 - 3	100%	0.52	0.58	–	–	0.55
Nickel	mg/kg dw	3 - 3	100%	25.2	38.8	–	–	31.4
Selenium	mg/kg dw	3 - 3	100%	3.7	4	–	–	3.83
Silver	mg/kg dw	3 - 3	100%	0.67	1	–	–	0.817
Strontium	mg/kg dw	3 - 3	100%	47.8	51.1	–	–	49.6
Thallium	mg/kg dw	0 - 3	0%	–	–	0.11	0.15	0.133
Vanadium	mg/kg dw	3 - 3	100%	0.35	0.57	–	–	0.473
Zinc	mg/kg dw	3 - 3	100%	177	236	–	–	205
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	36000	39400	–	–	37900
Iron	mg/kg dw	3 - 3	100%	652	832	–	–	738
Magnesium	mg/kg dw	3 - 3	100%	10300	11700	–	–	11100
Potassium	mg/kg dw	3 - 3	100%	3600	4500	–	–	4177
Sodium	mg/kg dw	3 - 3	100%	595	1060	–	–	796

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-177. Snail Whole Body Minus Gut (2010) Dataset: Clinch River - Reference (Above CRM 4.5)

Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	6.1	12	–	–	8.57
Antimony	mg/kg dw	3 - 3	100%	0.019	0.021	–	–	0.0197
Arsenic	mg/kg dw	3 - 3	100%	15.2	17.9	–	–	16.7
Barium	mg/kg dw	3 - 3	100%	20.7	35	–	–	27.1
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.06	0.062	0.0607
Boron	mg/kg dw	3 - 3	100%	0.85	1.4	–	–	1.15
Cadmium	mg/kg dw	3 - 3	100%	1.2	6.1	–	–	3.1
Chromium	mg/kg dw	3 - 3	100%	2.9	3.6	–	–	3.17
Cobalt	mg/kg dw	3 - 3	100%	7.2	11.6	–	–	9.33
Copper	mg/kg dw	3 - 3	100%	175	226	–	–	201
Lead	mg/kg dw	3 - 3	100%	0.37	0.87	–	–	0.583
Manganese	mg/kg dw	3 - 3	100%	161	318	–	–	215
Mercury	mg/kg dw	3 - 3	100%	0.24	0.33	–	–	0.28
Molybdenum	mg/kg dw	3 - 3	100%	0.9	1.1	–	–	0.977
Nickel	mg/kg dw	3 - 3	100%	21.9	28.2	–	–	25.1
Selenium	mg/kg dw	3 - 3	100%	4.6	4.9	–	–	4.73
Silver	mg/kg dw	3 - 3	100%	0.18	0.36	–	–	0.25
Strontium	mg/kg dw	3 - 3	100%	47.2	68.2	–	–	58.3
Thallium	mg/kg dw	1 - 3	33%	0.28	0.28	0.22	0.26	0.253
Vanadium	mg/kg dw	3 - 3	100%	0.65	0.82	–	–	0.75
Zinc	mg/kg dw	3 - 3	100%	149	213	–	–	174
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	38200	53700	–	–	47700
Iron	mg/kg dw	3 - 3	100%	523	597	–	–	568
Magnesium	mg/kg dw	3 - 3	100%	12400	18000	–	–	15200
Potassium	mg/kg dw	3 - 3	100%	3530	3940	–	–	3697
Sodium	mg/kg dw	3 - 3	100%	1150	1830	–	–	1530

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-178. Snail Whole Body Minus Gut (2010) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	7.7	35.4	–	–	18.6
Antimony	mg/kg dw	3 - 3	100%	0.015	0.026	–	–	0.0223
Arsenic	mg/kg dw	3 - 3	100%	11.4	19.8	–	–	16.2
Barium	mg/kg dw	3 - 3	100%	18.4	28.8	–	–	24.7
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.03	0.038	0.0337
Boron	mg/kg dw	3 - 3	100%	1.1	2.2	–	–	1.6
Cadmium	mg/kg dw	3 - 3	100%	1.5	5.4	–	–	3.53
Chromium	mg/kg dw	3 - 3	100%	1.2	10.1	–	–	5.33
Cobalt	mg/kg dw	3 - 3	100%	7.4	16.2	–	–	13
Copper	mg/kg dw	3 - 3	100%	144	217	–	–	190
Lead	mg/kg dw	3 - 3	100%	0.37	0.9	–	–	0.667
Manganese	mg/kg dw	3 - 3	100%	373	636	–	–	542
Mercury	mg/kg dw	3 - 3	100%	0.13	0.21	–	–	0.177
Molybdenum	mg/kg dw	3 - 3	100%	0.7	0.98	–	–	0.847
Nickel	mg/kg dw	3 - 3	100%	18.8	49.4	–	–	36.9
Selenium	mg/kg dw	3 - 3	100%	3.7	9.2	–	–	6.83
Silver	mg/kg dw	3 - 3	100%	0.055	0.33	–	–	0.228
Strontium	mg/kg dw	3 - 3	100%	50.2	58.5	–	–	55.3
Thallium	mg/kg dw	3 - 3	100%	0.31	0.4	–	–	0.367
Vanadium	mg/kg dw	3 - 3	100%	0.56	1.7	–	–	1.29
Zinc	mg/kg dw	3 - 3	100%	126	246	–	–	192
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	42900	45800	–	–	44700
Iron	mg/kg dw	3 - 3	100%	392	790	–	–	639
Magnesium	mg/kg dw	3 - 3	100%	12900	15800	–	–	14800
Potassium	mg/kg dw	3 - 3	100%	3070	4560	–	–	4053
Sodium	mg/kg dw	3 - 3	100%	860	1800	–	–	1350

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-179. Snail Whole Body Minus Gut (2010) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations	Detection Limits	Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min Max	Min Max	
Inorganics						
Aluminum	mg/kg dw	3 - 3	100%	9.1 - 15.3	– - –	12.4
Antimony	mg/kg dw	3 - 3	100%	0.019 - 0.027	– - –	0.0223
Arsenic	mg/kg dw	3 - 3	100%	10 - 17.8	– - –	14.5
Barium	mg/kg dw	3 - 3	100%	21.9 - 27.5	– - –	24.5
Beryllium	mg/kg dw	0 - 3	0%	– - –	0.028 - 0.03	0.0293
Boron	mg/kg dw	3 - 3	100%	1.2 - 1.2	– - –	1.2
Cadmium	mg/kg dw	3 - 3	100%	1.4 - 2.4	– - –	2.03
Chromium	mg/kg dw	3 - 3	100%	1.6 - 4.7	– - –	3.07
Cobalt	mg/kg dw	3 - 3	100%	10.4 - 13.2	– - –	11.5
Copper	mg/kg dw	3 - 3	100%	140 - 196	– - –	172
Lead	mg/kg dw	3 - 3	100%	0.31 - 0.37	– - –	0.34
Manganese	mg/kg dw	3 - 3	100%	319 - 409	– - –	355
Mercury	mg/kg dw	3 - 3	100%	0.1 - 0.18	– - –	0.143
Molybdenum	mg/kg dw	3 - 3	100%	0.57 - 1.1	– - –	0.86
Nickel	mg/kg dw	3 - 3	100%	23.6 - 35.1	– - –	28.1
Selenium	mg/kg dw	3 - 3	100%	4.5 - 7.1	– - –	6.07
Silver	mg/kg dw	3 - 3	100%	0.06 - 0.14	– - –	0.11
Strontium	mg/kg dw	3 - 3	100%	48 - 60.7	– - –	55.3
Thallium	mg/kg dw	2 - 3	67%	0.27 - 0.37	0.44 - 0.44	0.36
Vanadium	mg/kg dw	3 - 3	100%	0.86 - 1.6	– - –	1.25
Zinc	mg/kg dw	3 - 3	100%	188 - 227	– - –	208
Inorganic-cations/anions						
Calcium	mg/kg dw	3 - 3	100%	39500 - 49400	– - –	45800
Iron	mg/kg dw	3 - 3	100%	461 - 680	– - –	582
Magnesium	mg/kg dw	3 - 3	100%	10600 - 14400	– - –	12800
Potassium	mg/kg dw	3 - 3	100%	3300 - 4190	– - –	3827
Sodium	mg/kg dw	3 - 3	100%	681 - 1490	– - –	1080

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-180. Snail Whole Body Minus Gut (2010) Dataset: Tennessee River - Reference (Above TRM 568.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	4.7	18.3	–	–	9.77
Antimony	mg/kg dw	0 - 3	0%	–	–	0.014	0.015	0.0143
Arsenic	mg/kg dw	3 - 3	100%	4.8	5.7	–	–	5.33
Barium	mg/kg dw	3 - 3	100%	9.7	12.4	–	–	11.2
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.06	0.062	0.0613
Boron	mg/kg dw	3 - 3	100%	1.5	1.7	–	–	1.6
Cadmium	mg/kg dw	3 - 3	100%	0.54	0.64	–	–	0.577
Chromium	mg/kg dw	3 - 3	100%	0.35	0.52	–	–	0.41
Cobalt	mg/kg dw	3 - 3	100%	5.5	7.3	–	–	6.2
Copper	mg/kg dw	3 - 3	100%	107	117	–	–	110
Lead	mg/kg dw	3 - 3	100%	0.22	0.33	–	–	0.273
Manganese	mg/kg dw	3 - 3	100%	163	288	–	–	214
Mercury	mg/kg dw	3 - 3	100%	0.04	0.046	–	–	0.0427
Molybdenum	mg/kg dw	3 - 3	100%	0.48	0.65	–	–	0.59
Nickel	mg/kg dw	3 - 3	100%	4.9	6.5	–	–	5.73
Selenium	mg/kg dw	3 - 3	100%	2.1	2.3	–	–	2.23
Silver	mg/kg dw	3 - 3	100%	0.38	0.68	–	–	0.553
Strontium	mg/kg dw	3 - 3	100%	27	45.2	–	–	37.7
Thallium	mg/kg dw	0 - 3	0%	–	–	0.027	0.035	0.0303
Vanadium	mg/kg dw	3 - 3	100%	0.23	0.32	–	–	0.28
Zinc	mg/kg dw	3 - 3	100%	116	120	–	–	118
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	23100	34600	–	–	30000
Iron	mg/kg dw	3 - 3	100%	258	355	–	–	295
Magnesium	mg/kg dw	3 - 3	100%	8430	11100	–	–	10100
Potassium	mg/kg dw	3 - 3	100%	3560	3670	–	–	3627
Sodium	mg/kg dw	3 - 3	100%	939	1280	–	–	1065

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg dw = Milligram per kilogram dry weight.

TRM = Tennessee River mile.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-181. Snail Whole Body Minus Gut (2010) Dataset: Tennessee River - Reach B (TRM 566.0 to TRM 568.0)

Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	7.9	9.8	–	–	8.9
Antimony	mg/kg dw	1 - 3	33%	0.022	0.022	0.015	0.015	0.0173
Arsenic	mg/kg dw	3 - 3	100%	8.6	11.3	–	–	10.1
Barium	mg/kg dw	3 - 3	100%	20.7	25.5	–	–	22.6
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.059	0.062	0.061
Boron	mg/kg dw	3 - 3	100%	1.2	2	–	–	1.6
Cadmium	mg/kg dw	3 - 3	100%	0.89	1.4	–	–	1.16
Chromium	mg/kg dw	3 - 3	100%	0.92	1.7	–	–	1.27
Cobalt	mg/kg dw	3 - 3	100%	5.2	8.2	–	–	6.6
Copper	mg/kg dw	3 - 3	100%	99.7	187	–	–	130
Lead	mg/kg dw	3 - 3	100%	0.24	0.29	–	–	0.263
Manganese	mg/kg dw	3 - 3	100%	238	306	–	–	262
Mercury	mg/kg dw	3 - 3	100%	0.094	0.15	–	–	0.125
Molybdenum	mg/kg dw	3 - 3	100%	0.72	1.2	–	–	0.97
Nickel	mg/kg dw	3 - 3	100%	8.7	18.9	–	–	12.7
Selenium	mg/kg dw	3 - 3	100%	3.2	3.6	–	–	3.43
Silver	mg/kg dw	3 - 3	100%	0.14	0.24	–	–	0.193
Strontium	mg/kg dw	3 - 3	100%	38.3	65.4	–	–	50.7
Thallium	mg/kg dw	0 - 3	0%	–	–	0.12	0.16	0.147
Vanadium	mg/kg dw	3 - 3	100%	0.42	0.54	–	–	0.487
Zinc	mg/kg dw	3 - 3	100%	142	146	–	–	144
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	30100	52300	–	–	40300
Iron	mg/kg dw	3 - 3	100%	378	564	–	–	459
Magnesium	mg/kg dw	3 - 3	100%	11200	21000	–	–	15500
Potassium	mg/kg dw	3 - 3	100%	3680	3840	–	–	3747
Sodium	mg/kg dw	3 - 3	100%	1770	1920	–	–	1837

Note: All data were freeze dried prior to submission to lab and are assumed to be dry weight.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg dw = Milligram per kilogram dry weight.

TRM = Tennessee River mile.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-182. Periphyton Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Concentration [b]
Inorganics								
Aluminum	mg/kg dw	13 - 13	100%	9687	151667	–	–	27900
Antimony	mg/kg dw	13 - 13	100%	0.09398	1.25	–	–	0.31
Arsenic	mg/kg dw	13 - 13	100%	5.128	62.5	–	–	13.1
Barium	mg/kg dw	13 - 13	100%	183.1	1863	–	–	393
Beryllium	mg/kg dw	12 - 13	92%	0.6036	9.167	0.7143	0.7143	1.67
Boron	mg/kg dw	13 - 13	100%	15.48	74.87	–	–	48.7
Cadmium	mg/kg dw	6 - 13	46%	0.182	1.88	0.1711	3.042	0.572
Chromium	mg/kg dw	13 - 13	100%	12.53	150	–	–	30.6
Cobalt	mg/kg dw	13 - 13	100%	9.041	129.2	–	–	22.2
Copper	mg/kg dw	13 - 13	100%	10.26	100	–	–	22.7
Lead	mg/kg dw	13 - 13	100%	11.57	137.5	–	–	26.2
Manganese	mg/kg dw	13 - 13	100%	1219	25250	–	–	4481
Mercury	mg/kg dw	11 - 13	85%	0.02892	0.4583	0.02849	0.2619	0.095
Molybdenum	mg/kg dw	6 - 13	46%	0.9217	2.564	0.7952	14.17	2.14
Nickel	mg/kg dw	13 - 13	100%	17.83	220.8	–	–	42.9
Selenium	mg/kg dw	12 - 13	92%	1.759	4.615	27.08	27.08	4.56
Silver	mg/kg dw	3 - 13	23%	0.1935	0.2564	0.06506	1.167	0.215
Strontium	mg/kg dw	13 - 13	100%	24.42	183.3	–	–	84.4
Thallium	mg/kg dw	11 - 13	85%	0.1542	0.3081	0.4286	1.542	0.346
Vanadium	mg/kg dw	13 - 13	100%	15.66	233.3	–	–	43.1
Zinc	mg/kg dw	13 - 13	100%	53.25	741.7	–	–	146
Inorganic-cations/anions								
Calcium	mg/kg dw	13 - 13	100%	6923	175490	–	–	76800
Iron	mg/kg dw	13 - 13	100%	16265	189583	–	–	36500
Magnesium	mg/kg dw	13 - 13	100%	2373	23742	–	–	9423
Potassium	mg/kg dw	8 - 13	62%	2447	4693	7796	28917	8475
Sodium	mg/kg dw	4 - 13	31%	86.42	189.6	108.2	1929	505

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-183. Periphyton Dataset: Emory River - Reaches A, B, and C (ERM 0.0 to ERM 6.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations	Detection Limits	Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min Max	Min Max	
Inorganics						
Aluminum	mg/kg dw	15 - 15	100%	9723 - 82449	– - –	22700
Antimony	mg/kg dw	15 - 15	100%	0.2132 - 1.204	– - –	0.448
Arsenic	mg/kg dw	15 - 15	100%	11.94 - 116.3	– - –	24.9
Barium	mg/kg dw	15 - 15	100%	218.7 - 1072	– - –	387
Beryllium	mg/kg dw	15 - 15	100%	0.6928 - 6.122	– - –	1.59
Boron	mg/kg dw	15 - 15	100%	12.57 - 82.21	– - –	53.3
Cadmium	mg/kg dw	14 - 15	93%	0.1686 - 1.184	0.7526 - 0.7526	0.387
Chromium	mg/kg dw	15 - 15	100%	14.23 - 91.84	– - –	27.8
Cobalt	mg/kg dw	15 - 15	100%	10.29 - 73.47	– - –	20.8
Copper	mg/kg dw	15 - 15	100%	12.93 - 102	– - –	30.2
Lead	mg/kg dw	15 - 15	100%	13.71 - 81.63	– - –	28.4
Manganese	mg/kg dw	15 - 15	100%	1800 - 20000	– - –	4834
Mercury	mg/kg dw	15 - 15	100%	0.03695 - 0.2857	– - –	0.0985
Molybdenum	mg/kg dw	12 - 15	80%	0.4857 - 3.878	1.199 - 3.505	1.44
Nickel	mg/kg dw	15 - 15	100%	17.71 - 122.4	– - –	36.5
Selenium	mg/kg dw	15 - 15	100%	1.524 - 12.45	– - –	4.05
Silver	mg/kg dw	6 - 15	40%	0.06928 - 0.2887	0.05314 - 0.2578	0.136
Strontium	mg/kg dw	15 - 15	100%	37.5 - 163.3	– - –	80.2
Thallium	mg/kg dw	12 - 15	80%	0.2771 - 0.4482	0.2629 - 0.9897	0.383
Vanadium	mg/kg dw	15 - 15	100%	22.63 - 167.3	– - –	44
Zinc	mg/kg dw	15 - 15	100%	52.42 - 381.6	– - –	117
Inorganic-cations/anions						
Calcium	mg/kg dw	15 - 15	100%	5341 - 91135	– - –	52300
Iron	mg/kg dw	15 - 15	100%	11316 - 94948	– - –	25300
Magnesium	mg/kg dw	15 - 15	100%	2549 - 40185	– - –	18200
Potassium	mg/kg dw	11 - 15	73%	2293 - 14959	2609 - 3989	4165
Sodium	mg/kg dw	11 - 15	73%	104.7 - 1176	135.5 - 479.4	257

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-184. Periphyton Dataset: Clinch River - Reference (Above CRM 4.5)

Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	2 - 2	100%	26122 - 43636	– - –	34900
Antimony	mg/kg dw	2 - 2	100%	0.2857 - 0.375	– - –	0.33
Arsenic	mg/kg dw	2 - 2	100%	19.39 - 23.86	– - –	21.6
Barium	mg/kg dw	2 - 2	100%	239.8 - 342	– - –	291
Beryllium	mg/kg dw	2 - 2	100%	1.327 - 1.932	– - –	1.63
Boron	mg/kg dw	2 - 2	100%	19.39 - 35.23	– - –	27.3
Cadmium	mg/kg dw	2 - 2	100%	0.5306 - 0.5341	– - –	0.532
Chromium	mg/kg dw	2 - 2	100%	29.59 - 46.59	– - –	38.1
Cobalt	mg/kg dw	2 - 2	100%	18.37 - 27.27	– - –	22.8
Copper	mg/kg dw	2 - 2	100%	46.94 - 50	– - –	48.5
Lead	mg/kg dw	2 - 2	100%	28.57 - 45.45	– - –	37
Manganese	mg/kg dw	2 - 2	100%	4459 - 6307	– - –	5383
Mercury	mg/kg dw	2 - 2	100%	1.122 - 1.591	– - –	1.36
Molybdenum	mg/kg dw	2 - 2	100%	0.8571 - 1.25	– - –	1.05
Nickel	mg/kg dw	2 - 2	100%	31.63 - 46.59	– - –	39.1
Selenium	mg/kg dw	2 - 2	100%	3.571 - 6.023	– - –	4.8
Silver	mg/kg dw	1 - 2	50%	0.1932 - 0.1932	0.1837 - 0.1837	0.188
Strontium	mg/kg dw	2 - 2	100%	67.05 - 86.73	– - –	76.9
Thallium	mg/kg dw	0 - 2	0%	– - –	0.3776 - 0.5	0.439
Vanadium	mg/kg dw	2 - 2	100%	45.92 - 68.18	– - –	57.1
Zinc	mg/kg dw	2 - 2	100%	187.8 - 188.6	– - –	188
Inorganic-cations/anions						
Calcium	mg/kg dw	2 - 2	100%	40909 - 78367	– - –	59600
Iron	mg/kg dw	2 - 2	100%	28878 - 49659	– - –	39300
Magnesium	mg/kg dw	2 - 2	100%	4755 - 6409	– - –	5582
Potassium	mg/kg dw	0 - 2	0%	– - –	7592 - 8523	8058
Sodium	mg/kg dw	0 - 2	0%	– - –	506.1 - 568.2	537

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-185. Periphyton Dataset: Clinch River - Reaches A and B (CRM 0.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	30868	69091	–	–	45700
Antimony	mg/kg dw	3 - 3	100%	0.4959	1.436	–	–	0.908
Arsenic	mg/kg dw	3 - 3	100%	39.67	74.55	–	–	52.9
Barium	mg/kg dw	3 - 3	100%	307	770.9	–	–	513
Beryllium	mg/kg dw	3 - 3	100%	2.603	5.455	–	–	3.61
Boron	mg/kg dw	3 - 3	100%	23.55	78.18	–	–	47.3
Cadmium	mg/kg dw	3 - 3	100%	0.5785	1.018	–	–	0.759
Chromium	mg/kg dw	3 - 3	100%	37.19	83.64	–	–	56
Cobalt	mg/kg dw	3 - 3	100%	23.97	52.73	–	–	34.8
Copper	mg/kg dw	3 - 3	100%	143.1	278.2	–	–	189
Lead	mg/kg dw	3 - 3	100%	32.64	80	–	–	51
Manganese	mg/kg dw	3 - 3	100%	5248	10855	–	–	7530
Mercury	mg/kg dw	3 - 3	100%	0.3926	0.9455	–	–	0.65
Molybdenum	mg/kg dw	3 - 3	100%	1.528	2.727	–	–	1.96
Nickel	mg/kg dw	3 - 3	100%	44.21	98.18	–	–	64.6
Selenium	mg/kg dw	3 - 3	100%	5.372	13.64	–	–	8.65
Silver	mg/kg dw	1 - 3	33%	0.2909	0.2909	0.1667	0.1818	0.213
Strontium	mg/kg dw	3 - 3	100%	85.12	283.6	–	–	201
Thallium	mg/kg dw	0 - 3	0%	–	–	0.6612	1.545	1.01
Vanadium	mg/kg dw	3 - 3	100%	84.3	167.3	–	–	113
Zinc	mg/kg dw	3 - 3	100%	226.9	472.7	–	–	309
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	12603	187500	–	–	112459
Iron	mg/kg dw	3 - 3	100%	30165	72727	–	–	46300
Magnesium	mg/kg dw	3 - 3	100%	3802	10818	–	–	7170
Potassium	mg/kg dw	0 - 3	0%	–	–	9139	27231	16500
Sodium	mg/kg dw	1 - 3	33%	811.1	811.1	865.5	1814	1164

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-186. Emergent Vegetation Dataset: Emory River - Reference (Above ERM 6.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	293.2	955	–	–	710
Antimony	mg/kg dw	0 - 3	0%	–	–	0.03509	0.1172	0.0724
Arsenic	mg/kg dw	3 - 3	100%	0.1429	0.5	–	–	0.339
Barium	mg/kg dw	3 - 3	100%	17.29	60.16	–	–	36
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.07268	0.2344	0.147
Boron	mg/kg dw	3 - 3	100%	6.516	57.81	–	–	25.1
Cadmium	mg/kg dw	2 - 3	67%	0.1328	0.16	0.06016	0.06016	0.118
Chromium	mg/kg dw	3 - 3	100%	0.5013	1.4	–	–	1.08
Cobalt	mg/kg dw	3 - 3	100%	0.4261	1.4	–	–	0.999
Copper	mg/kg dw	3 - 3	100%	2.757	8.594	–	–	5.78
Iron	mg/kg dw	3 - 3	100%	325.8	1080	–	–	810
Lead	mg/kg dw	3 - 3	100%	0.3509	1.016	–	–	0.756
Manganese	mg/kg dw	3 - 3	100%	443.6	535	–	–	501
Mercury	mg/kg dw	0 - 3	0%	–	–	0.02757	0.09375	0.0571
Molybdenum	mg/kg dw	3 - 3	100%	0.5514	0.9375	–	–	0.763
Nickel	mg/kg dw	3 - 3	100%	1.003	3.828	–	–	2.56
Selenium	mg/kg dw	0 - 3	0%	–	–	0.1654	0.5391	0.337
Silver	mg/kg dw	0 - 3	0%	–	–	0.007018	0.02266	0.0142
Strontium	mg/kg dw	3 - 3	100%	7.769	57.81	–	–	28
Thallium	mg/kg dw	0 - 3	0%	–	–	0.03258	0.1094	0.0673
Vanadium	mg/kg dw	3 - 3	100%	0.401	1.6	–	–	1.11
Zinc	mg/kg dw	3 - 3	100%	32.83	53.13	–	–	46.2
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	2632	24141	–	–	11100
Magnesium	mg/kg dw	3 - 3	100%	1068	7055	–	–	3460
Potassium	mg/kg dw	3 - 3	100%	11579	29531	–	–	18100
Sodium	mg/kg dw	0 - 3	0%	–	–	117.8	382	239

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-187. Emergent Vegetation Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	49.66	96.79	–	–	69.9
Antimony	mg/kg dw	0 - 3	0%	–	–	0.08929	0.1034	0.0941
Arsenic	mg/kg dw	0 - 3	0%	–	–	0.1731	0.3452	0.237
Barium	mg/kg dw	3 - 3	100%	25.6	39.74	–	–	34
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.1795	0.2069	0.19
Boron	mg/kg dw	3 - 3	100%	37.5	60	–	–	48.7
Cadmium	mg/kg dw	0 - 3	0%	–	–	0.04679	0.0531	0.049
Chromium	mg/kg dw	0 - 3	0%	–	–	0.7692	0.8276	0.79
Cobalt	mg/kg dw	3 - 3	100%	0.08929	0.3205	–	–	0.185
Copper	mg/kg dw	3 - 3	100%	8.333	8.966	–	–	8.54
Iron	mg/kg dw	3 - 3	100%	99.31	117.9	–	–	110
Lead	mg/kg dw	0 - 3	0%	–	–	0.1726	0.1931	0.18
Manganese	mg/kg dw	3 - 3	100%	135.1	333.8	–	–	223
Mercury	mg/kg dw	0 - 3	0%	–	–	0.07051	0.08276	0.0749
Molybdenum	mg/kg dw	3 - 3	100%	0.5833	1.282	–	–	1.01
Nickel	mg/kg dw	3 - 3	100%	0.8333	1.724	–	–	1.26
Selenium	mg/kg dw	1 - 3	33%	0.531	0.531	0.4167	0.8333	0.594
Silver	mg/kg dw	0 - 3	0%	–	–	0.01786	0.02	0.0186
Strontium	mg/kg dw	3 - 3	100%	36.9	69.23	–	–	55.4
Thallium	mg/kg dw	0 - 3	0%	–	–	0.08333	0.09655	0.0877
Vanadium	mg/kg dw	0 - 3	0%	–	–	0.2798	0.3172	0.293
Zinc	mg/kg dw	3 - 3	100%	30.34	39.1	–	–	35.3
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	16250	29359	–	–	23700
Magnesium	mg/kg dw	3 - 3	100%	5202	8414	–	–	7020
Potassium	mg/kg dw	3 - 3	100%	24167	31724	–	–	28000
Sodium	mg/kg dw	0 - 3	0%	–	–	297.6	336.6	311

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-188. Emergent Vegetation Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	70.51	167.3	–	–	106
Antimony	mg/kg dw	0 - 3	0%	–	–	0.04714	0.06452	0.0531
Arsenic	mg/kg dw	3 - 3	100%	0.1016	1.077	–	–	0.471
Barium	mg/kg dw	3 - 3	100%	22.86	43.32	–	–	34.4
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.09524	0.129	0.107
Boron	mg/kg dw	3 - 3	100%	13.8	28.57	–	–	19.1
Cadmium	mg/kg dw	3 - 3	100%	0.05387	0.2889	–	–	0.136
Chromium	mg/kg dw	1 - 3	33%	0.4377	0.4377	0.4127	0.553	0.468
Cobalt	mg/kg dw	3 - 3	100%	0.1556	0.553	–	–	0.323
Copper	mg/kg dw	3 - 3	100%	3.704	5.714	–	–	4.83
Iron	mg/kg dw	3 - 3	100%	109.8	235.7	–	–	159
Lead	mg/kg dw	2 - 3	67%	0.1429	0.2222	0.1198	0.1198	0.162
Manganese	mg/kg dw	3 - 3	100%	310.8	866.4	–	–	576
Mercury	mg/kg dw	0 - 3	0%	–	–	0.0381	0.05069	0.0431
Molybdenum	mg/kg dw	3 - 3	100%	0.8889	1.429	–	–	1.21
Nickel	mg/kg dw	3 - 3	100%	0.7071	1.429	–	–	0.987
Selenium	mg/kg dw	0 - 3	0%	–	–	0.4381	0.5899	0.494
Silver	mg/kg dw	0 - 3	0%	–	–	0.009206	0.01244	0.0105
Strontium	mg/kg dw	3 - 3	100%	11.75	35.94	–	–	22.4
Thallium	mg/kg dw	0 - 3	0%	–	–	0.04444	0.05991	0.0505
Vanadium	mg/kg dw	1 - 3	33%	0.3064	0.3064	0.1492	0.1982	0.218
Zinc	mg/kg dw	3 - 3	100%	28.28	47.62	–	–	37.1
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	3460	11336	–	–	7000
Magnesium	mg/kg dw	3 - 3	100%	1502	3074	–	–	2180
Potassium	mg/kg dw	3 - 3	100%	14343	22765	–	–	17200
Sodium	mg/kg dw	0 - 3	0%	–	–	155.9	211.1	176

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-189. Emergent Vegetation Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	141.9	440.1	–	–	248
Antimony	mg/kg dw	0 - 3	0%	–	–	0.0436	0.07558	0.0554
Arsenic	mg/kg dw	1 - 3	33%	0.2442	0.2442	0.1628	0.1846	0.197
Barium	mg/kg dw	3 - 3	100%	19.19	76.17	–	–	49.2
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.08721	0.1512	0.112
Boron	mg/kg dw	3 - 3	100%	13.08	50.58	–	–	26.6
Cadmium	mg/kg dw	2 - 3	67%	0.2791	0.3691	0.03953	0.03953	0.229
Chromium	mg/kg dw	0 - 3	0%	–	–	0.3779	0.6395	0.485
Cobalt	mg/kg dw	3 - 3	100%	0.2587	1.208	–	–	0.683
Copper	mg/kg dw	3 - 3	100%	4.07	7.558	–	–	5.67
Iron	mg/kg dw	3 - 3	100%	220.1	645.3	–	–	365
Lead	mg/kg dw	3 - 3	100%	0.198	0.5756	–	–	0.33
Manganese	mg/kg dw	3 - 3	100%	392.4	1591	–	–	865
Mercury	mg/kg dw	0 - 3	0%	–	–	0.03488	0.05814	0.0433
Molybdenum	mg/kg dw	3 - 3	100%	0.5705	0.9884	–	–	0.81
Nickel	mg/kg dw	3 - 3	100%	0.8721	2.093	–	–	1.44
Selenium	mg/kg dw	0 - 3	0%	–	–	0.3924	0.6977	0.512
Silver	mg/kg dw	0 - 3	0%	–	–	0.00843	0.01512	0.0111
Strontium	mg/kg dw	3 - 3	100%	12.21	50.58	–	–	31.9
Thallium	mg/kg dw	1 - 3	33%	0.05705	0.05705	0.0407	0.06977	0.0558
Vanadium	mg/kg dw	3 - 3	100%	0.1711	0.7558	–	–	0.385
Zinc	mg/kg dw	3 - 3	100%	36.34	57.05	–	–	44.1
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	3895	21047	–	–	10400
Magnesium	mg/kg dw	3 - 3	100%	1485	5360	–	–	3230
Potassium	mg/kg dw	3 - 3	100%	15101	26919	–	–	19200
Sodium	mg/kg dw	1 - 3	33%	231.7	231.7	159.7	248.8	213

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-190. Emergent Vegetation Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	202.8	506.8	–	–	356
Antimony	mg/kg dw	0 - 3	0%	–	–	0.09859	0.122	0.112
Arsenic	mg/kg dw	2 - 3	67%	0.2314	0.5285	0.1972	0.1972	0.319
Barium	mg/kg dw	3 - 3	100%	33.06	35.59	–	–	34.2
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.2042	0.252	0.232
Boron	mg/kg dw	3 - 3	100%	46.48	55.93	–	–	50.9
Cadmium	mg/kg dw	1 - 3	33%	0.1382	0.1382	0.05282	0.06198	0.0843
Chromium	mg/kg dw	0 - 3	0%	–	–	0.8451	1.074	0.979
Cobalt	mg/kg dw	3 - 3	100%	0.1972	0.6342	–	–	0.442
Copper	mg/kg dw	3 - 3	100%	8.451	11.86	–	–	9.8
Iron	mg/kg dw	3 - 3	100%	214.8	478	–	–	344
Lead	mg/kg dw	3 - 3	100%	0.2606	0.7881	–	–	0.512
Manganese	mg/kg dw	3 - 3	100%	97.18	400.9	–	–	269
Mercury	mg/kg dw	0 - 3	0%	–	–	0.07746	0.09756	0.0886
Molybdenum	mg/kg dw	3 - 3	100%	0.5282	0.9917	–	–	0.817
Nickel	mg/kg dw	3 - 3	100%	1.24	5.07	–	–	2.81
Selenium	mg/kg dw	0 - 3	0%	–	–	0.4648	0.5691	0.529
Silver	mg/kg dw	0 - 3	0%	–	–	0.01972	0.02439	0.0224
Strontium	mg/kg dw	3 - 3	100%	26.76	58.68	–	–	46.6
Thallium	mg/kg dw	0 - 3	0%	–	–	0.09859	0.1157	0.109
Vanadium	mg/kg dw	3 - 3	100%	0.3873	1.017	–	–	0.664
Zinc	mg/kg dw	3 - 3	100%	43.8	80.49	–	–	62.3
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	23732	28099	–	–	25500
Magnesium	mg/kg dw	3 - 3	100%	7348	8239	–	–	7800
Potassium	mg/kg dw	3 - 3	100%	20986	33388	–	–	29100
Sodium	mg/kg dw	0 - 3	0%	–	–	333.1	406.5	377

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-191. Emergent Vegetation Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	26.21	98.25	–	–	64.5
Antimony	mg/kg dw	0 - 3	0%	–	–	0.05645	0.07487	0.0661
Arsenic	mg/kg dw	3 - 3	100%	0.1979	0.7661	–	–	0.414
Barium	mg/kg dw	3 - 3	100%	26.21	44.92	–	–	36.2
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.1129	0.1551	0.134
Boron	mg/kg dw	3 - 3	100%	27.82	67.01	–	–	48.2
Cadmium	mg/kg dw	0 - 3	0%	–	–	0.02944	0.04011	0.0347
Chromium	mg/kg dw	0 - 3	0%	–	–	0.4839	0.6701	0.599
Cobalt	mg/kg dw	3 - 3	100%	0.06048	0.2781	–	–	0.165
Copper	mg/kg dw	3 - 3	100%	6.452	11.11	–	–	9.42
Iron	mg/kg dw	3 - 3	100%	82.26	121.1	–	–	105
Lead	mg/kg dw	3 - 3	100%	0.125	0.1872	–	–	0.165
Manganese	mg/kg dw	3 - 3	100%	326.3	386.6	–	–	357
Mercury	mg/kg dw	0 - 3	0%	–	–	0.04435	0.05882	0.0516
Molybdenum	mg/kg dw	3 - 3	100%	1.25	1.711	–	–	1.47
Nickel	mg/kg dw	3 - 3	100%	0.5242	1.551	–	–	1
Selenium	mg/kg dw	3 - 3	100%	0.4032	0.7487	–	–	0.556
Silver	mg/kg dw	0 - 3	0%	–	–	0.01129	0.01497	0.0131
Strontium	mg/kg dw	3 - 3	100%	24.6	55.61	–	–	44.7
Thallium	mg/kg dw	0 - 3	0%	–	–	0.05242	0.07487	0.0631
Vanadium	mg/kg dw	0 - 3	0%	–	–	0.1774	0.2406	0.208
Zinc	mg/kg dw	3 - 3	100%	34.27	53.8	–	–	43.6
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	10242	26316	–	–	19600
Magnesium	mg/kg dw	3 - 3	100%	3710	8342	–	–	6380
Potassium	mg/kg dw	3 - 3	100%	19798	29485	–	–	25700
Sodium	mg/kg dw	0 - 3	0%	–	–	186.7	253.5	219

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-192. Emergent Vegetation Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	88.44	154.1	–	–	115
Antimony	mg/kg dw	0 - 3	0%	–	–	0.04281	0.09524	0.069
Arsenic	mg/kg dw	1 - 3	33%	0.2523	0.2523	0.08563	0.1837	0.174
Barium	mg/kg dw	3 - 3	100%	16.97	42.81	–	–	28.5
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.09174	0.1973	0.142
Boron	mg/kg dw	3 - 3	100%	14.07	50.34	–	–	32.8
Cadmium	mg/kg dw	2 - 3	67%	0.05714	0.06881	0.02324	0.02324	0.0497
Chromium	mg/kg dw	1 - 3	33%	0.7798	0.7798	0.367	0.8163	0.654
Cobalt	mg/kg dw	3 - 3	100%	0.1973	0.4037	–	–	0.267
Copper	mg/kg dw	3 - 3	100%	6.422	10.2	–	–	7.99
Iron	mg/kg dw	3 - 3	100%	108.3	168.3	–	–	133
Lead	mg/kg dw	2 - 3	67%	0.1835	0.3394	0.1837	0.1837	0.236
Manganese	mg/kg dw	3 - 3	100%	98.17	600.7	–	–	386
Mercury	mg/kg dw	0 - 3	0%	–	–	0.0367	0.07483	0.0555
Molybdenum	mg/kg dw	3 - 3	100%	0.4587	1.468	–	–	1
Nickel	mg/kg dw	3 - 3	100%	1.239	2.783	–	–	1.93
Selenium	mg/kg dw	1 - 3	33%	0.3899	0.3899	0.208	0.4422	0.347
Silver	mg/kg dw	0 - 3	0%	–	–	0.008869	0.01905	0.0139
Strontium	mg/kg dw	3 - 3	100%	25.08	37.41	–	–	29.4
Thallium	mg/kg dw	0 - 3	0%	–	–	0.04281	0.08844	0.0652
Vanadium	mg/kg dw	1 - 3	33%	0.3257	0.3257	0.1407	0.2993	0.255
Zinc	mg/kg dw	3 - 3	100%	18.35	41.5	–	–	32.9
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	7248	17687	–	–	12800
Magnesium	mg/kg dw	3 - 3	100%	1936	5551	–	–	4010
Potassium	mg/kg dw	3 - 3	100%	11651	28776	–	–	19600
Sodium	mg/kg dw	0 - 3	0%	–	–	147.7	317	231

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-193. Emergent Vegetation Dataset: Tennessee River - Reference (Above TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	18.58	102	–	–	46.9
Antimony	mg/kg dw	0 - 3	0%	–	–	0.05242	0.06829	0.0587
Arsenic	mg/kg dw	1 - 3	33%	0.1344	0.1344	0.2097	0.2634	0.203
Barium	mg/kg dw	3 - 3	100%	3.557	43.41	–	–	24.9
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.1089	0.1366	0.119
Boron	mg/kg dw	3 - 3	100%	4.743	16.94	–	–	12.3
Cadmium	mg/kg dw	2 - 3	67%	0.06829	0.125	0.02846	0.02846	0.0739
Chromium	mg/kg dw	1 - 3	33%	1.317	1.317	0.4743	0.4839	0.758
Cobalt	mg/kg dw	3 - 3	100%	0.06855	1.22	–	–	0.477
Copper	mg/kg dw	3 - 3	100%	4.878	8.871	–	–	6.69
Iron	mg/kg dw	3 - 3	100%	55.65	243.4	–	–	124
Lead	mg/kg dw	1 - 3	33%	0.1129	0.1129	0.1028	0.1317	0.116
Manganese	mg/kg dw	3 - 3	100%	242.7	887.8	–	–	473
Mercury	mg/kg dw	0 - 3	0%	–	–	0.04348	0.05366	0.0472
Molybdenum	mg/kg dw	3 - 3	100%	0.2621	1.512	–	–	0.802
Nickel	mg/kg dw	2 - 3	67%	0.4585	0.6855	0.3676	0.3676	0.504
Selenium	mg/kg dw	0 - 3	0%	–	–	0.504	0.6293	0.546
Silver	mg/kg dw	1 - 3	33%	0.01532	0.01532	0.01067	0.01366	0.0132
Strontium	mg/kg dw	3 - 3	100%	4.348	37.56	–	–	24.3
Thallium	mg/kg dw	0 - 3	0%	–	–	0.05138	0.06341	0.0557
Vanadium	mg/kg dw	1 - 3	33%	0.2585	0.2585	0.1694	0.17	0.199
Zinc	mg/kg dw	3 - 3	100%	30.73	47.18	–	–	39.1
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	1980	13171	–	–	9240
Magnesium	mg/kg dw	3 - 3	100%	1289	4435	–	–	2950
Potassium	mg/kg dw	3 - 3	100%	12661	22439	–	–	16900
Sodium	mg/kg dw	1 - 3	33%	1798	1798	179.8	225.4	734

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-194. Emergent Vegetation Dataset: Tennessee River - Reach B (TRM 566.0 to TRM 568.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	92.77	362.2	–	–	215
Antimony	mg/kg dw	0 - 3	0%	–	–	0.06383	0.1102	0.0861
Arsenic	mg/kg dw	2 - 3	67%	0.2468	0.2677	0.3253	0.3253	0.28
Barium	mg/kg dw	3 - 3	100%	25.53	210.8	–	–	90.3
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.1277	0.2205	0.172
Boron	mg/kg dw	3 - 3	100%	11.91	51.97	–	–	31.9
Cadmium	mg/kg dw	0 - 3	0%	–	–	0.03362	0.05591	0.0445
Chromium	mg/kg dw	0 - 3	0%	–	–	0.5532	0.9449	0.74
Cobalt	mg/kg dw	3 - 3	100%	0.315	0.6024	–	–	0.438
Copper	mg/kg dw	3 - 3	100%	5.106	7.874	–	–	6.94
Iron	mg/kg dw	3 - 3	100%	122.9	419.7	–	–	233
Lead	mg/kg dw	2 - 3	67%	0.1702	0.4094	0.1627	0.1627	0.247
Manganese	mg/kg dw	3 - 3	100%	192.8	395.3	–	–	314
Mercury	mg/kg dw	0 - 3	0%	–	–	0.05106	0.08661	0.068
Molybdenum	mg/kg dw	3 - 3	100%	0.5482	1.102	–	–	0.848
Nickel	mg/kg dw	3 - 3	100%	0.4681	2.047	–	–	1.24
Selenium	mg/kg dw	0 - 3	0%	–	–	0.5915	1	0.79
Silver	mg/kg dw	0 - 3	0%	–	–	0.01277	0.02126	0.017
Strontium	mg/kg dw	3 - 3	100%	23.83	58.27	–	–	40.8
Thallium	mg/kg dw	0 - 3	0%	–	–	0.05957	0.1024	0.0801
Vanadium	mg/kg dw	2 - 3	67%	0.3106	0.6535	0.2651	0.2651	0.41
Zinc	mg/kg dw	3 - 3	100%	32.53	43.31	–	–	36.6
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	8426	25591	–	–	16000
Magnesium	mg/kg dw	3 - 3	100%	2574	8189	–	–	5580
Potassium	mg/kg dw	3 - 3	100%	14936	31205	–	–	23700
Sodium	mg/kg dw	0 - 3	0%	–	–	211.9	355.9	282

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-195. Shoreline Vegetation Dataset: Emory River - Reference (Above ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	37.25	206	–	–	137
Antimony	mg/kg dw	0 - 3	0%	–	–	0.0549	0.07609	0.065
Arsenic	mg/kg dw	0 - 3	0%	–	–	0.1059	0.1274	0.127
Barium	mg/kg dw	3 - 3	100%	47.06	120.9	–	–	77.5
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.1137	0.1576	0.133
Boron	mg/kg dw	3 - 3	100%	12.16	30.77	–	–	21.6
Cadmium	mg/kg dw	3 - 3	100%	0.1581	0.3859	–	–	0.298
Chromium	mg/kg dw	1 - 3	33%	0.902	0.902	0.5556	0.7065	0.721
Cobalt	mg/kg dw	3 - 3	100%	0.1961	0.5435	–	–	0.345
Copper	mg/kg dw	3 - 3	100%	5.128	11.96	–	–	8.44
Iron	mg/kg dw	3 - 3	100%	71.76	262	–	–	195
Lead	mg/kg dw	2 - 3	67%	0.2337	0.2436	0.1059	0.1059	0.194
Manganese	mg/kg dw	3 - 3	100%	206.7	348.9	–	–	265
Mercury	mg/kg dw	0 - 3	0%	–	–	0.04314	0.05978	0.0514
Molybdenum	mg/kg dw	3 - 3	100%	0.1923	0.5098	–	–	0.341
Nickel	mg/kg dw	3 - 3	100%	2.337	3.59	–	–	3.17
Selenium	mg/kg dw	0 - 3	0%	–	–	0.2588	0.3641	0.307
Silver	mg/kg dw	1 - 3	33%	0.07609	0.07609	0.01098	0.01282	0.0333
Strontium	mg/kg dw	3 - 3	100%	22.75	50.85	–	–	35.2
Thallium	mg/kg dw	0 - 3	0%	–	–	0.05098	0.07609	0.0623
Vanadium	mg/kg dw	1 - 3	33%	0.2949	0.2949	0.1765	0.2446	0.239
Zinc	mg/kg dw	3 - 3	100%	45.1	76.63	–	–	60.5
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	6667	15128	–	–	10500
Magnesium	mg/kg dw	3 - 3	100%	3027	4829	–	–	3940
Potassium	mg/kg dw	3 - 3	100%	12094	24783	–	–	17300
Sodium	mg/kg dw	0 - 3	0%	–	–	184.3	259.2	219

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-196. Shoreline Vegetation Dataset: Emory River - Reach A (ERM 0.0 to ERM 1.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	35.34	200.8	–	–	94.5
Antimony	mg/kg dw	0 - 3	0%	–	–	0.03769	0.05639	0.0467
Arsenic	mg/kg dw	0 - 3	0%	–	–	0.07143	0.1274	0.0908
Barium	mg/kg dw	3 - 3	100%	26.69	32.24	–	–	28.9
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.07538	0.1128	0.0945
Boron	mg/kg dw	3 - 3	100%	9.694	20.72	–	–	16.4
Cadmium	mg/kg dw	0 - 3	0%	–	–	0.01964	0.1165	0.0537
Chromium	mg/kg dw	1 - 3	33%	0.4592	0.4592	0.4276	0.4887	0.459
Cobalt	mg/kg dw	3 - 3	100%	0.09398	0.5528	–	–	0.278
Copper	mg/kg dw	3 - 3	100%	5.357	9.398	–	–	7.99
Iron	mg/kg dw	3 - 3	100%	66.92	265.3	–	–	136
Lead	mg/kg dw	2 - 3	67%	0.09211	0.1225	0.109	0.109	0.108
Manganese	mg/kg dw	3 - 3	100%	48.5	152	–	–	112
Mercury	mg/kg dw	0 - 3	0%	–	–	0.03015	0.04511	0.0371
Molybdenum	mg/kg dw	2 - 3	67%	0.5921	0.7895	0.09045	0.09045	0.491
Nickel	mg/kg dw	3 - 3	100%	0.8271	2.161	–	–	1.57
Selenium	mg/kg dw	0 - 3	0%	–	–	0.1735	0.2632	0.219
Silver	mg/kg dw	0 - 3	0%	–	–	0.007398	0.02594	0.0143
Strontium	mg/kg dw	3 - 3	100%	27.07	34.21	–	–	30
Thallium	mg/kg dw	0 - 3	0%	–	–	0.03518	0.05263	0.0446
Vanadium	mg/kg dw	1 - 3	33%	0.2806	0.2806	0.148	0.1767	0.202
Zinc	mg/kg dw	2 - 3	67%	19.9	32.24	38.35	38.35	30.2
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	7270	11805	–	–	9850
Magnesium	mg/kg dw	3 - 3	100%	1510	2434	–	–	1990
Potassium	mg/kg dw	3 - 3	100%	9924	17895	–	–	15000
Sodium	mg/kg dw	0 - 3	0%	–	–	124.2	186.5	156

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-197. Shoreline Vegetation Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	18.99	27.76	–	–	23.4
Antimony	mg/kg dw	0 - 3	0%	–	–	0.04982	0.05426	0.0516
Arsenic	mg/kg dw	3 - 3	100%	0.1317	0.3424	–	0.1274	0.211
Barium	mg/kg dw	3 - 3	100%	31.13	54.09	–	–	43
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.1032	0.1124	0.107
Boron	mg/kg dw	3 - 3	100%	8.915	9.609	–	–	9.29
Cadmium	mg/kg dw	0 - 3	0%	–	–	0.04626	0.0969	0.0672
Chromium	mg/kg dw	0 - 3	0%	–	–	0.4626	0.5039	0.478
Cobalt	mg/kg dw	3 - 3	100%	0.1362	0.3333	–	–	0.212
Copper	mg/kg dw	3 - 3	100%	5.426	6.05	–	–	5.64
Iron	mg/kg dw	3 - 3	100%	59.53	74.81	–	–	66.6
Lead	mg/kg dw	2 - 3	67%	0.1068	0.1089	0.1085	0.1085	0.108
Manganese	mg/kg dw	3 - 3	100%	268.1	883.7	–	–	491
Mercury	mg/kg dw	0 - 3	0%	–	–	0.04264	0.0428	0.0427
Molybdenum	mg/kg dw	3 - 3	100%	0.605	1.051	–	–	0.875
Nickel	mg/kg dw	3 - 3	100%	1.24	1.779	–	–	1.42
Selenium	mg/kg dw	0 - 3	0%	–	–	0.2384	0.2597	0.246
Silver	mg/kg dw	0 - 3	0%	–	–	0.01032	0.0144	0.012
Strontium	mg/kg dw	3 - 3	100%	18.29	23.64	–	–	21.8
Thallium	mg/kg dw	0 - 3	0%	–	–	0.04982	0.05426	0.0516
Vanadium	mg/kg dw	0 - 3	0%	–	–	0.1601	0.1744	0.166
Zinc	mg/kg dw	2 - 3	67%	50.97	55.16	35.27	35.27	47.1
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	4708	6318	–	–	5400
Magnesium	mg/kg dw	3 - 3	100%	2062	2412	–	–	2260
Potassium	mg/kg dw	3 - 3	100%	15552	19961	–	–	17200
Sodium	mg/kg dw	0 - 3	0%	–	–	170.8	185.7	177

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-198. Shoreline Vegetation Dataset: Emory River - Reach C (ERM 3.5 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	31.82	138.1	–	–	85
Antimony	mg/kg dw	0 - 3	0%	–	–	0.03423	0.04762	0.0424
Arsenic	mg/kg dw	1 - 3	33%	0.2687	0.2687	0.06846	0.1274	0.142
Barium	mg/kg dw	3 - 3	100%	24.69	66.67	–	–	42.8
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.0709	0.09524	0.0857
Boron	mg/kg dw	3 - 3	100%	10.02	12.59	–	–	10.9
Cadmium	mg/kg dw	1 - 3	33%	0.1491	0.1491	0.0487	0.119	0.106
Chromium	mg/kg dw	0 - 3	0%	–	–	0.3178	0.4082	0.372
Cobalt	mg/kg dw	3 - 3	100%	0.07143	0.3741	–	–	0.201
Copper	mg/kg dw	3 - 3	100%	4.89	6.169	–	–	5.61
Iron	mg/kg dw	3 - 3	100%	57.14	180.3	–	–	119
Lead	mg/kg dw	3 - 3	100%	0.1006	0.1905	–	–	0.139
Manganese	mg/kg dw	3 - 3	100%	247.1	642.9	–	–	411
Mercury	mg/kg dw	0 - 3	0%	–	–	0.02934	0.03741	0.0342
Molybdenum	mg/kg dw	3 - 3	100%	0.2825	1.687	–	–	0.793
Nickel	mg/kg dw	3 - 3	100%	1.701	2.175	–	–	2.01
Selenium	mg/kg dw	0 - 3	0%	–	–	0.1638	0.2211	0.198
Silver	mg/kg dw	0 - 3	0%	–	–	0.00709	0.009524	0.00857
Strontium	mg/kg dw	3 - 3	100%	16.87	22.45	–	–	19
Thallium	mg/kg dw	0 - 3	0%	–	–	0.03423	0.04422	0.0402
Vanadium	mg/kg dw	2 - 3	67%	0.132	0.2109	0.1396	0.1396	0.161
Zinc	mg/kg dw	2 - 3	67%	37.9	47.28	37.01	37.01	40.7
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	4903	5952	–	–	5350
Magnesium	mg/kg dw	3 - 3	100%	1511	2675	–	–	2110
Potassium	mg/kg dw	3 - 3	100%	9578	15102	–	–	12100
Sodium	mg/kg dw	0 - 3	0%	–	–	117.4	156.5	141

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-199. Shoreline Vegetation Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	26.35	32.55	–	–	29.7
Antimony	mg/kg dw	0 - 3	0%	–	–	0.0473	0.06604	0.0548
Arsenic	mg/kg dw	0 - 3	0%	–	–	0.08784	0.1274	0.105
Barium	mg/kg dw	3 - 3	100%	10.54	44.59	–	–	27.7
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.09459	0.1368	0.112
Boron	mg/kg dw	3 - 3	100%	12.59	19.81	–	–	16.9
Cadmium	mg/kg dw	1 - 3	33%	0.03176	0.03176	0.02687	0.03491	0.0312
Chromium	mg/kg dw	0 - 3	0%	–	–	0.4054	0.566	0.471
Cobalt	mg/kg dw	2 - 3	67%	0.06757	0.119	0.06604	0.06604	0.0842
Copper	mg/kg dw	3 - 3	100%	5.782	10.85	–	–	8.25
Iron	mg/kg dw	3 - 3	100%	49.66	77.83	–	–	60.8
Lead	mg/kg dw	1 - 3	33%	0.1081	0.1081	0.09864	0.1274	0.111
Manganese	mg/kg dw	3 - 3	100%	67.92	112.5	–	–	87.9
Mercury	mg/kg dw	0 - 3	0%	–	–	0.03716	0.05189	0.0433
Molybdenum	mg/kg dw	3 - 3	100%	0.277	1.429	–	–	0.977
Nickel	mg/kg dw	3 - 3	100%	0.5782	1.419	–	–	0.886
Selenium	mg/kg dw	0 - 3	0%	–	–	0.2162	0.3113	0.255
Silver	mg/kg dw	0 - 3	0%	–	–	0.009122	0.01321	0.0108
Strontium	mg/kg dw	3 - 3	100%	11.32	19.93	–	–	15.3
Thallium	mg/kg dw	0 - 3	0%	–	–	0.04392	0.06132	0.051
Vanadium	mg/kg dw	0 - 3	0%	–	–	0.1453	0.2123	0.173
Zinc	mg/kg dw	3 - 3	100%	30.66	42.57	–	–	34.7
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	6803	10330	–	–	8480
Magnesium	mg/kg dw	3 - 3	100%	2297	4505	–	–	3190
Potassium	mg/kg dw	3 - 3	100%	13367	20566	–	–	15900
Sodium	mg/kg dw	0 - 3	0%	–	–	153	221.7	181

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-200. Shoreline Vegetation Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	38.04	450.8	–	–	178
Antimony	mg/kg dw	0 - 3	0%	–	–	0.03627	0.053	0.0441
Arsenic	mg/kg dw	1 - 3	33%	0.3109	0.3109	0.08282	0.1274	0.164
Barium	mg/kg dw	3 - 3	100%	7.669	30.04	–	–	22.2
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.07513	0.106	0.09
Boron	mg/kg dw	3 - 3	100%	8.834	22.7	–	–	15.3
Cadmium	mg/kg dw	2 - 3	67%	0.03067	0.05181	0.02721	0.02721	0.0366
Chromium	mg/kg dw	1 - 3	33%	0.7254	0.7254	0.3681	0.4594	0.518
Cobalt	mg/kg dw	2 - 3	67%	0.05215	0.4404	0.04947	0.04947	0.181
Copper	mg/kg dw	3 - 3	100%	5.3	7.669	–	–	6.83
Iron	mg/kg dw	3 - 3	100%	53.99	435.2	–	–	187
Lead	mg/kg dw	3 - 3	100%	0.1012	1.244	–	–	0.483
Manganese	mg/kg dw	3 - 3	100%	19.43	57.25	–	–	39.6
Mercury	mg/kg dw	0 - 3	0%	–	–	0.0285	0.0424	0.0349
Molybdenum	mg/kg dw	3 - 3	100%	0.9509	1.554	–	–	1.34
Nickel	mg/kg dw	2 - 3	67%	0.424	0.8808	0.2914	0.2914	0.532
Selenium	mg/kg dw	0 - 3	0%	–	–	0.1736	0.2403	0.205
Silver	mg/kg dw	0 - 3	0%	–	–	0.007513	0.01025	0.00878
Strontium	mg/kg dw	3 - 3	100%	12.27	18.02	–	–	15.2
Thallium	mg/kg dw	0 - 3	0%	–	–	0.03627	0.04947	0.0419
Vanadium	mg/kg dw	1 - 3	33%	0.829	0.829	0.135	0.1625	0.376
Zinc	mg/kg dw	3 - 3	100%	29.33	36.5	–	–	32.9
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	5890	9378	–	–	7670
Magnesium	mg/kg dw	3 - 3	100%	1463	3057	–	–	2260
Potassium	mg/kg dw	3 - 3	100%	8342	22546	–	–	15700
Sodium	mg/kg dw	0 - 3	0%	–	–	124.1	171.4	146

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-201. Shoreline Vegetation Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	25.91	94.03	–	–	53.6
Antimony	mg/kg dw	0 - 3	0%	–	–	0.04179	0.06073	0.0497
Arsenic	mg/kg dw	0 - 3	0%	–	–	0.0806	0.1274	0.0946
Barium	mg/kg dw	3 - 3	100%	11.96	45.97	–	–	25
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.08657	0.1215	0.1
Boron	mg/kg dw	3 - 3	100%	11.34	18.21	–	–	14.9
Cadmium	mg/kg dw	3 - 3	100%	0.03279	0.05075	–	–	0.0445
Chromium	mg/kg dw	1 - 3	33%	0.6073	0.6073	0.3582	0.3987	0.455
Cobalt	mg/kg dw	3 - 3	100%	0.08638	0.3881	–	–	0.193
Copper	mg/kg dw	3 - 3	100%	7.164	12.55	–	–	10.2
Iron	mg/kg dw	3 - 3	100%	55.15	76.72	–	–	69.3
Lead	mg/kg dw	3 - 3	100%	0.09302	0.1612	–	–	0.132
Manganese	mg/kg dw	3 - 3	100%	118.6	267.2	–	–	200
Mercury	mg/kg dw	0 - 3	0%	–	–	0.03284	0.04858	0.0393
Molybdenum	mg/kg dw	3 - 3	100%	0.2567	4.319	–	–	2.25
Nickel	mg/kg dw	3 - 3	100%	0.598	2.836	–	–	1.47
Selenium	mg/kg dw	0 - 3	0%	–	–	0.194	0.2753	0.228
Silver	mg/kg dw	1 - 3	33%	0.01741	0.01741	0.008358	0.009302	0.0117
Strontium	mg/kg dw	3 - 3	100%	15.95	23.58	–	–	20.7
Thallium	mg/kg dw	0 - 3	0%	–	–	0.03881	0.05668	0.0462
Vanadium	mg/kg dw	0 - 3	0%	–	–	0.1313	0.1862	0.155
Zinc	mg/kg dw	3 - 3	100%	28.36	38.46	–	–	34.5
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	7015	9190	–	–	7900
Magnesium	mg/kg dw	3 - 3	100%	2254	2968	–	–	2510
Potassium	mg/kg dw	3 - 3	100%	14534	16716	–	–	15600
Sodium	mg/kg dw	0 - 3	0%	–	–	139.1	197.2	163

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-202. Shoreline Vegetation Dataset: Tennessee River - Reference (Above TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	175.8	223.4	–	–	196
Antimony	mg/kg dw	0 - 3	0%	–	–	0.04545	0.05814	0.052
Arsenic	mg/kg dw	0 - 3	0%	–	–	0.09091	0.1274	0.103
Barium	mg/kg dw	3 - 3	100%	6.169	49.19	–	–	24.7
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.0974	0.1163	0.108
Boron	mg/kg dw	3 - 3	100%	4.221	12.5	–	–	7.38
Cadmium	mg/kg dw	0 - 3	0%	–	–	0.02468	0.1331	0.0681
Chromium	mg/kg dw	2 - 3	67%	0.5242	0.5519	0.5039	0.5039	0.527
Cobalt	mg/kg dw	3 - 3	100%	0.1163	0.375	–	–	0.206
Copper	mg/kg dw	3 - 3	100%	9.416	26.36	–	–	17.4
Iron	mg/kg dw	3 - 3	100%	206.5	228.9	–	–	215
Lead	mg/kg dw	3 - 3	100%	0.246	0.7364	–	–	0.428
Manganese	mg/kg dw	3 - 3	100%	418.8	758.1	–	–	556
Mercury	mg/kg dw	0 - 3	0%	–	–	0.03896	0.04651	0.0433
Molybdenum	mg/kg dw	3 - 3	100%	0.1948	1.976	–	–	1.18
Nickel	mg/kg dw	3 - 3	100%	0.8065	5.039	–	–	2.34
Selenium	mg/kg dw	0 - 3	0%	–	–	0.2208	0.2713	0.249
Silver	mg/kg dw	0 - 3	0%	–	–	0.009416	0.02558	0.0153
Strontium	mg/kg dw	3 - 3	100%	6.494	34.27	–	–	18.8
Thallium	mg/kg dw	0 - 3	0%	–	–	0.04545	0.05426	0.0507
Vanadium	mg/kg dw	3 - 3	100%	0.2752	0.3117	–	–	0.288
Zinc	mg/kg dw	1 - 3	33%	60.48	60.48	30.84	42.64	44.7
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	3042	12339	–	–	7100
Magnesium	mg/kg dw	3 - 3	100%	1750	4556	–	–	3040
Potassium	mg/kg dw	3 - 3	100%	14838	21357	–	–	17600
Sodium	mg/kg dw	0 - 3	0%	–	–	156.8	192.6	177

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-203. Shoreline Vegetation Dataset: Tennessee River - Reach B (TRM 566.0 to TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 3	100%	14.49	36.26	–	–	24.4
Antimony	mg/kg dw	0 - 3	0%	–	–	0.04058	0.05344	0.0468
Arsenic	mg/kg dw	2 - 3	67%	0.1101	0.1637	0.1069	0.1274	0.127
Barium	mg/kg dw	3 - 3	100%	27.48	34.88	–	–	30.5
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.08406	0.1107	0.097
Boron	mg/kg dw	3 - 3	100%	4.982	6.957	–	–	6.14
Cadmium	mg/kg dw	0 - 3	0%	–	–	0.02174	0.02901	0.0251
Chromium	mg/kg dw	0 - 3	0%	–	–	0.3768	0.4962	0.433
Cobalt	mg/kg dw	3 - 3	100%	0.07117	0.1374	–	–	0.0975
Copper	mg/kg dw	3 - 3	100%	6.406	8.397	–	–	7.25
Iron	mg/kg dw	3 - 3	100%	56.52	72.52	–	–	64
Lead	mg/kg dw	2 - 3	67%	0.1459	0.3397	0.08116	0.08116	0.189
Manganese	mg/kg dw	3 - 3	100%	167.5	366.5	–	–	290
Mercury	mg/kg dw	0 - 3	0%	–	–	0.03188	0.04198	0.0377
Molybdenum	mg/kg dw	3 - 3	100%	0.1679	2.899	–	–	1.34
Nickel	mg/kg dw	3 - 3	100%	0.6087	1.489	–	–	1.07
Selenium	mg/kg dw	0 - 3	0%	–	–	0.1942	0.2557	0.224
Silver	mg/kg dw	0 - 3	0%	–	–	0.008406	0.01107	0.00958
Strontium	mg/kg dw	3 - 3	100%	11.39	12.75	–	–	12.1
Thallium	mg/kg dw	0 - 3	0%	–	–	0.04058	0.05344	0.0468
Vanadium	mg/kg dw	0 - 3	0%	–	–	0.1304	0.1718	0.151
Zinc	mg/kg dw	3 - 3	100%	61.83	76.87	–	–	71.6
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	4493	4626	–	–	4580
Magnesium	mg/kg dw	3 - 3	100%	1859	2779	–	–	2430
Potassium	mg/kg dw	3 - 3	100%	12870	16031	–	–	14600
Sodium	mg/kg dw	0 - 3	0%	–	–	138.3	182.8	159

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-204. Great Blue Heron Egg (2009) Dataset: Tennessee River - Reference (TRM 569.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations	Detection Limits	Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min Max	Min Max	
Inorganics						
Aluminum	mg/kg dw	0 - 5	0%	– - –	84.3 - 138	119
Antimony	mg/kg dw	0 - 5	0%	– - –	0.34 - 0.55	0.474
Arsenic	mg/kg dw	0 - 5	0%	– - –	0.34 - 0.55	0.474
Barium	mg/kg dw	4 - 5	80%	0.36 - 0.66	0.55 - 0.55	0.542
Beryllium	mg/kg dw	0 - 5	0%	– - –	0.34 - 0.55	0.474
Boron	mg/kg dw	0 - 5	0%	– - –	6.7 - 11	9.48
Cadmium	mg/kg dw	0 - 5	0%	– - –	0.34 - 0.55	0.474
Chromium	mg/kg dw	0 - 5	0%	– - –	0.34 - 0.55	0.474
Cobalt	mg/kg dw	0 - 5	0%	– - –	0.34 - 0.55	0.474
Copper	mg/kg dw	5 - 5	100%	1.7 - 4.6	– - –	3.38
Iron	mg/kg dw	0 - 5	0%	– - –	84.3 - 138	119
Lead	mg/kg dw	0 - 5	0%	– - –	0.34 - 0.55	0.474
Manganese	mg/kg dw	3 - 5	60%	2.4 - 3.5	1.7 - 2.6	2.7
Mercury	mg/kg dw	5 - 5	100%	0.11 - 0.99	– - –	0.348
Molybdenum	mg/kg dw	0 - 5	0%	– - –	3.4 - 5.5	4.74
Nickel	mg/kg dw	0 - 5	0%	– - –	0.34 - 0.55	0.474
Selenium	mg/kg dw	5 - 5	100%	1.6 - 3.2	– - –	2.52
Silver	mg/kg dw	0 - 5	0%	– - –	0.17 - 0.28	0.24
Strontium	mg/kg dw	5 - 5	100%	0.61 - 3.7	– - –	1.5
Thallium	mg/kg dw	0 - 5	0%	– - –	0.34 - 0.55	0.474
Vanadium	mg/kg dw	0 - 5	0%	– - –	0.67 - 1.1	0.934
Zinc	mg/kg dw	5 - 5	100%	30.3 - 68.8	– - –	51.9
Inorganic-cations/anions						
Calcium	mg/kg dw	5 - 5	100%	1480 - 16800	– - –	5420
Magnesium	mg/kg dw	2 - 5	40%	564 - 637	337 - 519	502
Potassium	mg/kg dw	5 - 5	100%	4930 - 6310	– - –	5630
Sodium	mg/kg dw	5 - 5	100%	6850 - 9280	– - –	7960

Note: Great blue heron egg concentrations presented in mg/kg dw, using a default site-specific percent moisture of 81 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-205. Great Blue Heron Egg (2009) Dataset: Emory River - Reach B (ERM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 5	0%	–	–	126	166	143
Antimony	mg/kg dw	0 - 5	0%	–	–	0.51	0.67	0.576
Arsenic	mg/kg dw	0 - 5	0%	–	–	0.51	0.67	0.576
Barium	mg/kg dw	2 - 5	40%	0.71	1	0.51	0.67	0.686
Beryllium	mg/kg dw	0 - 5	0%	–	–	0.51	0.67	0.576
Boron	mg/kg dw	0 - 5	0%	–	–	10.1	13.3	11.4
Cadmium	mg/kg dw	0 - 5	0%	–	–	0.51	0.67	0.576
Chromium	mg/kg dw	0 - 5	0%	–	–	0.51	0.67	0.576
Cobalt	mg/kg dw	0 - 5	0%	–	–	0.51	0.67	0.576
Copper	mg/kg dw	5 - 5	100%	3.1	18.5	–	–	7.84
Iron	mg/kg dw	0 - 5	0%	–	–	126	166	143
Lead	mg/kg dw	0 - 5	0%	–	–	0.51	0.67	0.576
Manganese	mg/kg dw	2 - 5	40%	3	3.1	2.5	3.3	3
Mercury	mg/kg dw	5 - 5	100%	0.26	0.6	–	–	0.412
Molybdenum	mg/kg dw	0 - 5	0%	–	–	5.1	6.7	5.76
Nickel	mg/kg dw	1 - 5	20%	3	3	0.51	0.67	1.05
Selenium	mg/kg dw	5 - 5	100%	2.4	3.3	–	–	2.9
Silver	mg/kg dw	0 - 5	0%	–	–	0.25	0.33	0.286
Strontium	mg/kg dw	5 - 5	100%	0.8	4.2	–	–	1.78
Thallium	mg/kg dw	0 - 5	0%	–	–	0.51	0.67	0.576
Vanadium	mg/kg dw	0 - 5	0%	–	–	1	1.3	1.14
Zinc	mg/kg dw	5 - 5	100%	28.5	77.9	–	–	47.4
Inorganic-cations/anions								
Calcium	mg/kg dw	5 - 5	100%	1600	10700	–	–	4090
Magnesium	mg/kg dw	3 - 5	60%	542	691	505	665	606
Potassium	mg/kg dw	5 - 5	100%	5420	7720	–	–	6760
Sodium	mg/kg dw	5 - 5	100%	7490	12200	–	–	10500

Note: Great blue heron egg concentrations presented in mg/kg dw, using a default site-specific percent moisture of 81 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-206. Great Blue Heron Egg (2010) Dataset: Tennessee River - Reference (TRM 569.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 4	0%	–	–	14.7	23	19.4
Antimony	mg/kg dw	0 - 4	0%	–	–	0.053	0.083	0.0703
Arsenic	mg/kg dw	0 - 4	0%	–	–	0.1	0.16	0.135
Barium	mg/kg dw	4 - 4	100%	0.57	0.83	–	–	0.715
Beryllium	mg/kg dw	0 - 4	0%	–	–	0.11	0.17	0.143
Boron	mg/kg dw	0 - 4	0%	–	–	1.5	2.4	2
Cadmium	mg/kg dw	0 - 4	0%	–	–	0.028	0.044	0.037
Chromium	mg/kg dw	0 - 4	0%	–	–	0.47	0.73	0.618
Cobalt	mg/kg dw	2 - 4	50%	0.062	0.078	0.072	0.081	0.0733
Copper	mg/kg dw	4 - 4	100%	3.2	7.1	–	–	5.55
Iron	mg/kg dw	4 - 4	100%	95.3	113	–	–	106
Lead	mg/kg dw	0 - 4	0%	–	–	0.1	0.16	0.135
Manganese	mg/kg dw	4 - 4	100%	2.5	5.7	–	–	4.3
Mercury	mg/kg dw	4 - 4	100%	0.21	0.96	–	–	0.425
Molybdenum	mg/kg dw	4 - 4	100%	0.48	0.69	–	–	0.568
Nickel	mg/kg dw	0 - 4	0%	–	–	0.36	0.56	0.475
Selenium	mg/kg dw	4 - 4	100%	2.6	3	–	–	2.78
Silver	mg/kg dw	0 - 4	0%	–	–	0.011	0.017	0.0143
Strontium	mg/kg dw	4 - 4	100%	1.1	5	–	–	2.28
Thallium	mg/kg dw	0 - 4	0%	–	–	0.051	0.079	0.067
Vanadium	mg/kg dw	0 - 4	0%	–	–	0.17	0.26	0.22
Zinc	mg/kg dw	4 - 4	100%	46.1	67.2	–	–	60.8
Inorganic-cations/anions								
Calcium	mg/kg dw	4 - 4	100%	2500	23400	–	–	8030
Magnesium	mg/kg dw	4 - 4	100%	546	1010	–	–	736
Potassium	mg/kg dw	4 - 4	100%	7030	8680	–	–	7650
Sodium	mg/kg dw	4 - 4	100%	8450	12300	–	–	10600

Note: Great blue heron egg concentrations presented in mg/kg dw, using a default site-specific percent moisture of 81 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-207. Great Blue Heron Egg (2010) Dataset: Emory River - Reach B (ERM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 9	0%	–	–	19	26.2	22.1
Antimony	mg/kg dw	0 - 9	0%	–	–	0.069	0.095	0.0802
Arsenic	mg/kg dw	0 - 9	0%	–	–	0.13	0.18	0.156
Barium	mg/kg dw	9 - 9	100%	0.53	3.7	–	–	1.36
Beryllium	mg/kg dw	0 - 9	0%	–	–	0.14	0.19	0.162
Boron	mg/kg dw	0 - 9	0%	–	–	2	2.7	2.31
Cadmium	mg/kg dw	0 - 9	0%	–	–	0.036	0.05	0.0422
Chromium	mg/kg dw	0 - 9	0%	–	–	0.6	0.83	0.701
Cobalt	mg/kg dw	0 - 9	0%	–	–	0.067	0.14	0.0914
Copper	mg/kg dw	9 - 9	100%	3.8	9.6	–	–	5.9
Iron	mg/kg dw	9 - 9	100%	94	163	–	–	122
Lead	mg/kg dw	0 - 9	0%	–	–	0.13	0.18	0.155
Manganese	mg/kg dw	9 - 9	100%	2	4.6	–	–	3.47
Mercury	mg/kg dw	9 - 9	100%	0.2	1.989	–	–	0.794
Molybdenum	mg/kg dw	0 - 9	0%	–	–	0.6	1.7	1.07
Nickel	mg/kg dw	0 - 9	0%	–	–	0.46	0.64	0.54
Selenium	mg/kg dw	9 - 9	100%	2.6	5	–	–	3.64
Silver	mg/kg dw	0 - 9	0%	–	–	0.014	0.025	0.017
Strontium	mg/kg dw	9 - 9	100%	1	3.1	–	–	1.74
Thallium	mg/kg dw	0 - 9	0%	–	–	0.065	0.09	0.0764
Vanadium	mg/kg dw	0 - 9	0%	–	–	0.22	0.3	0.252
Zinc	mg/kg dw	9 - 9	100%	53.1	76.3	–	–	60.7
Inorganic-cations/anions								
Calcium	mg/kg dw	9 - 9	100%	2400	7020	–	–	3490
Magnesium	mg/kg dw	9 - 9	100%	462	967	–	–	665
Potassium	mg/kg dw	9 - 9	100%	6590	9420	–	–	7740
Sodium	mg/kg dw	9 - 9	100%	8590	15800	–	–	11500

Note: Great blue heron egg concentrations presented in mg/kg dw, using a default site-specific percent moisture of 81 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-208. Osprey Egg (2009) Dataset: Tennessee River - Reference (Above TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 2	0%	–	–	141	162	152
Antimony	mg/kg dw	0 - 2	0%	–	–	0.56	0.65	0.605
Arsenic	mg/kg dw	0 - 2	0%	–	–	0.56	0.65	0.605
Barium	mg/kg dw	0 - 2	0%	–	–	0.56	0.65	0.605
Beryllium	mg/kg dw	0 - 2	0%	–	–	0.56	0.65	0.605
Boron	mg/kg dw	0 - 2	0%	–	–	11.3	12.9	12.1
Cadmium	mg/kg dw	0 - 2	0%	–	–	0.56	0.65	0.605
Chromium	mg/kg dw	0 - 2	0%	–	–	0.56	0.65	0.605
Cobalt	mg/kg dw	0 - 2	0%	–	–	0.56	0.65	0.605
Copper	mg/kg dw	0 - 2	0%	–	–	2.8	3.2	3
Iron	mg/kg dw	0 - 2	0%	–	–	141	162	152
Lead	mg/kg dw	0 - 2	0%	–	–	0.56	0.65	0.605
Manganese	mg/kg dw	0 - 2	0%	–	–	2.8	3.2	3
Mercury	mg/kg dw	2 - 2	100%	0.31	0.36	–	–	0.335
Molybdenum	mg/kg dw	0 - 2	0%	–	–	5.6	6.5	6.05
Nickel	mg/kg dw	0 - 2	0%	–	–	0.56	0.65	0.605
Selenium	mg/kg dw	2 - 2	100%	1.5	1.6	–	–	1.55
Silver	mg/kg dw	0 - 2	0%	–	–	0.28	0.32	0.3
Strontium	mg/kg dw	0 - 2	0%	–	–	0.56	0.65	0.605
Thallium	mg/kg dw	0 - 2	0%	–	–	0.56	0.65	0.605
Vanadium	mg/kg dw	0 - 2	0%	–	–	1.1	1.3	1.2
Zinc	mg/kg dw	1 - 2	50%	29.4	29.4	13.2	13.2	21.3
Inorganic-cations/anions								
Calcium	mg/kg dw	2 - 2	100%	1120	1650	–	–	1390
Magnesium	mg/kg dw	0 - 2	0%	–	–	563	646	605
Potassium	mg/kg dw	2 - 2	100%	6010	6020	–	–	6020
Sodium	mg/kg dw	2 - 2	100%	9560	9800	–	–	9680

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-209. Osprey Egg (2009) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5) and Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 4	0%	–	–	106	174	139
Antimony	mg/kg dw	0 - 4	0%	–	–	0.42	0.7	0.558
Arsenic	mg/kg dw	0 - 4	0%	–	–	0.42	0.7	0.558
Barium	mg/kg dw	0 - 4	0%	–	–	0.42	0.7	0.558
Beryllium	mg/kg dw	0 - 4	0%	–	–	0.42	0.7	0.558
Boron	mg/kg dw	0 - 4	0%	–	–	8.5	13.9	11.2
Cadmium	mg/kg dw	0 - 4	0%	–	–	0.42	0.7	0.558
Chromium	mg/kg dw	0 - 4	0%	–	–	0.42	0.7	0.558
Cobalt	mg/kg dw	0 - 4	0%	–	–	0.42	0.7	0.558
Copper	mg/kg dw	0 - 4	0%	–	–	2.1	3.5	2.78
Iron	mg/kg dw	1 - 4	25%	165	165	127	174	154
Lead	mg/kg dw	0 - 4	0%	–	–	0.42	0.7	0.558
Manganese	mg/kg dw	1 - 4	25%	2.4	2.4	2.5	3.5	2.85
Mercury	mg/kg dw	4 - 4	100%	0.2	0.28	–	–	0.24
Molybdenum	mg/kg dw	0 - 4	0%	–	–	4.2	7	5.58
Nickel	mg/kg dw	0 - 4	0%	–	–	0.42	0.7	0.558
Selenium	mg/kg dw	4 - 4	100%	2	2.6	–	–	2.28
Silver	mg/kg dw	0 - 4	0%	–	–	0.21	0.35	0.278
Strontium	mg/kg dw	3 - 4	75%	0.6	0.8	0.6	0.6	0.695
Thallium	mg/kg dw	0 - 4	0%	–	–	0.42	0.7	0.558
Vanadium	mg/kg dw	0 - 4	0%	–	–	0.85	1.4	1.11
Zinc	mg/kg dw	4 - 4	100%	24.4	76.8	–	–	45.7
Inorganic-cations/anions								
Calcium	mg/kg dw	4 - 4	100%	1330	2690	–	–	1880
Magnesium	mg/kg dw	0 - 4	0%	–	–	424	696	557
Potassium	mg/kg dw	4 - 4	100%	3870	6620	–	–	5240
Sodium	mg/kg dw	4 - 4	100%	5120	10100	–	–	8170

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-210. Osprey Egg (2009) Dataset: Tennessee River - Reach A (TRM 550.0 to TRM 566.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 3	0%	–	–	98.4	165	142
Antimony	mg/kg dw	0 - 3	0%	–	–	0.39	0.66	0.567
Arsenic	mg/kg dw	0 - 3	0%	–	–	0.39	0.66	0.567
Barium	mg/kg dw	0 - 3	0%	–	–	0.39	0.66	0.567
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.39	0.66	0.567
Boron	mg/kg dw	0 - 3	0%	–	–	7.9	13.2	11.4
Cadmium	mg/kg dw	0 - 3	0%	–	–	0.39	0.66	0.567
Chromium	mg/kg dw	0 - 3	0%	–	–	0.39	0.66	0.567
Cobalt	mg/kg dw	0 - 3	0%	–	–	0.39	0.66	0.567
Copper	mg/kg dw	0 - 3	0%	–	–	2	3.3	2.83
Iron	mg/kg dw	1 - 3	33%	129	129	162	165	152
Lead	mg/kg dw	0 - 3	0%	–	–	0.39	0.66	0.567
Manganese	mg/kg dw	0 - 3	0%	–	–	2	3.3	2.83
Mercury	mg/kg dw	3 - 3	100%	0.16	0.26	–	–	0.193
Molybdenum	mg/kg dw	0 - 3	0%	–	–	3.9	6.6	5.67
Nickel	mg/kg dw	0 - 3	0%	–	–	0.39	0.66	0.567
Selenium	mg/kg dw	3 - 3	100%	1.7	2	–	–	1.8
Silver	mg/kg dw	0 - 3	0%	–	–	0.2	0.33	0.283
Strontium	mg/kg dw	2 - 3	67%	0.78	1.1	0.66	0.66	0.847
Thallium	mg/kg dw	0 - 3	0%	–	–	0.39	0.66	0.567
Vanadium	mg/kg dw	0 - 3	0%	–	–	0.79	1.3	1.13
Zinc	mg/kg dw	3 - 3	100%	36	65.6	–	–	48.7
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	1840	2420	–	–	2080
Magnesium	mg/kg dw	0 - 3	0%	–	–	394	662	568
Potassium	mg/kg dw	3 - 3	100%	3510	7460	–	–	5720
Sodium	mg/kg dw	3 - 3	100%	5200	11200	–	–	8970

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-211. Osprey Egg (2010) Dataset: Tennessee River - Reference (Above TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 5	0%	–	–	20.8	27.7	23.7
Antimony	mg/kg dw	1 - 5	20%	0.43	0.43	0.075	0.1	0.157
Arsenic	mg/kg dw	0 - 5	0%	–	–	0.15	0.19	0.166
Barium	mg/kg dw	1 - 5	20%	0.31	0.31	0.24	0.32	0.288
Beryllium	mg/kg dw	0 - 5	0%	–	–	0.15	0.2	0.172
Boron	mg/kg dw	0 - 5	0%	–	–	2.2	2.9	2.48
Cadmium	mg/kg dw	0 - 5	0%	–	–	0.04	0.053	0.0452
Chromium	mg/kg dw	1 - 5	20%	1.5	1.5	0.66	0.79	0.876
Cobalt	mg/kg dw	0 - 5	0%	–	–	0.073	0.097	0.0836
Copper	mg/kg dw	5 - 5	100%	1.8	4.4	–	–	2.6
Iron	mg/kg dw	4 - 5	80%	91.1	197	73.3	73.3	126
Lead	mg/kg dw	1 - 5	20%	0.57	0.57	0.15	0.19	0.25
Manganese	mg/kg dw	4 - 5	80%	1.4	2.8	1	1	1.78
Mercury	mg/kg dw	5 - 5	100%	0.21	0.89	–	–	0.58
Molybdenum	mg/kg dw	0 - 5	0%	–	–	0.18	0.24	0.206
Nickel	mg/kg dw	1 - 5	20%	0.9	0.9	0.51	0.61	0.624
Selenium	mg/kg dw	5 - 5	100%	1.9	4.7	–	–	3.02
Silver	mg/kg dw	0 - 5	0%	–	–	0.015	0.02	0.0172
Strontium	mg/kg dw	5 - 5	100%	0.73	1.2	–	–	0.958
Thallium	mg/kg dw	0 - 5	0%	–	–	0.072	0.095	0.0818
Vanadium	mg/kg dw	1 - 5	20%	0.51	0.51	0.24	0.28	0.31
Zinc	mg/kg dw	5 - 5	100%	34	86.2	–	–	59.6
Inorganic-cations/anions								
Calcium	mg/kg dw	5 - 5	100%	1720	3900	–	–	2800
Magnesium	mg/kg dw	5 - 5	100%	436	1050	–	–	708
Potassium	mg/kg dw	5 - 5	100%	5780	17100	–	–	9800
Sodium	mg/kg dw	5 - 5	100%	9460	25800	–	–	15200

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-212. Osprey Egg (2010) Dataset: Emory River - Reach B (ERM 1.5 to ERM 3.5) and Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 2	0%	–	–	23.3	24.3	23.8
Antimony	mg/kg dw	0 - 2	0%	–	–	0.084	0.088	0.086
Arsenic	mg/kg dw	0 - 2	0%	–	–	0.16	0.34	0.25
Barium	mg/kg dw	1 - 2	50%	0.27	0.27	0.28	0.28	0.275
Beryllium	mg/kg dw	0 - 2	0%	–	–	0.17	0.36	0.265
Boron	mg/kg dw	0 - 2	0%	–	–	2.4	2.5	2.45
Cadmium	mg/kg dw	0 - 2	0%	–	–	0.044	0.046	0.045
Chromium	mg/kg dw	0 - 2	0%	–	–	0.74	0.77	0.755
Cobalt	mg/kg dw	0 - 2	0%	–	–	0.082	0.086	0.084
Copper	mg/kg dw	2 - 2	100%	1.5	2.2	–	–	1.85
Iron	mg/kg dw	1 - 2	50%	92.1	92.1	70.3	70.3	81.2
Lead	mg/kg dw	0 - 2	0%	–	–	0.16	0.17	0.165
Manganese	mg/kg dw	2 - 2	100%	1.4	1.8	–	–	1.6
Mercury	mg/kg dw	2 - 2	100%	0.34	0.36	–	–	0.35
Molybdenum	mg/kg dw	0 - 2	0%	–	–	0.21	0.21	0.21
Nickel	mg/kg dw	0 - 2	0%	–	–	0.57	0.59	0.58
Selenium	mg/kg dw	2 - 2	100%	2.5	3	–	–	2.75
Silver	mg/kg dw	0 - 2	0%	–	–	0.017	0.018	0.0175
Strontium	mg/kg dw	2 - 2	100%	0.59	0.9	–	–	0.745
Thallium	mg/kg dw	0 - 2	0%	–	–	0.08	0.084	0.082
Vanadium	mg/kg dw	0 - 2	0%	–	–	0.27	0.28	0.275
Zinc	mg/kg dw	2 - 2	100%	30.9	50.5	–	–	40.7
Inorganic-cations/anions								
Calcium	mg/kg dw	2 - 2	100%	1270	2270	–	–	1770
Magnesium	mg/kg dw	2 - 2	100%	362	574	–	–	468
Potassium	mg/kg dw	2 - 2	100%	5540	7110	–	–	6330
Sodium	mg/kg dw	2 - 2	100%	8650	9150	–	–	8900

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-213. Osprey Egg (2010) Dataset: Tennessee River - Reaches A and B (TRM 550.0 to TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 3	0%	–	–	25	27.7	26.1
Antimony	mg/kg dw	0 - 3	0%	–	–	0.09	0.1	0.0943
Arsenic	mg/kg dw	0 - 3	0%	–	–	0.18	0.19	0.183
Barium	mg/kg dw	1 - 3	33%	0.33	0.33	0.29	0.32	0.313
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.18	0.2	0.19
Boron	mg/kg dw	0 - 3	0%	–	–	2.6	2.9	2.73
Cadmium	mg/kg dw	0 - 3	0%	–	–	0.048	0.053	0.05
Chromium	mg/kg dw	0 - 3	0%	–	–	0.79	0.88	0.827
Cobalt	mg/kg dw	0 - 3	0%	–	–	0.088	0.098	0.092
Copper	mg/kg dw	3 - 3	100%	2	2.3	–	–	2.17
Iron	mg/kg dw	3 - 3	100%	85	197	–	–	125
Lead	mg/kg dw	0 - 3	0%	–	–	0.17	0.19	0.18
Manganese	mg/kg dw	2 - 3	67%	1.3	2.6	1.2	1.2	1.7
Mercury	mg/kg dw	3 - 3	100%	0.18	0.68	–	–	0.387
Molybdenum	mg/kg dw	0 - 3	0%	–	–	0.22	0.24	0.23
Nickel	mg/kg dw	0 - 3	0%	–	–	0.61	0.68	0.64
Selenium	mg/kg dw	3 - 3	100%	2.4	2.8	–	–	2.53
Silver	mg/kg dw	0 - 3	0%	–	–	0.018	0.02	0.019
Strontium	mg/kg dw	3 - 3	100%	0.89	1.2	–	–	0.993
Thallium	mg/kg dw	0 - 3	0%	–	–	0.086	0.096	0.09
Vanadium	mg/kg dw	0 - 3	0%	–	–	0.29	0.32	0.3
Zinc	mg/kg dw	3 - 3	100%	37.2	73.9	–	–	51.9
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	2180	3120	–	–	2500
Magnesium	mg/kg dw	3 - 3	100%	641	705	–	–	673
Potassium	mg/kg dw	3 - 3	100%	7230	8780	–	–	8180
Sodium	mg/kg dw	3 - 3	100%	11100	13500	–	–	12500

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-214. Raccoon Blood (2009) Dataset: Reference

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Concentration [b]
Inorganics								
Aluminum	mg/kg ww	0 - 5	0%	–	–	0.87	0.89	0.882
Antimony	mg/kg ww	0 - 5	0%	–	–	0.019	0.04	0.0272
Arsenic	mg/kg ww	0 - 5	0%	–	–	0.016	0.034	0.0266
Barium	mg/kg ww	1 - 5	20%	0.057	0.057	0.02	0.022	0.0284
Beryllium	mg/kg ww	0 - 5	0%	–	–	0.0032	0.0033	0.00328
Boron	mg/kg ww	0 - 5	0%	–	–	0.063	0.11	0.073
Cadmium	mg/kg ww	0 - 5	0%	–	–	0.0059	0.014	0.00916
Chromium	mg/kg ww	0 - 5	0%	–	–	0.12	0.12	0.12
Cobalt	mg/kg ww	0 - 5	0%	–	–	0.0048	0.013	0.00854
Copper	mg/kg ww	5 - 5	100%	0.99	2	–	–	1.398
Lead	mg/kg ww	1 - 5	20%	0.011	0.011	0.01	0.022	0.0128
Manganese	mg/kg ww	1 - 5	20%	0.25	0.25	0.083	0.084	0.1166
Mercury	mg/kg ww	1 - 5	20%	0.0086	0.0086	0.0042	0.005	0.00528
Molybdenum	mg/kg ww	1 - 5	20%	0.12	0.12	0.037	0.11	0.0806
Nickel	mg/kg ww	0 - 5	0%	–	–	0.033	0.034	0.0334
Selenium	mg/kg ww	5 - 5	100%	0.43	0.47	–	–	0.454
Silver	mg/kg ww	0 - 5	0%	–	–	0.003	0.003	0.003
Strontium	mg/kg ww	2 - 5	40%	0.022	0.022	0.015	0.029	0.0218
Thallium	mg/kg ww	0 - 5	0%	–	–	0.015	0.03	0.0238
Vanadium	mg/kg ww	0 - 5	0%	–	–	0.054	0.11	0.0878
Zinc	mg/kg ww	5 - 5	100%	3.8	15.4	–	–	10.24
Inorganic-cations/anions								
Calcium	mg/kg ww	3 - 5	60%	51.3	56.9	49	50	52.52
Iron	mg/kg ww	5 - 5	100%	61.3	434	–	–	322.86
Magnesium	mg/kg ww	1 - 5	20%	101	101	49	50	59.8
Potassium	mg/kg ww	5 - 5	100%	594	2180	–	–	944.8
Sodium	mg/kg ww	5 - 5	100%	1490	3020	–	–	2592

Note: 2009 Reference location includes samples collected from Melton Hill Dam.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-215. Raccoon Blood (2009) Dataset: Impacted

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 10	0%	–	–	0.83	0.89	0.874
Antimony	mg/kg ww	0 - 10	0%	–	–	0.019	0.062	0.0275
Arsenic	mg/kg ww	0 - 10	0%	–	–	0.015	0.034	0.0265
Barium	mg/kg ww	1 - 10	10%	0.025	0.025	0.019	0.042	0.0227
Beryllium	mg/kg ww	0 - 10	0%	–	–	0.0031	0.01	0.00459
Boron	mg/kg ww	0 - 10	0%	–	–	0.061	0.26	0.0864
Cadmium	mg/kg ww	0 - 10	0%	–	–	0.0056	0.014	0.00754
Chromium	mg/kg ww	0 - 10	0%	–	–	0.12	0.12	0.12
Cobalt	mg/kg ww	0 - 10	0%	–	–	0.0048	0.014	0.00775
Copper	mg/kg ww	10 - 10	100%	0.98	4.6	–	–	1.588
Lead	mg/kg ww	1 - 10	10%	0.03	0.03	0.01	0.018	0.0134
Manganese	mg/kg ww	1 - 10	10%	0.27	0.27	0.079	0.17	0.1103
Mercury	mg/kg ww	5 - 10	50%	0.0047	0.015	0.0042	0.02	0.01002
Molybdenum	mg/kg ww	1 - 10	10%	0.25	0.25	0.033	0.082	0.0694
Nickel	mg/kg ww	1 - 10	10%	0.04	0.04	0.032	0.034	0.0337
Selenium	mg/kg ww	10 - 10	100%	0.27	1	–	–	0.477
Silver	mg/kg ww	0 - 10	0%	–	–	0.0028	0.003	0.00296
Strontium	mg/kg ww	8 - 10	80%	0.018	0.046	0.015	0.021	0.0241
Thallium	mg/kg ww	0 - 10	0%	–	–	0.014	0.03	0.0222
Vanadium	mg/kg ww	0 - 10	0%	–	–	0.052	0.11	0.082
Zinc	mg/kg ww	10 - 10	100%	3.7	21.9	–	–	9.34
Inorganic-cations/anions								
Calcium	mg/kg ww	9 - 10	90%	50.5	62	48.8	48.8	54.83
Iron	mg/kg ww	10 - 10	100%	25.8	434	–	–	306.48
Magnesium	mg/kg ww	1 - 10	10%	149	149	47	50	59.19
Potassium	mg/kg ww	10 - 10	100%	593	3200	–	–	910.3
Sodium	mg/kg ww	10 - 10	100%	1430	3060	–	–	2711

Note: 2009 Impacted location includes samples collected from the East, West, and North Embayments, the Intake Channel, and Clinch River mile 2.5.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-216. Raccoon Blood (2010) Dataset: Reference

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 5	0%	–	–	3.7	4.1	3.94
Antimony	mg/kg ww	0 - 5	0%	–	–	0.013	0.015	0.014
Arsenic	mg/kg ww	0 - 5	0%	–	–	0.026	0.029	0.0276
Barium	mg/kg ww	1 - 5	20%	0.057	0.057	0.044	0.047	0.048
Beryllium	mg/kg ww	0 - 5	0%	–	–	0.027	0.03	0.0288
Boron	mg/kg ww	0 - 5	0%	–	–	0.38	0.42	0.404
Cadmium	mg/kg ww	0 - 5	0%	–	–	0.007	0.0078	0.00748
Chromium	mg/kg ww	0 - 5	0%	–	–	0.12	0.13	0.126
Cobalt	mg/kg ww	1 - 5	20%	0.016	0.016	0.014	0.014	0.0144
Copper	mg/kg ww	5 - 5	100%	1.2	1.8	–	–	1.4
Lead	mg/kg ww	3 - 5	60%	0.029	0.037	0.026	0.027	0.031
Manganese	mg/kg ww	0 - 5	0%	–	–	0.16	0.17	0.168
Mercury	mg/kg ww	1 - 5	20%	0.019	0.019	0.011	0.012	0.013
Molybdenum	mg/kg ww	3 - 5	60%	0.063	0.087	0.034	0.056	0.062
Nickel	mg/kg ww	0 - 5	0%	–	–	0.09	0.1	0.096
Selenium	mg/kg ww	5 - 5	100%	0.36	0.53	–	–	0.434
Silver	mg/kg ww	0 - 5	0%	–	–	0.0027	0.0029	0.00284
Strontium	mg/kg ww	0 - 5	0%	–	–	0.041	0.045	0.0434
Thallium	mg/kg ww	0 - 5	0%	–	–	0.013	0.014	0.0136
Vanadium	mg/kg ww	0 - 5	0%	–	–	0.042	0.047	0.0448
Zinc	mg/kg ww	5 - 5	100%	4.6	8.2	–	–	6.08
Inorganic-cations/anions								
Calcium	mg/kg ww	5 - 5	100%	55.4	85.1	–	–	69.24
Iron	mg/kg ww	5 - 5	100%	304	481	–	–	397
Magnesium	mg/kg ww	2 - 5	40%	44.8	60.4	46.7	49.1	49.8
Potassium	mg/kg ww	3 - 5	60%	706	1090	683	720	784.2
Sodium	mg/kg ww	5 - 5	100%	2880	3980	–	–	3274

Note: 2010 Reference location includes samples collected from Hugo Property and Knox County, Tennessee.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-217. Raccoon Blood (2010) Dataset: Impacted

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	1 - 10	10%	4	4	3.5	4.1	3.72
Antimony	mg/kg ww	0 - 10	0%	–	–	0.013	0.015	0.0133
Arsenic	mg/kg ww	0 - 10	0%	–	–	0.025	0.029	0.026
Barium	mg/kg ww	1 - 10	10%	0.078	0.078	0.04	0.044	0.0453
Beryllium	mg/kg ww	0 - 10	0%	–	–	0.026	0.03	0.0271
Boron	mg/kg ww	0 - 10	0%	–	–	0.36	0.42	0.382
Cadmium	mg/kg ww	0 - 10	0%	–	–	0.0067	0.0078	0.00702
Chromium	mg/kg ww	0 - 10	0%	–	–	0.11	0.13	0.117
Cobalt	mg/kg ww	0 - 10	0%	–	–	0.012	0.014	0.0128
Copper	mg/kg ww	10 - 10	100%	1.2	1.7	–	–	1.47
Lead	mg/kg ww	2 - 10	20%	0.056	0.074	0.024	0.027	0.0334
Manganese	mg/kg ww	0 - 10	0%	–	–	0.15	0.17	0.157
Mercury	mg/kg ww	2 - 10	20%	0.021	0.032	0.01	0.012	0.0139
Molybdenum	mg/kg ww	6 - 10	60%	0.054	0.12	0.059	0.082	0.072
Nickel	mg/kg ww	0 - 10	0%	–	–	0.085	0.1	0.0898
Selenium	mg/kg ww	10 - 10	100%	0.37	0.62	–	–	0.459
Silver	mg/kg ww	0 - 10	0%	–	–	0.0025	0.003	0.00267
Strontium	mg/kg ww	3 - 10	30%	0.041	0.048	0.039	0.042	0.0412
Thallium	mg/kg ww	0 - 10	0%	–	–	0.012	0.014	0.0127
Vanadium	mg/kg ww	0 - 10	0%	–	–	0.04	0.047	0.0421
Zinc	mg/kg ww	10 - 10	100%	3.4	13	–	–	6.53
Inorganic-cations/anions								
Calcium	mg/kg ww	10 - 10	100%	56.4	69.4	–	–	62.35
Iron	mg/kg ww	10 - 10	100%	324	563	–	–	394.8
Magnesium	mg/kg ww	5 - 10	50%	42.2	52.7	43.6	49.2	46.25
Potassium	mg/kg ww	6 - 10	60%	663	801	636	678	703.6
Sodium	mg/kg ww	10 - 10	100%	2740	3440	–	–	3029

Note: 2010 Impacted location includes samples collected from East, West, and North Embayments and the Intake Channel.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-218. Raccoon Skeletal Muscle (2009) Dataset: Reference

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	1 - 5	20%	1.306	1.306	0.837	1.403	1.06
Antimony	mg/kg ww	0 - 5	0%	–	–	0.01734	0.0378	0.026
Arsenic	mg/kg ww	0 - 5	0%	–	–	0.01403	0.03421	0.0268
Barium	mg/kg ww	2 - 5	40%	0.02167	0.05865	0.01971	0.0425	0.033
Beryllium	mg/kg ww	0 - 5	0%	–	–	0.00306	0.003276	0.0032
Boron	mg/kg ww	0 - 5	0%	–	–	0.05865	0.0875	0.067
Cadmium	mg/kg ww	0 - 5	0%	–	–	0.005355	0.03	0.014
Chromium	mg/kg ww	0 - 5	0%	–	–	0.1097	0.1225	0.12
Cobalt	mg/kg ww	0 - 5	0%	–	–	0.00459	0.01	0.0076
Copper	mg/kg ww	5 - 5	100%	1.301	1.663	–	–	1.47
Lead	mg/kg ww	0 - 5	0%	–	–	0.009435	0.0105	0.0101
Manganese	mg/kg ww	5 - 5	100%	0.105	0.2219	–	–	0.16
Mercury	mg/kg ww	3 - 5	60%	0.005292	0.024	0.00765	0.01701	0.0146
Molybdenum	mg/kg ww	1 - 5	20%	0.0425	0.0425	0.0306	0.04354	0.038
Nickel	mg/kg ww	2 - 5	40%	0.03276	0.04043	0.0306	0.0325	0.0337
Selenium	mg/kg ww	5 - 5	100%	0.2168	0.297	–	–	0.247
Silver	mg/kg ww	0 - 5	0%	–	–	0.002772	0.0055	0.0034
Strontium	mg/kg ww	0 - 5	0%	–	–	0.01352	0.05	0.0221
Thallium	mg/kg ww	0 - 5	0%	–	–	0.01326	0.0297	0.0229
Vanadium	mg/kg ww	0 - 5	0%	–	–	0.04845	0.11	0.085
Zinc	mg/kg ww	5 - 5	100%	48.83	69.87	–	–	62.29
Inorganic-cations/anions								
Calcium	mg/kg ww	0 - 5	0%	–	–	44.63	49.75	47.83
Iron	mg/kg ww	5 - 5	100%	28.56	35.91	–	–	32.38
Magnesium	mg/kg ww	5 - 5	100%	234.8	267.1	–	–	248.3
Potassium	mg/kg ww	5 - 5	100%	3203	4077	–	–	3687
Sodium	mg/kg ww	5 - 5	100%	504	727.7	–	–	581.9

Note: 2009 Reference location includes samples collected from Melton Hill Dam.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-219. Raccoon Skeletal Muscle (2009) Dataset: Impacted

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	3 - 10	30%	1.109	4.5	0.8214	3.979	1.66
Antimony	mg/kg ww	0 - 10	0%	–	–	0.0173	0.04032	0.023
Arsenic	mg/kg ww	2 - 10	20%	0.01755	0.05994	0.015	0.03705	0.03
Barium	mg/kg ww	8 - 10	80%	0.02174	0.1445	0.03108	0.04032	0.047
Beryllium	mg/kg ww	0 - 10	0%	–	–	0.002976	0.009288	0.0038
Boron	mg/kg ww	0 - 10	0%	–	–	0.05882	0.0645	0.062
Cadmium	mg/kg ww	0 - 10	0%	–	–	0.005536	0.01334	0.00828
Chromium	mg/kg ww	5 - 10	50%	0.13	1.445	0.1154	0.1224	0.264
Cobalt	mg/kg ww	0 - 10	0%	–	–	0.004693	0.01858	0.00826
Copper	mg/kg ww	10 - 10	100%	1.058	1.889	–	–	1.54
Lead	mg/kg ww	0 - 10	0%	–	–	0.009688	0.01058	0.0101
Manganese	mg/kg ww	10 - 10	100%	0.1359	0.519	–	–	0.222
Mercury	mg/kg ww	8 - 10	80%	0.01032	0.1037	0.03211	0.03354	0.029
Molybdenum	mg/kg ww	1 - 10	10%	0.08122	0.08122	0.02717	0.1109	0.0492
Nickel	mg/kg ww	7 - 10	70%	0.03668	0.3354	0.03096	0.03458	0.0671
Selenium	mg/kg ww	10 - 10	100%	0.23	0.5418	–	–	0.366
Silver	mg/kg ww	0 - 10	0%	–	–	0.002699	0.003096	0.00292
Strontium	mg/kg ww	7 - 10	70%	0.01471	0.02717	0.01457	0.02367	0.0186
Thallium	mg/kg ww	0 - 10	0%	–	–	0.01315	0.03096	0.021
Vanadium	mg/kg ww	0 - 10	0%	–	–	0.04844	0.1084	0.0786
Zinc	mg/kg ww	10 - 10	100%	15.09	60.63	–	–	51
Inorganic-cations/anions								
Calcium	mg/kg ww	1 - 10	10%	58.21	58.21	44.98	49.54	48.55
Iron	mg/kg ww	10 - 10	100%	21.22	46.82	–	–	36.19
Magnesium	mg/kg ww	10 - 10	100%	122.2	272.5	–	–	228.3
Potassium	mg/kg ww	10 - 10	100%	2545	4347	–	–	3617
Sodium	mg/kg ww	10 - 10	100%	482.5	1421	–	–	683.9

Note: 2009 Impacted location includes samples collected from the East, West, and North Embayments, the Intake Channel, and Clinch River mile 2.5.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-220. Raccoon Skeletal Muscle (2010) Dataset: Reference

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 5	0%	–	–	3.6	4	3.76
Antimony	mg/kg ww	0 - 5	0%	–	–	0.013	0.014	0.0134
Arsenic	mg/kg ww	0 - 5	0%	–	–	0.025	0.028	0.0266
Barium	mg/kg ww	3 - 5	60%	0.044	0.13	0.041	0.046	0.0648
Beryllium	mg/kg ww	0 - 5	0%	–	–	0.027	0.03	0.028
Boron	mg/kg ww	0 - 5	0%	–	–	0.37	0.41	0.39
Cadmium	mg/kg ww	0 - 5	0%	–	–	0.0069	0.023	0.0103
Chromium	mg/kg ww	0 - 5	0%	–	–	0.11	0.13	0.12
Cobalt	mg/kg ww	0 - 5	0%	–	–	0.013	0.014	0.0134
Copper	mg/kg ww	5 - 5	100%	1.4	1.8	–	–	1.66
Lead	mg/kg ww	0 - 5	0%	–	–	0.025	0.028	0.0262
Manganese	mg/kg ww	4 - 5	80%	0.18	0.21	0.16	0.16	0.186
Mercury	mg/kg ww	3 - 5	60%	0.025	0.12	0.014	0.049	0.0466
Molybdenum	mg/kg ww	3 - 5	60%	0.05	0.067	0.034	0.035	0.0476
Nickel	mg/kg ww	0 - 5	0%	–	–	0.088	0.098	0.0922
Selenium	mg/kg ww	5 - 5	100%	0.22	0.35	–	–	0.286
Silver	mg/kg ww	0 - 5	0%	–	–	0.0026	0.0029	0.00272
Strontium	mg/kg ww	0 - 5	0%	–	–	0.04	0.044	0.0416
Thallium	mg/kg ww	0 - 5	0%	–	–	0.012	0.014	0.0132
Vanadium	mg/kg ww	0 - 5	0%	–	–	0.041	0.046	0.0432
Zinc	mg/kg ww	5 - 5	100%	53.3	67.3	–	–	60.96
Inorganic-cations/anions								
Calcium	mg/kg ww	3 - 5	60%	46.8	55.6	43.4	47.9	48.74
Iron	mg/kg ww	5 - 5	100%	18.6	32.4	–	–	27.76
Magnesium	mg/kg ww	5 - 5	100%	256	301	–	–	270.4
Potassium	mg/kg ww	5 - 5	100%	3740	4470	–	–	4048
Sodium	mg/kg ww	5 - 5	100%	490	657	–	–	601

Note: 2010 Reference location includes samples collected from Hugo Property and Knox County, Tennessee.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-221. Raccoon Skeletal Muscle (2010) Dataset: Impacted

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	1 - 10	10%	5.5	5.5	3.5	4.1	4.05
Antimony	mg/kg ww	1 - 10	10%	0.31	0.31	0.013	0.015	0.0438
Arsenic	mg/kg ww	3 - 10	30%	0.025	0.07	0.026	0.029	0.036
Barium	mg/kg ww	3 - 10	30%	0.046	0.064	0.043	0.048	0.0488
Beryllium	mg/kg ww	0 - 10	0%	–	–	0.026	0.031	0.0286
Boron	mg/kg ww	0 - 10	0%	–	–	0.37	0.43	0.402
Cadmium	mg/kg ww	1 - 10	10%	0.17	0.17	0.0071	0.0079	0.0237
Chromium	mg/kg ww	1 - 10	10%	0.93	0.93	0.11	0.13	0.204
Cobalt	mg/kg ww	1 - 10	10%	0.063	0.063	0.013	0.015	0.0188
Copper	mg/kg ww	10 - 10	100%	1.3	16.7	–	–	3.27
Lead	mg/kg ww	1 - 10	10%	3.2	3.2	0.026	0.029	0.345
Manganese	mg/kg ww	8 - 10	80%	0.18	2.7	0.17	0.18	0.473
Mercury	mg/kg ww	10 - 10	100%	0.012	0.39	–	–	0.0941
Molybdenum	mg/kg ww	6 - 10	60%	0.042	0.81	0.034	0.05	0.123
Nickel	mg/kg ww	0 - 10	0%	–	–	0.086	0.1	0.094
Selenium	mg/kg ww	10 - 10	100%	0.31	1.3	–	–	0.492
Silver	mg/kg ww	1 - 10	10%	0.014	0.014	0.0027	0.003	0.00394
Strontium	mg/kg ww	1 - 10	10%	0.053	0.053	0.041	0.046	0.0442
Thallium	mg/kg ww	0 - 10	0%	–	–	0.012	0.014	0.0133
Vanadium	mg/kg ww	2 - 10	20%	0.25	0.36	0.042	0.047	0.0968
Zinc	mg/kg ww	10 - 10	100%	39.5	73.3	–	–	57.76
Inorganic-cations/anions								
Calcium	mg/kg ww	5 - 10	50%	50	85.9	45.1	49.8	54.22
Iron	mg/kg ww	10 - 10	100%	27.1	733	–	–	108.94
Magnesium	mg/kg ww	10 - 10	100%	188	292	–	–	265.1
Potassium	mg/kg ww	10 - 10	100%	2320	4160	–	–	3728
Sodium	mg/kg ww	10 - 10	100%	446	1790	–	–	736.3

Note: 2010 Impacted location includes samples collected from East, West, and North Embayments and the Intake Channel.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-222. Raccoon Kidney (2009) Dataset: Reference

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	1 - 5	20%	158.4	158.4	0.8	0.8416	32.34
Antimony	mg/kg ww	0 - 5	0%	–	–	0.01794	0.036	0.024
Arsenic	mg/kg ww	1 - 5	20%	0.814	0.814	0.01469	0.0322	0.185
Barium	mg/kg ww	4 - 5	80%	0.0437	3.256	0.04471	0.04471	0.713
Beryllium	mg/kg ww	0 - 5	0%	–	–	0.00299	0.01276	0.005
Boron	mg/kg ww	0 - 5	0%	–	–	0.0598	1.188	0.291
Cadmium	mg/kg ww	4 - 5	80%	0.46	2.262	0.00572	0.00572	1.12
Chromium	mg/kg ww	3 - 5	60%	0.1288	0.396	0.114	0.1153	0.19
Cobalt	mg/kg ww	0 - 5	0%	–	–	0.01788	0.1232	0.0463
Copper	mg/kg ww	5 - 5	100%	3.58	8.866	–	–	4.8
Lead	mg/kg ww	3 - 5	60%	0.04294	0.308	0.04208	0.056	0.131
Manganese	mg/kg ww	5 - 5	100%	0.66	18.13	–	–	4.28
Mercury	mg/kg ww	5 - 5	100%	0.0192	0.66	–	–	0.18
Molybdenum	mg/kg ww	5 - 5	100%	0.1034	0.42	–	–	0.315
Nickel	mg/kg ww	4 - 5	80%	0.034	0.1782	0.03164	0.03164	0.067
Selenium	mg/kg ww	5 - 5	100%	1.153	4.224	–	–	2.01
Silver	mg/kg ww	0 - 5	0%	–	–	0.002712	0.002893	0.0028
Strontium	mg/kg ww	4 - 5	80%	0.023	1.342	0.062	0.062	0.296
Thallium	mg/kg ww	0 - 5	0%	–	–	0.01379	0.02893	0.0245
Vanadium	mg/kg ww	1 - 5	20%	0.352	0.352	0.0506	0.1052	0.132
Zinc	mg/kg ww	5 - 5	100%	16.68	180.2	–	–	51.77
Inorganic-cations/anions								
Calcium	mg/kg ww	5 - 5	100%	62.86	413.6	–	–	158.4
Iron	mg/kg ww	5 - 5	100%	51.6	125.8	–	–	96.73
Magnesium	mg/kg ww	5 - 5	100%	91.52	142.5	–	–	121.9
Potassium	mg/kg ww	5 - 5	100%	108	2175	–	–	1477
Sodium	mg/kg ww	5 - 5	100%	158.6	2060	–	–	1580

Note: 2009 Reference location includes samples collected from Melton Hill Dam.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-223. Raccoon Kidney (2009) Dataset: Impacted

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	1 - 10	10%	1.9	1.9	0.7956	1.196	0.985
Antimony	mg/kg ww	0 - 10	0%	–	–	0.01612	0.03612	0.0217
Arsenic	mg/kg ww	1 - 10	10%	0.0304	0.0304	0.01445	0.05264	0.0293
Barium	mg/kg ww	8 - 10	80%	0.0351	0.0988	0.07224	0.0893	0.0653
Beryllium	mg/kg ww	0 - 10	0%	–	–	0.00286	0.0094	0.0038
Boron	mg/kg ww	0 - 10	0%	–	–	0.0546	0.2322	0.082
Cadmium	mg/kg ww	10 - 10	100%	0.24	3.253	–	–	1.748
Chromium	mg/kg ww	4 - 10	40%	0.1269	0.1562	0.1123	0.1203	0.126
Cobalt	mg/kg ww	4 - 10	40%	0.022	0.0598	0.01393	0.0399	0.0312
Copper	mg/kg ww	10 - 10	100%	3.196	5.616	–	–	4.22
Lead	mg/kg ww	6 - 10	60%	0.0376	0.129	0.0442	0.09594	0.067
Manganese	mg/kg ww	10 - 10	100%	0.6708	1.8	–	–	1.09
Mercury	mg/kg ww	10 - 10	100%	0.051	0.4212	–	–	0.153
Molybdenum	mg/kg ww	10 - 10	100%	0.2632	0.5148	–	–	0.39
Nickel	mg/kg ww	7 - 10	70%	0.03196	0.1045	0.03096	0.1215	0.059
Selenium	mg/kg ww	10 - 10	100%	1.354	2.802	–	–	1.81
Silver	mg/kg ww	0 - 10	0%	–	–	0.002522	0.00304	0.0028
Strontium	mg/kg ww	8 - 10	80%	0.021	0.06665	0.03276	0.04386	0.041
Thallium	mg/kg ww	0 - 10	0%	–	–	0.01222	0.0304	0.0209
Vanadium	mg/kg ww	1 - 10	10%	0.07	0.07	0.0468	0.1083	0.079
Zinc	mg/kg ww	10 - 10	100%	15.3	27.3	–	–	20.49
Inorganic-cations/anions								
Calcium	mg/kg ww	10 - 10	100%	49.2	172.3	–	–	86.66
Iron	mg/kg ww	10 - 10	100%	53.77	186	–	–	99.41
Magnesium	mg/kg ww	10 - 10	100%	112.2	153	–	–	135.4
Potassium	mg/kg ww	10 - 10	100%	1474	2109	–	–	1824
Sodium	mg/kg ww	10 - 10	100%	1610	2670	–	–	2040

Note: 2009 Impacted location includes samples collected from the East, West, and North Embayments, the Intake Channel, and Clinch River mile 2.5.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-224. Raccoon Kidney (2010) Dataset: Reference

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 5	0%	–	–	3.6	4.1	3.78
Antimony	mg/kg ww	0 - 5	0%	–	–	0.013	0.015	0.0136
Arsenic	mg/kg ww	3 - 5	60%	0.03	0.065	0.026	0.029	0.0376
Barium	mg/kg ww	5 - 5	100%	0.067	0.3	–	–	0.1576
Beryllium	mg/kg ww	0 - 5	0%	–	–	0.027	0.03	0.028
Boron	mg/kg ww	0 - 5	0%	–	–	0.37	0.42	0.392
Cadmium	mg/kg ww	5 - 5	100%	0.93	10.1	–	–	3.102
Chromium	mg/kg ww	0 - 5	0%	–	–	0.11	0.13	0.12
Cobalt	mg/kg ww	5 - 5	100%	0.036	0.11	–	–	0.0734
Copper	mg/kg ww	5 - 5	100%	3.5	8.7	–	–	5.6
Lead	mg/kg ww	5 - 5	100%	0.041	0.21	–	–	0.1268
Manganese	mg/kg ww	5 - 5	100%	1.2	1.5	–	–	1.3
Mercury	mg/kg ww	5 - 5	100%	0.064	0.4	–	–	0.1734
Molybdenum	mg/kg ww	5 - 5	100%	0.28	0.68	–	–	0.444
Nickel	mg/kg ww	0 - 5	0%	–	–	0.088	0.1	0.0926
Selenium	mg/kg ww	5 - 5	100%	1.5	2	–	–	1.84
Silver	mg/kg ww	0 - 5	0%	–	–	0.0026	0.003	0.00274
Strontium	mg/kg ww	3 - 5	60%	0.048	0.088	0.04	0.04	0.0534
Thallium	mg/kg ww	0 - 5	0%	–	–	0.012	0.014	0.0132
Vanadium	mg/kg ww	1 - 5	20%	0.061	0.061	0.042	0.047	0.0474
Zinc	mg/kg ww	5 - 5	100%	17.8	25.7	–	–	21.74
Inorganic-cations/anions								
Calcium	mg/kg ww	5 - 5	100%	75.3	162	–	–	96.42
Iron	mg/kg ww	5 - 5	100%	49.9	231	–	–	109.84
Magnesium	mg/kg ww	5 - 5	100%	146	170	–	–	155.6
Potassium	mg/kg ww	5 - 5	100%	1730	2160	–	–	1896
Sodium	mg/kg ww	5 - 5	100%	2090	2300	–	–	2214

Note: 2010 Reference location includes samples collected from Hugo Property and Knox County, Tennessee.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-225. Raccoon Kidney (2010) Dataset: Impacted

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 10	0%	–	–	3.6	4.1	3.91
Antimony	mg/kg ww	1 - 10	10%	0.016	0.016	0.013	0.015	0.0145
Arsenic	mg/kg ww	3 - 10	30%	0.031	0.037	0.025	0.028	0.029
Barium	mg/kg ww	10 - 10	100%	0.052	0.12	–	–	0.0806
Beryllium	mg/kg ww	0 - 10	0%	–	–	0.027	0.03	0.0289
Boron	mg/kg ww	0 - 10	0%	–	–	0.37	0.43	0.405
Cadmium	mg/kg ww	10 - 10	100%	0.63	2.7	–	–	1.251
Chromium	mg/kg ww	0 - 10	0%	–	–	0.11	0.13	0.123
Cobalt	mg/kg ww	10 - 10	100%	0.025	0.065	–	–	0.0424
Copper	mg/kg ww	10 - 10	100%	3.3	5.3	–	–	4.42
Lead	mg/kg ww	10 - 10	100%	0.043	1.3	–	–	0.271
Manganese	mg/kg ww	10 - 10	100%	0.92	1.5	–	–	1.21
Mercury	mg/kg ww	10 - 10	100%	0.057	0.79	–	–	0.19
Molybdenum	mg/kg ww	10 - 10	100%	0.29	0.54	–	–	0.42
Nickel	mg/kg ww	0 - 10	0%	–	–	0.088	0.1	0.095
Selenium	mg/kg ww	10 - 10	100%	1.3	2.3	–	–	1.94
Silver	mg/kg ww	0 - 10	0%	–	–	0.0026	0.0047	0.003
Strontium	mg/kg ww	7 - 10	70%	0.045	0.065	0.044	0.045	0.049
Thallium	mg/kg ww	0 - 10	0%	–	–	0.012	0.014	0.0135
Vanadium	mg/kg ww	2 - 10	20%	0.063	0.085	0.043	0.14	0.0606
Zinc	mg/kg ww	10 - 10	100%	17.4	31	–	–	21.28
Inorganic-cations/anions								
Calcium	mg/kg ww	10 - 10	100%	69.7	90.4	–	–	79.41
Iron	mg/kg ww	10 - 10	100%	63	204	–	–	105.98
Magnesium	mg/kg ww	10 - 10	100%	133	166	–	–	149.2
Potassium	mg/kg ww	10 - 10	100%	1520	2020	–	–	1793
Sodium	mg/kg ww	10 - 10	100%	1900	2470	–	–	2124

Note: 2010 Impacted location includes samples collected from East, West, and North Embayments and the Intake Channel.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-226. Raccoon Liver (2009) Dataset: Reference

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 5	0%	–	–	0.8416	0.8928	0.875
Antimony	mg/kg ww	0 - 5	0%	–	–	0.0171	0.04064	0.027
Arsenic	mg/kg ww	0 - 5	0%	–	–	0.01394	0.03456	0.0271
Barium	mg/kg ww	2 - 5	40%	0.02311	0.02893	0.02057	0.0556	0.0312
Beryllium	mg/kg ww	0 - 5	0%	–	–	0.002893	0.003336	0.0032
Boron	mg/kg ww	0 - 5	0%	–	–	0.05786	0.06394	0.062
Cadmium	mg/kg ww	5 - 5	100%	0.1279	0.556	–	–	0.32
Chromium	mg/kg ww	1 - 5	20%	0.265	0.265	0.1105	0.1245	0.148
Cobalt	mg/kg ww	2 - 5	40%	0.07784	0.08942	0.01529	0.03456	0.05
Copper	mg/kg ww	5 - 5	100%	4.615	10.59	–	–	7.4
Lead	mg/kg ww	3 - 5	60%	0.05786	0.5282	0.03058	0.0762	0.17
Manganese	mg/kg ww	5 - 5	100%	1.056	3.253	–	–	2.43
Mercury	mg/kg ww	5 - 5	100%	0.05842	0.2752	–	–	0.156
Molybdenum	mg/kg ww	5 - 5	100%	0.4448	1.168	–	–	0.86
Nickel	mg/kg ww	3 - 5	60%	0.06048	0.695	0.02893	0.03302	0.19
Selenium	mg/kg ww	5 - 5	100%	0.8382	1.946	–	–	1.12
Silver	mg/kg ww	0 - 5	0%	–	–	0.00278	0.008153	0.0057
Strontium	mg/kg ww	3 - 5	60%	0.0263	0.0432	0.02057	0.0417	0.033
Thallium	mg/kg ww	0 - 5	0%	–	–	0.01315	0.03058	0.0234
Vanadium	mg/kg ww	2 - 5	40%	0.1575	0.2419	0.04997	0.1094	0.133
Zinc	mg/kg ww	5 - 5	100%	19.4	41.4	–	–	36.01
Inorganic-cations/anions								
Calcium	mg/kg ww	4 - 5	80%	54.43	83.96	50.04	50.04	68.35
Iron	mg/kg ww	5 - 5	100%	141.2	700.6	–	–	422.6
Magnesium	mg/kg ww	5 - 5	100%	123.2	171.4	–	–	150.3
Potassium	mg/kg ww	5 - 5	100%	1573	2052	–	–	1879
Sodium	mg/kg ww	5 - 5	100%	1455	2277	–	–	1715

Note: 2009 Reference location includes samples collected from Melton Hill Dam.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-227. Raccoon Liver (2009) Dataset: Impacted

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	1 - 10	10%	0.917	0.917	0.8448	1.459	1.04
Antimony	mg/kg ww	1 - 10	10%	0.01886	0.01886	0.01863	0.03906	0.023
Arsenic	mg/kg ww	1 - 10	10%	0.04454	0.04454	0.01485	0.0548	0.033
Barium	mg/kg ww	8 - 10	80%	0.02211	0.0429	0.02882	0.04096	0.031
Beryllium	mg/kg ww	0 - 10	0%	–	–	0.002882	0.009963	0.0039
Boron	mg/kg ww	0 - 10	0%	–	–	0.05502	0.1423	0.072
Cadmium	mg/kg ww	10 - 10	100%	0.043	0.411	–	–	0.307
Chromium	mg/kg ww	0 - 10	0%	–	–	0.1048	0.1248	0.12
Cobalt	mg/kg ww	6 - 10	60%	0.036	0.0988	0.02651	0.04539	0.056
Copper	mg/kg ww	10 - 10	100%	3.946	37.89	–	–	12.42
Lead	mg/kg ww	8 - 10	80%	0.0806	0.2192	0.04004	0.0768	0.119
Manganese	mg/kg ww	10 - 10	100%	2.158	3.6	–	–	2.88
Mercury	mg/kg ww	10 - 10	100%	0.038	3.952	–	–	0.678
Molybdenum	mg/kg ww	10 - 10	100%	0.63	1.408	–	–	0.945
Nickel	mg/kg ww	5 - 10	50%	0.039	0.04743	0.03328	0.04806	0.0409
Selenium	mg/kg ww	10 - 10	100%	0.79	2.243	–	–	1.27
Silver	mg/kg ww	2 - 10	20%	0.015	0.01507	0.002568	0.01945	0.0099
Strontium	mg/kg ww	8 - 10	80%	0.02594	0.06006	0.01715	0.02567	0.036
Thallium	mg/kg ww	0 - 10	0%	–	–	0.01408	0.03069	0.022
Vanadium	mg/kg ww	10 - 10	100%	0.06075	0.685	–	–	0.29
Zinc	mg/kg ww	10 - 10	100%	26.17	45.31	–	–	38.43
Inorganic-cations/anions								
Calcium	mg/kg ww	10 - 10	100%	51.97	84.38	–	–	64.81
Iron	mg/kg ww	10 - 10	100%	276.6	602.7	–	–	482.0
Magnesium	mg/kg ww	10 - 10	100%	145.2	179.5	–	–	159.0
Potassium	mg/kg ww	10 - 10	100%	1780	2179	–	–	1998
Sodium	mg/kg ww	10 - 10	100%	1400	1810	–	–	1653

Note: 2009 Impacted location includes samples collected from the East, West, and North Embayments, the Intake Channel, and Clinch River mile 2.5.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-228. Raccoon Liver (2010) Dataset: Reference

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 5	0%	–	–	3.6	4.1	3.92
Antimony	mg/kg ww	1 - 5	20%	0.015	0.015	0.013	0.015	0.0144
Arsenic	mg/kg ww	3 - 5	60%	0.029	0.039	0.028	0.029	0.0316
Barium	mg/kg ww	2 - 5	40%	0.054	0.062	0.041	0.047	0.0498
Beryllium	mg/kg ww	0 - 5	0%	–	–	0.027	0.03	0.029
Boron	mg/kg ww	0 - 5	0%	–	–	0.37	0.42	0.406
Cadmium	mg/kg ww	5 - 5	100%	0.21	1.1	–	–	0.454
Chromium	mg/kg ww	0 - 5	0%	–	–	0.11	0.13	0.122
Cobalt	mg/kg ww	5 - 5	100%	0.068	0.12	–	–	0.086
Copper	mg/kg ww	5 - 5	100%	5.1	32.9	–	–	16.56
Lead	mg/kg ww	5 - 5	100%	0.066	0.41	–	–	0.196
Manganese	mg/kg ww	5 - 5	100%	2.8	3.4	–	–	3.06
Mercury	mg/kg ww	4 - 5	80%	0.08	1.6	0.053	0.053	0.443
Molybdenum	mg/kg ww	5 - 5	100%	0.5	1.6	–	–	1.12
Nickel	mg/kg ww	0 - 5	0%	–	–	0.088	0.1	0.096
Selenium	mg/kg ww	5 - 5	100%	0.79	1.6	–	–	1.026
Silver	mg/kg ww	3 - 5	60%	0.016	0.055	0.0028	0.0029	0.023
Strontium	mg/kg ww	0 - 5	0%	–	–	0.04	0.045	0.043
Thallium	mg/kg ww	0 - 5	0%	–	–	0.012	0.014	0.0136
Vanadium	mg/kg ww	2 - 5	40%	0.064	0.13	0.045	0.047	0.0664
Zinc	mg/kg ww	5 - 5	100%	29.7	51.9	–	–	43.9
Inorganic-cations/anions								
Calcium	mg/kg ww	4 - 5	80%	57.1	69.1	49.1	49.1	61.38
Iron	mg/kg ww	5 - 5	100%	312	555	–	–	435.8
Magnesium	mg/kg ww	5 - 5	100%	179	190	–	–	184.4
Potassium	mg/kg ww	5 - 5	100%	2150	2990	–	–	2426
Sodium	mg/kg ww	5 - 5	100%	1020	1660	–	–	1458

Note: 2010 Reference location includes samples collected from Hugo Property and Knox County, Tennessee.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-229. Raccoon Liver (2010) Dataset: Impacted

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 10	0%	–	–	3.5	4.1	3.81
Antimony	mg/kg ww	1 - 10	10%	0.014	0.014	0.013	0.015	0.0138
Arsenic	mg/kg ww	3 - 10	30%	0.042	0.046	0.025	0.028	0.0317
Barium	mg/kg ww	4 - 10	40%	0.049	0.055	0.04	0.045	0.0464
Beryllium	mg/kg ww	0 - 10	0%	–	–	0.026	0.03	0.028
Boron	mg/kg ww	0 - 10	0%	–	–	0.36	0.42	0.392
Cadmium	mg/kg ww	9 - 10	90%	0.12	0.48	0.007	0.007	0.247
Chromium	mg/kg ww	0 - 10	0%	–	–	0.11	0.13	0.121
Cobalt	mg/kg ww	9 - 10	90%	0.038	0.15	0.013	0.013	0.0726
Copper	mg/kg ww	10 - 10	100%	1.5	23.7	–	–	11.12
Lead	mg/kg ww	9 - 10	90%	0.055	0.84	0.025	0.025	0.255
Manganese	mg/kg ww	10 - 10	100%	0.21	3.6	–	–	2.191
Mercury	mg/kg ww	9 - 10	90%	0.045	3.1	0.04	0.04	0.571
Molybdenum	mg/kg ww	10 - 10	100%	0.053	1.2	–	–	0.811
Nickel	mg/kg ww	1 - 10	10%	0.23	0.23	0.086	0.1	0.106
Selenium	mg/kg ww	10 - 10	100%	0.48	2.3	–	–	1.15
Silver	mg/kg ww	3 - 10	30%	0.0074	0.02	0.0026	0.0088	0.00658
Strontium	mg/kg ww	2 - 10	20%	0.044	0.056	0.039	0.045	0.0435
Thallium	mg/kg ww	0 - 10	0%	–	–	0.012	0.014	0.0131
Vanadium	mg/kg ww	8 - 10	80%	0.088	0.42	0.042	0.086	0.225
Zinc	mg/kg ww	10 - 10	100%	26.7	64.5	–	–	45.28
Inorganic-cations/anions								
Calcium	mg/kg ww	10 - 10	100%	59.7	98.3	–	–	74.57
Iron	mg/kg ww	10 - 10	100%	29.7	815	–	–	445.0
Magnesium	mg/kg ww	10 - 10	100%	161	269	–	–	186.6
Potassium	mg/kg ww	10 - 10	100%	1610	3840	–	–	2235
Sodium	mg/kg ww	10 - 10	100%	694	1770	–	–	1535

Note: 2010 Impacted location includes samples collected from East, West, and North Embayments and the Intake Channel.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-230. Raccoon Gonad (2009) Dataset: Reference

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 5	0%	–	–	0.819	2.1	1.28
Antimony	mg/kg ww	0 - 5	0%	–	–	0.01794	0.093	0.037
Arsenic	mg/kg ww	0 - 5	0%	–	–	0.01629	0.079	0.04
Barium	mg/kg ww	4 - 5	80%	0.0195	1.2	0.02013	0.02013	0.28
Beryllium	mg/kg ww	0 - 5	0%	–	–	0.00312	0.0086	0.0049
Boron	mg/kg ww	0 - 5	0%	–	–	0.06045	0.15	0.0931
Cadmium	mg/kg ww	0 - 5	0%	–	–	0.01287	0.1007	0.0401
Chromium	mg/kg ww	1 - 5	20%	0.1268	0.1268	0.1244	0.29	0.182
Cobalt	mg/kg ww	0 - 5	0%	–	–	0.0072	0.01702	0.011
Copper	mg/kg ww	5 - 5	100%	1.248	5.051	–	–	2.28
Lead	mg/kg ww	0 - 5	0%	–	–	0.00975	0.08235	0.0296
Manganese	mg/kg ww	5 - 5	100%	0.27	2.233	–	–	0.703
Mercury	mg/kg ww	2 - 5	40%	0.012	0.2013	0.0054	0.01	0.0472
Molybdenum	mg/kg ww	2 - 5	40%	0.1053	0.8967	0.085	0.2	0.289
Nickel	mg/kg ww	3 - 5	60%	0.04095	0.092	0.03294	0.042	0.058
Selenium	mg/kg ww	5 - 5	100%	0.4	1.098	–	–	0.583
Silver	mg/kg ww	0 - 5	0%	–	–	0.00273	0.007	0.00429
Strontium	mg/kg ww	3 - 5	60%	0.01931	0.059	0.02196	0.047	0.0383
Thallium	mg/kg ww	0 - 5	0%	–	–	0.01464	0.069	0.036
Vanadium	mg/kg ww	1 - 5	20%	0.4392	0.4392	0.0507	0.25	0.198
Zinc	mg/kg ww	5 - 5	100%	14.1	29.65	–	–	19.3
Inorganic-cation/anion								
Calcium	mg/kg ww	3 - 5	60%	53.8	78.4	82.8	116	77.9
Iron	mg/kg ww	5 - 5	100%	36.47	722.9	–	–	183.7
Magnesium	mg/kg ww	4 - 5	80%	90.5	131.6	116	116	115.8
Potassium	mg/kg ww	5 - 5	100%	1638	2828	–	–	2163
Sodium	mg/kg ww	5 - 5	100%	1080	1958	–	–	1503

Note: 2009 Reference location includes samples collected from Melton Hill Dam.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-231. Raccoon Gonad (2009) Dataset: Impacted

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 9	0%	–	–	0.8256	2.485	1.41
Antimony	mg/kg ww	0 - 9	0%	–	–	0.01702	0.044	0.0268
Arsenic	mg/kg ww	0 - 9	0%	–	–	0.01529	0.078	0.0304
Barium	mg/kg ww	7 - 9	78%	0.02244	0.19	0.0384	0.04182	0.0647
Beryllium	mg/kg ww	0 - 9	0%	–	–	0.002912	0.009216	0.0045
Boron	mg/kg ww	0 - 9	0%	–	–	0.056	0.15	0.0779
Cadmium	mg/kg ww	0 - 9	0%	–	–	0.005568	0.037	0.0163
Chromium	mg/kg ww	4 - 9	44%	0.1171	0.75	0.1163	0.29	0.225
Cobalt	mg/kg ww	1 - 9	11%	0.005376	0.005376	0.0051	0.025	0.0106
Copper	mg/kg ww	8 - 9	89%	0.9408	2.1	0.1771	0.1771	1.191
Lead	mg/kg ww	0 - 9	0%	–	–	0.009408	0.024	0.0124
Manganese	mg/kg ww	9 - 9	100%	0.08364	0.47	–	–	0.322
Mercury	mg/kg ww	6 - 9	67%	0.005166	0.015	0.009464	0.045	0.0151
Molybdenum	mg/kg ww	1 - 9	11%	0.1401	0.1401	0.01451	0.16	0.108
Nickel	mg/kg ww	6 - 9	67%	0.0364	0.21	0.03198	0.05152	0.074
Selenium	mg/kg ww	8 - 9	89%	0.29	0.7462	0.05412	0.05412	0.448
Silver	mg/kg ww	0 - 9	0%	–	–	0.002688	0.0069	0.0035
Strontium	mg/kg ww	7 - 9	78%	0.0288	0.13	0.01501	0.02652	0.0501
Thallium	mg/kg ww	0 - 9	0%	–	–	0.01363	0.069	0.0259
Vanadium	mg/kg ww	0 - 9	0%	–	–	0.04992	0.13	0.087
Zinc	mg/kg ww	9 - 9	100%	1.599	21	–	–	14.27
Inorganic-cations/anions								
Calcium	mg/kg ww	8 - 9	89%	56.64	178	49.2	49.2	87.19
Iron	mg/kg ww	8 - 9	89%	20.57	150	12.3	12.3	49.14
Magnesium	mg/kg ww	7 - 9	78%	97.4	137.7	49.2	115	111.4
Potassium	mg/kg ww	9 - 9	100%	113.9	3276	–	–	2261
Sodium	mg/kg ww	9 - 9	100%	128.2	1710	–	–	1202

Note: 2009 Impacted location includes samples collected from the East, West, and North Embayments, the Intake Channel, and Clinch River mile 2.5.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-232. Raccoon Gonad (2010) Dataset: Reference

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 3	0%	–	–	3.7	4	3.87
Antimony	mg/kg ww	0 - 3	0%	–	–	0.014	0.014	0.014
Arsenic	mg/kg ww	0 - 3	0%	–	–	0.026	0.028	0.027
Barium	mg/kg ww	3 - 3	100%	0.047	0.083	–	–	0.0633
Beryllium	mg/kg ww	0 - 3	0%	–	–	0.028	0.029	0.0287
Boron	mg/kg ww	0 - 3	0%	–	–	0.39	0.41	0.4
Cadmium	mg/kg ww	1 - 3	33%	0.012	0.012	0.0071	0.0076	0.0089
Chromium	mg/kg ww	0 - 3	0%	–	–	0.12	0.13	0.123
Cobalt	mg/kg ww	0 - 3	0%	–	–	0.013	0.014	0.0137
Copper	mg/kg ww	3 - 3	100%	1	1.2	–	–	1.1
Lead	mg/kg ww	0 - 3	0%	–	–	0.026	0.028	0.027
Manganese	mg/kg ww	3 - 3	100%	0.28	0.38	–	–	0.347
Mercury	mg/kg ww	0 - 3	0%	–	–	0.011	0.014	0.012
Molybdenum	mg/kg ww	2 - 3	67%	0.19	0.24	0.071	0.071	0.167
Nickel	mg/kg ww	0 - 3	0%	–	–	0.091	0.097	0.0943
Selenium	mg/kg ww	3 - 3	100%	0.37	0.7	–	–	0.52
Silver	mg/kg ww	0 - 3	0%	–	–	0.0027	0.0029	0.0028
Strontium	mg/kg ww	2 - 3	67%	0.044	0.045	0.041	0.041	0.0433
Thallium	mg/kg ww	0 - 3	0%	–	–	0.013	0.014	0.013
Vanadium	mg/kg ww	0 - 3	0%	–	–	0.043	0.046	0.045
Zinc	mg/kg ww	3 - 3	100%	12.7	17.3	–	–	15.57
Inorganic-cations/anions								
Calcium	mg/kg ww	3 - 3	100%	60.4	78.3	–	–	68.57
Iron	mg/kg ww	3 - 3	100%	17.1	35.8	–	–	24.23
Magnesium	mg/kg ww	3 - 3	100%	122	150	–	–	137
Potassium	mg/kg ww	3 - 3	100%	2290	3150	–	–	2820
Sodium	mg/kg ww	3 - 3	100%	1290	1620	–	–	1443

Note: 2010 Reference location includes samples collected from Hugo Property and Knox County, Tennessee.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-233. Raccoon Gonad (2010) Dataset: Impacted

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	1 - 8	13%	12.7	12.7	3.5	4.1	4.88
Antimony	mg/kg ww	0 - 8	0%	–	–	0.013	0.016	0.0143
Arsenic	mg/kg ww	0 - 8	0%	–	–	0.025	0.029	0.0268
Barium	mg/kg ww	6 - 8	75%	0.043	0.11	0.044	0.047	0.057
Beryllium	mg/kg ww	0 - 8	0%	–	–	0.026	0.03	0.0279
Boron	mg/kg ww	0 - 8	0%	–	–	0.36	0.42	0.391
Cadmium	mg/kg ww	4 - 8	50%	0.007	0.01	0.0067	0.0078	0.00795
Chromium	mg/kg ww	1 - 8	13%	0.18	0.18	0.11	0.15	0.129
Cobalt	mg/kg ww	0 - 8	0%	–	–	0.012	0.014	0.013
Copper	mg/kg ww	8 - 8	100%	0.9	1.4	–	–	1.15
Lead	mg/kg ww	0 - 8	0%	–	–	0.024	0.028	0.0263
Manganese	mg/kg ww	8 - 8	100%	0.25	0.51	–	–	0.365
Mercury	mg/kg ww	6 - 8	75%	0.013	0.045	0.01	0.011	0.0198
Molybdenum	mg/kg ww	5 - 8	63%	0.11	0.14	0.1	0.16	0.121
Nickel	mg/kg ww	0 - 8	0%	–	–	0.086	0.1	0.0924
Selenium	mg/kg ww	8 - 8	100%	0.38	0.73	–	–	0.513
Silver	mg/kg ww	0 - 8	0%	–	–	0.0025	0.003	0.0027
Strontium	mg/kg ww	4 - 8	50%	0.048	0.063	0.039	0.045	0.047
Thallium	mg/kg ww	0 - 8	0%	–	–	0.012	0.014	0.013
Vanadium	mg/kg ww	0 - 8	0%	–	–	0.04	0.064	0.046
Zinc	mg/kg ww	8 - 8	100%	12.4	21.4	–	–	16.01
Inorganic-cations/anions								
Calcium	mg/kg ww	8 - 8	100%	61.1	79	–	–	69.04
Iron	mg/kg ww	8 - 8	100%	21.3	65.4	–	–	39.86
Magnesium	mg/kg ww	8 - 8	100%	99.1	169	–	–	128.51
Potassium	mg/kg ww	8 - 8	100%	2160	3140	–	–	2628
Sodium	mg/kg ww	8 - 8	100%	1260	1640	–	–	1409

Note: 2010 Impacted location includes samples collected from East, West, and North Embayments and the Intake Channel.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-234. Raccoon Ovary (2009) Dataset: Impacted

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg	0 - 1	0%	–	–	5.5	5.5	5.5
Antimony	mg/kg	0 - 1	0%	–	–	0.12	0.12	0.12
Arsenic	mg/kg ww	0 - 1	0%	–	–	0.21	0.21	0.21
Barium	mg/kg ww	1 - 1	100%	0.13	0.13	–	–	0.13
Beryllium	mg/kg ww	0 - 1	0%	–	–	0.021	0.021	0.021
Boron	mg/kg ww	0 - 1	0%	–	–	0.4	0.4	0.4
Cadmium	mg/kg ww	0 - 1	0%	–	–	0.038	0.038	0.038
Chromium	mg/kg ww	1 - 1	100%	0.95	0.95	–	–	0.95
Cobalt	mg/kg ww	0 - 1	0%	–	–	0.031	0.031	0.031
Copper	mg/kg ww	1 - 1	100%	2.3	2.3	–	–	2.3
Lead	mg/kg ww	0 - 1	0%	–	–	0.066	0.066	0.066
Manganese	mg/kg ww	1 - 1	100%	0.58	0.58	–	–	0.58
Mercury	mg/kg ww	0 - 1	0%	–	–	0.054	0.054	0.054
Molybdenum	mg/kg ww	0 - 1	0%	–	–	0.19	0.19	0.19
Nickel	mg/kg ww	0 - 1	0%	–	–	0.21	0.21	0.21
Selenium	mg/kg ww	1 - 1	100%	0.78	0.78	–	–	0.78
Silver	mg/kg ww	0 - 1	0%	–	–	0.019	0.019	0.019
Strontium	mg/kg ww	0 - 1	0%	–	–	0.095	0.095	0.095
Thallium	mg/kg ww	0 - 1	0%	–	–	0.19	0.19	0.19
Vanadium	mg/kg ww	0 - 1	0%	–	–	0.69	0.69	0.69
Zinc	mg/kg ww	1 - 1	100%	22.7	22.7	–	–	22.7
Inorganic-cations/anions								
Calcium	mg/kg ww	0 - 1	0%	–	–	312	312	312
Iron	mg/kg ww	1 - 1	100%	141	141	–	–	141
Magnesium	mg/kg ww	0 - 1	0%	–	–	312	312	312
Potassium	mg/kg ww	1 - 1	100%	3770	3770	–	–	3770
Sodium	mg/kg ww	1 - 1	100%	1480	1480	–	–	1480

Note: 2009 Impacted location includes samples collected from the East, West, and North Embayments, the Intake Channel, and Clinch River mile 2.5.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-235. Raccoon Hair (2009) Dataset: Reference

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Concentration [b]
Inorganics								
Aluminum	mg/kg ww	4 - 5	80%	19.49	44.63	0.847	0.847	25.11
Antimony	mg/kg ww	0 - 5	0%	–	–	0.01734	0.03896	0.027
Arsenic	mg/kg ww	4 - 5	80%	0.0867	0.1448	0.01525	0.01525	0.092
Barium	mg/kg ww	4 - 5	80%	0.905	2.61	0.02287	0.02287	1.28
Beryllium	mg/kg ww	0 - 5	0%	–	–	0.002948	0.003306	0.0032
Boron	mg/kg ww	2 - 5	40%	0.4248	0.5249	0.07877	0.7046	0.45
Cadmium	mg/kg ww	0 - 5	0%	–	–	0.005765	0.01214	0.0077
Chromium	mg/kg ww	2 - 5	40%	1.098	1.301	0.1186	0.4344	0.648
Cobalt	mg/kg ww	0 - 5	0%	–	–	0.009317	0.03711	0.0271
Copper	mg/kg ww	5 - 5	100%	1.016	9.831	–	–	7.54
Lead	mg/kg ww	4 - 5	80%	0.1392	0.181	0.01016	0.01016	0.132
Manganese	mg/kg ww	4 - 5	80%	3.892	7.83	0.08131	0.08131	4.49
Mercury	mg/kg ww	4 - 5	80%	0.119	1.127	0.00415	0.00415	0.45
Molybdenum	mg/kg ww	1 - 5	20%	0.06945	0.06945	0.02262	0.0896	0.051
Nickel	mg/kg ww	1 - 5	20%	0.07137	0.07137	0.03219	0.1127	0.068
Selenium	mg/kg ww	5 - 5	100%	0.3981	3.439	–	–	2.574
Silver	mg/kg ww	0 - 5	0%	–	–	0.00288	0.003728	0.0031
Strontium	mg/kg ww	1 - 5	20%	0.5582	0.5582	0.01694	0.5916	0.42
Thallium	mg/kg ww	0 - 5	0%	–	–	0.0144	0.02987	0.023
Vanadium	mg/kg ww	0 - 5	0%	–	–	0.05481	0.1101	0.085
Zinc	mg/kg ww	5 - 5	100%	8.555	236.1	–	–	161
Inorganic-cations/anions								
Calcium	mg/kg ww	4 - 5	80%	441.3	596	48.53	48.53	427.4
Iron	mg/kg ww	5 - 5	100%	26.35	332.9	–	–	94.4
Magnesium	mg/kg ww	4 - 5	80%	91.9	126.2	48.53	48.53	97.4
Potassium	mg/kg ww	1 - 5	20%	212.3	212.3	200	603.9	318.7
Sodium	mg/kg ww	1 - 5	20%	225.1	225.1	215	2465	684.1

Note: 2009 Reference location includes samples collected from Melton Hill Dam.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-236. Raccoon Hair (2009) Dataset: Impacted

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	10 - 10	100%	13.56	181	–	–	86.7
Antimony	mg/kg ww	3 - 10	30%	0.01962	0.04827	0.01729	0.03917	0.027
Arsenic	mg/kg ww	9 - 10	90%	0.1806	0.7844	0.1238	0.1238	0.398
Barium	mg/kg ww	10 - 10	100%	0.8554	5.948	–	–	2.401
Beryllium	mg/kg ww	0 - 10	0%	–	–	0.0029	0.009812	0.00409
Boron	mg/kg ww	7 - 10	70%	0.2366	1.184	0.4066	1.281	0.686
Cadmium	mg/kg ww	2 - 10	20%	0.013	0.02319	0.005307	0.02103	0.011
Chromium	mg/kg ww	5 - 10	50%	0.6741	5.1	0.2187	0.6066	1.03
Cobalt	mg/kg ww	7 - 10	70%	0.04823	0.15	0.03612	0.06453	0.091
Copper	mg/kg ww	10 - 10	100%	6.728	10.43	–	–	8.97
Lead	mg/kg ww	10 - 10	100%	0.08235	0.4646	–	–	0.257
Manganese	mg/kg ww	10 - 10	100%	7.007	53.79	–	–	21.5
Mercury	mg/kg ww	10 - 10	100%	0.064	1.682	–	–	0.463
Molybdenum	mg/kg ww	3 - 10	30%	0.2004	0.2184	0.03477	0.1249	0.111
Nickel	mg/kg ww	2 - 10	20%	0.1822	0.37	0.09031	0.3033	0.177
Selenium	mg/kg ww	10 - 10	100%	1.945	5.733	–	–	3.396
Silver	mg/kg ww	1 - 10	10%	0.0035	0.0035	0.002654	0.008052	0.0041
Strontium	mg/kg ww	9 - 10	90%	0.6916	2.23	0.4155	0.4155	1.34
Thallium	mg/kg ww	0 - 10	0%	–	–	0.01281	0.08206	0.028
Vanadium	mg/kg ww	10 - 10	100%	0.06322	0.44	–	–	0.208
Zinc	mg/kg ww	10 - 10	100%	153.8	407.7	–	–	250.5
Inorganic-cations/anions								
Calcium	mg/kg ww	10 - 10	100%	450	913.7	–	–	625.3
Iron	mg/kg ww	10 - 10	100%	25.12	534.8	–	–	149.1
Magnesium	mg/kg ww	10 - 10	100%	70.53	205.2	–	–	115.4
Potassium	mg/kg ww	1 - 10	10%	157.6	157.6	44.3	276.7	174.2
Sodium	mg/kg ww	1 - 10	10%	306.1	306.1	80.26	267	191.4

Note: 2009 Impacted location includes samples collected from the East, West, and North Embayments, the Intake Channel, and Clinch River mile 2.5.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-237. Raccoon Hair (2010) Dataset: Reference

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	5 - 5	100%	11.9	77.5	–	–	38.94
Antimony	mg/kg ww	3 - 5	60%	0.015	0.031	0.013	0.014	0.0192
Arsenic	mg/kg ww	5 - 5	100%	0.036	0.21	–	–	0.119
Barium	mg/kg ww	5 - 5	100%	1.4	11.6	–	–	3.96
Beryllium	mg/kg ww	0 - 5	0%	–	–	0.027	0.03	0.0288
Boron	mg/kg ww	5 - 5	100%	1	3	–	–	1.7
Cadmium	mg/kg ww	4 - 5	80%	0.0083	0.058	0.007	0.007	0.0273
Chromium	mg/kg ww	5 - 5	100%	0.12	0.42	–	–	0.248
Cobalt	mg/kg ww	5 - 5	100%	0.031	0.35	–	–	0.135
Copper	mg/kg ww	5 - 5	100%	20.9	29.6	–	–	23.7
Lead	mg/kg ww	5 - 5	100%	0.1	0.86	–	–	0.34
Manganese	mg/kg ww	5 - 5	100%	5.5	42.8	–	–	15.9
Mercury	mg/kg ww	4 - 5	80%	0.19	1.9	0.068	0.068	0.698
Molybdenum	mg/kg ww	3 - 5	60%	0.045	0.11	0.032	0.034	0.055
Nickel	mg/kg ww	5 - 5	100%	0.099	0.55	–	–	0.202
Selenium	mg/kg ww	5 - 5	100%	2.2	3.7	–	–	2.9
Silver	mg/kg ww	3 - 5	60%	0.0041	0.012	0.0028	0.003	0.00552
Strontium	mg/kg ww	5 - 5	100%	0.73	2.1	–	–	1.12
Thallium	mg/kg ww	0 - 5	0%	–	–	0.013	0.014	0.0138
Vanadium	mg/kg ww	3 - 5	60%	0.075	0.24	0.042	0.045	0.12
Zinc	mg/kg ww	5 - 5	100%	216	234	–	–	225.6
Inorganic-cations/anions								
Calcium	mg/kg ww	5 - 5	100%	493	1150	–	–	764
Iron	mg/kg ww	5 - 5	100%	16.6	126	–	–	53.06
Magnesium	mg/kg ww	5 - 5	100%	99.5	213	–	–	144.3
Potassium	mg/kg ww	0 - 5	0%	–	–	664	734	708.4
Sodium	mg/kg ww	5 - 5	100%	155	235	–	–	187.6

Note: 2010 Reference location includes samples collected from Hugo Property and Knox County, Tennessee.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-238. Raccoon Hair (2010) Dataset: Impacted

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	10 - 10	100%	17.4	474	–	–	126.5
Antimony	mg/kg ww	8 - 10	80%	0.019	0.092	0.015	0.022	0.0301
Arsenic	mg/kg ww	10 - 10	100%	0.2	0.83	–	–	0.483
Barium	mg/kg ww	10 - 10	100%	0.9	4.5	–	–	2.2
Beryllium	mg/kg ww	0 - 10	0%	–	–	0.026	0.031	0.0286
Boron	mg/kg ww	10 - 10	100%	0.62	2	–	–	1.241
Cadmium	mg/kg ww	6 - 10	60%	0.014	0.46	0.0074	0.0096	0.0578
Chromium	mg/kg ww	8 - 10	80%	0.16	0.73	0.2	0.24	0.371
Cobalt	mg/kg ww	10 - 10	100%	0.033	0.62	–	–	0.15
Copper	mg/kg ww	10 - 10	100%	11.3	26.2	–	–	19.99
Lead	mg/kg ww	10 - 10	100%	0.15	6.7	–	–	1.18
Manganese	mg/kg ww	10 - 10	100%	3.2	71.7	–	–	19.39
Mercury	mg/kg ww	10 - 10	100%	0.13	4.8	–	–	0.927
Molybdenum	mg/kg ww	6 - 10	60%	0.044	0.19	0.065	0.096	0.0927
Nickel	mg/kg ww	10 - 10	100%	0.096	0.66	–	–	0.267
Selenium	mg/kg ww	10 - 10	100%	2.7	8	–	–	4.67
Silver	mg/kg ww	3 - 10	30%	0.0028	0.0091	0.0025	0.0037	0.00376
Strontium	mg/kg ww	10 - 10	100%	0.57	2.1	–	–	1.1
Thallium	mg/kg ww	0 - 10	0%	–	–	0.012	0.046	0.0178
Vanadium	mg/kg ww	8 - 10	80%	0.11	0.93	0.11	0.21	0.278
Zinc	mg/kg ww	10 - 10	100%	194	288	–	–	232.8
Inorganic-cation/anions								
Calcium	mg/kg ww	10 - 10	100%	537	1040	–	–	682.9
Iron	mg/kg ww	10 - 10	100%	30.7	630	–	–	198.17
Magnesium	mg/kg ww	10 - 10	100%	92.5	171	–	–	125.04
Potassium	mg/kg ww	0 - 10	0%	–	–	642	724	686.7
Sodium	mg/kg ww	10 - 10	100%	51.2	281	–	–	138.21

Note: 2010 Impacted location includes samples collected from East, West, and North Embayments and the Intake Channel.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-239. Raccoon Brain (2009) Dataset: Reference

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 5	0%	–	–	0.8463	0.8692	0.856
Antimony	mg/kg ww	0 - 5	0%	–	–	0.01866	0.03888	0.027
Arsenic	mg/kg ww	0 - 5	0%	–	–	0.01507	0.03392	0.0263
Barium	mg/kg ww	3 - 5	60%	0.02096	0.02544	0.02041	0.04338	0.0268
Beryllium	mg/kg ww	0 - 5	0%	–	–	0.003122	0.006561	0.00385
Boron	mg/kg ww	0 - 5	0%	–	–	0.06244	0.1507	0.0805
Cadmium	mg/kg ww	0 - 5	0%	–	–	0.005798	0.01378	0.009
Chromium	mg/kg ww	1 - 5	20%	0.3374	0.3374	0.1182	0.123	0.163
Cobalt	mg/kg ww	0 - 5	0%	–	–	0.006804	0.01783	0.014
Copper	mg/kg ww	5 - 5	100%	2.862	3.884	–	–	3.48
Lead	mg/kg ww	0 - 5	0%	–	–	0.0102	0.01039	0.0103
Manganese	mg/kg ww	5 - 5	100%	0.2673	0.3472	–	–	0.311
Mercury	mg/kg ww	3 - 5	60%	0.005575	0.01239	0.006293	0.01251	0.00972
Molybdenum	mg/kg ww	1 - 5	20%	0.05346	0.05346	0.0217	0.06507	0.0445
Nickel	mg/kg ww	2 - 5	40%	0.03816	0.05061	0.03122	0.03255	0.0368
Selenium	mg/kg ww	5 - 5	100%	0.217	0.3402	–	–	0.258
Silver	mg/kg ww	0 - 5	0%	–	–	0.002916	0.007953	0.0052
Strontium	mg/kg ww	2 - 5	40%	0.02078	0.02651	0.01454	0.01993	0.02
Thallium	mg/kg ww	0 - 5	0%	–	–	0.01411	0.02968	0.0247
Vanadium	mg/kg ww	0 - 5	0%	–	–	0.05208	0.1085	0.0855
Zinc	mg/kg ww	5 - 5	100%	12.64	15.23	–	–	13.93
Inorganic-cations/anions								
Calcium	mg/kg ww	4 - 5	80%	51.96	67	48.36	48.36	56.308
Iron	mg/kg ww	5 - 5	100%	16.91	21.79	–	–	18.80
Magnesium	mg/kg ww	5 - 5	100%	135.8	145.3	–	–	141.2
Potassium	mg/kg ww	5 - 5	100%	3234	3776	–	–	3448
Sodium	mg/kg ww	5 - 5	100%	1189	1309	–	–	1233

Note: 2009 Reference location includes samples collected from Melton Hill Dam.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-240. Raccoon Brain (2009) Dataset: Impacted

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics	mg/kg ww							
Aluminum	mg/kg ww	1 - 10	10%	3	3	0.8024	2.701	1.34
Antimony	mg/kg ww	0 - 10	0%	–	–	0.0177	0.0405	0.0228
Arsenic	mg/kg ww	0 - 10	0%	–	–	0.01521	0.03375	0.026
Barium	mg/kg ww	7 - 10	70%	0.02021	0.1283	0.02093	0.05675	0.0411
Beryllium	mg/kg ww	0 - 10	0%	–	–	0.002977	0.0096	0.0041
Boron	mg/kg ww	1 - 10	10%	0.1792	0.1792	0.059	0.27	0.1
Cadmium	mg/kg ww	0 - 10	0%	–	–	0.005428	0.01363	0.0078
Chromium	mg/kg ww	2 - 10	20%	0.1293	0.2977	0.1133	0.1238	0.14
Cobalt	mg/kg ww	1 - 10	10%	0.01856	0.01856	0.0049	0.0229	0.015
Copper	mg/kg ww	10 - 10	100%	0.2951	4.568	–	–	3.308
Lead	mg/kg ww	0 - 10	0%	–	–	0.009676	0.011	0.0103
Manganese	mg/kg ww	10 - 10	100%	0.1861	0.4351	–	–	0.327
Mercury	mg/kg ww	7 - 10	70%	0.0068	0.0517	0.004086	0.01841	0.0196
Molybdenum	mg/kg ww	1 - 10	10%	0.0784	0.0784	0.02336	0.0585	0.0433
Nickel	mg/kg ww	4 - 10	40%	0.0405	0.08931	0.03068	0.04351	0.0430
Selenium	mg/kg ww	10 - 10	100%	0.09988	0.4484	–	–	0.279
Silver	mg/kg ww	1 - 10	10%	0.00416	0.00416	0.002832	0.01457	0.0061
Strontium	mg/kg ww	8 - 10	80%	0.0151	0.08325	0.015	0.03178	0.0289
Thallium	mg/kg ww	0 - 10	0%	–	–	0.0143	0.02925	0.0214
Vanadium	mg/kg ww	0 - 10	0%	–	–	0.05376	0.1103	0.0796
Zinc	mg/kg ww	10 - 10	100%	2.906	16.04	–	–	13.1
Inorganic-cations/anions								
Calcium	mg/kg ww	7 - 10	70%	49.82	222.3	48.58	49.8	68.27
Iron	mg/kg ww	9 - 10	90%	14.2	23.97	12.17	12.17	17.42
Magnesium	mg/kg ww	9 - 10	90%	133.3	153.9	48.58	48.58	135.6
Potassium	mg/kg ww	10 - 10	100%	254.2	4077	–	–	3272
Sodium	mg/kg ww	10 - 10	100%	526.6	1449	–	–	1208
Sodium	mg/kg ww	10 - 10	100%	1430	3060	–	–	2711

Note: 2009 Reference location includes samples collected from Melton Hill Dam.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-241. Raccoon Brain (2010) Dataset: Reference

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 5	0%	–	–	3.6	4.1	3.84
Antimony	mg/kg ww	0 - 5	0%	–	–	0.013	0.015	0.0138
Arsenic	mg/kg ww	0 - 5	0%	–	–	0.025	0.029	0.027
Barium	mg/kg ww	2 - 5	40%	0.047	0.052	0.041	0.048	0.046
Beryllium	mg/kg ww	0 - 5	0%	–	–	0.026	0.031	0.0282
Boron	mg/kg ww	0 - 5	0%	–	–	0.37	0.43	0.398
Cadmium	mg/kg ww	1 - 5	20%	0.028	0.028	0.0068	0.021	0.01396
Chromium	mg/kg ww	1 - 5	20%	0.17	0.17	0.11	0.13	0.13
Cobalt	mg/kg ww	5 - 5	100%	0.013	0.023	–	–	0.0198
Copper	mg/kg ww	5 - 5	100%	2.5	4.8	–	–	3.9
Lead	mg/kg ww	0 - 5	0%	–	–	0.025	0.029	0.027
Manganese	mg/kg ww	5 - 5	100%	0.34	0.42	–	–	0.368
Mercury	mg/kg ww	2 - 5	40%	0.012	0.056	0.011	0.021	0.0222
Molybdenum	mg/kg ww	1 - 5	20%	0.062	0.062	0.031	0.036	0.0394
Nickel	mg/kg ww	0 - 5	0%	–	–	0.087	0.1	0.0934
Selenium	mg/kg ww	5 - 5	100%	0.22	0.33	–	–	0.266
Silver	mg/kg ww	3 - 5	60%	0.005	0.009	0.0027	0.0027	0.00514
Strontium	mg/kg ww	1 - 5	20%	0.071	0.071	0.039	0.046	0.0476
Thallium	mg/kg ww	0 - 5	0%	–	–	0.012	0.014	0.0132
Vanadium	mg/kg ww	0 - 5	0%	–	–	0.041	0.047	0.0438
Zinc	mg/kg ww	5 - 5	100%	14.2	16.1	–	–	15.02
Inorganic-cations/anions								
Calcium	mg/kg ww	5 - 5	100%	53.5	72	–	–	59.96
Iron	mg/kg ww	5 - 5	100%	13.5	19.6	–	–	17.26
Magnesium	mg/kg ww	5 - 5	100%	152	169	–	–	160.2
Potassium	mg/kg ww	5 - 5	100%	3560	4150	–	–	3846
Sodium	mg/kg ww	5 - 5	100%	1240	1410	–	–	1354

Note: 2010 Reference location includes samples collected from Hugo Property and Knox County, Tennessee.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-242. Raccoon Brain (2010) Dataset: Impacted

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 10	0%	–	–	3.9	4.2	4.06
Antimony	mg/kg ww	0 - 10	0%	–	–	0.014	0.015	0.0147
Arsenic	mg/kg ww	0 - 10	0%	–	–	0.026	0.029	0.0283
Barium	mg/kg ww	3 - 10	30%	0.048	0.31	0.045	0.048	0.0841
Beryllium	mg/kg ww	0 - 10	0%	–	–	0.029	0.031	0.03
Boron	mg/kg ww	0 - 10	0%	–	–	0.41	0.43	0.422
Cadmium	mg/kg ww	4 - 10	40%	0.013	0.026	0.0075	0.018	0.0129
Chromium	mg/kg ww	2 - 10	20%	0.17	0.17	0.12	0.13	0.137
Cobalt	mg/kg ww	8 - 10	80%	0.015	0.022	0.014	0.015	0.0168
Copper	mg/kg ww	10 - 10	100%	3.2	4.8	–	–	3.99
Lead	mg/kg ww	2 - 10	20%	0.033	0.17	0.027	0.029	0.0429
Manganese	mg/kg ww	10 - 10	100%	0.33	0.41	–	–	0.37
Mercury	mg/kg ww	7 - 10	70%	0.015	0.1	0.011	0.014	0.0254
Molybdenum	mg/kg ww	4 - 10	40%	0.058	0.061	0.036	0.04	0.0461
Nickel	mg/kg ww	2 - 10	20%	0.11	0.25	0.096	0.1	0.1151
Selenium	mg/kg ww	10 - 10	100%	0.22	0.37	–	–	0.304
Silver	mg/kg ww	3 - 10	30%	0.0051	0.0086	0.0029	0.0072	0.00511
Strontium	mg/kg ww	4 - 10	40%	0.047	0.07	0.043	0.046	0.0485
Thallium	mg/kg ww	0 - 10	0%	–	–	0.014	0.014	0.014
Vanadium	mg/kg ww	0 - 10	0%	–	–	0.045	0.047	0.0463
Zinc	mg/kg ww	10 - 10	100%	12.9	18.7	–	–	16.02
Inorganic-cations/anions								
Calcium	mg/kg ww	10 - 10	100%	55.1	103	–	–	64.74
Iron	mg/kg ww	10 - 10	100%	15.7	22	–	–	18.08
Magnesium	mg/kg ww	10 - 10	100%	154	162	–	–	157.5
Potassium	mg/kg ww	10 - 10	100%	3510	3960	–	–	3678
Sodium	mg/kg ww	10 - 10	100%	1250	1390	–	–	1306

Note: 2010 Impacted location includes samples collected from East, West, and North Embayments and the Intake Channel.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-243. Raccoon Subcutaneous Fat (2009) Dataset: Reference

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Concentration [b]
Inorganics								
Aluminum	mg/kg ww	0 - 5	0%	–	–	0.8149	9.385	2.6
Antimony	mg/kg ww	1 - 5	20%	0.0205	0.0205	0.01832	0.03872	0.0267
Arsenic	mg/kg ww	1 - 5	20%	0.01651	0.01651	0.01549	0.03355	0.026
Barium	mg/kg ww	1 - 5	20%	0.1477	0.1477	0.01852	0.04066	0.0495
Beryllium	mg/kg ww	0 - 5	0%	–	–	0.003056	0.003262	0.00319
Boron	mg/kg ww	0 - 5	0%	–	–	0.05926	0.06431	0.062
Cadmium	mg/kg ww	0 - 5	0%	–	–	0.005463	0.01398	0.00898
Chromium	mg/kg ww	0 - 5	0%	–	–	0.1111	0.1217	0.118
Cobalt	mg/kg ww	0 - 5	0%	–	–	0.004445	0.01025	0.0077
Copper	mg/kg ww	2 - 5	40%	0.2607	1.549	0.1667	0.1771	0.466
Lead	mg/kg ww	1 - 5	20%	0.0113	0.0113	0.00926	0.01065	0.0103
Manganese	mg/kg ww	2 - 5	40%	0.1646	0.9559	0.07686	0.08388	0.27
Mercury	mg/kg ww	1 - 5	20%	0.02323	0.02323	0.003982	0.004287	0.00798
Molybdenum	mg/kg ww	1 - 5	20%	0.05324	0.05324	0.01667	0.03262	0.0285
Nickel	mg/kg ww	0 - 5	0%	–	–	0.03056	0.03355	0.0322
Selenium	mg/kg ww	2 - 5	40%	0.06691	0.4162	0.04908	0.1118	0.139
Silver	mg/kg ww	0 - 5	0%	–	–	0.002778	0.002982	0.0029
Strontium	mg/kg ww	1 - 5	20%	0.03476	0.03476	0.01389	0.01491	0.019
Thallium	mg/kg ww	0 - 5	0%	–	–	0.01452	0.02982	0.0231
Vanadium	mg/kg ww	0 - 5	0%	–	–	0.05313	0.1118	0.0854
Zinc	mg/kg ww	5 - 5	100%	1.305	56.72	–	–	12.77
Inorganic-cations/anions								
Calcium	mg/kg ww	0 - 5	0%	–	–	45.74	49.58	48.14
Iron	mg/kg ww	1 - 5	20%	46.66	46.66	11.48	12.4	18.98
Magnesium	mg/kg ww	1 - 5	20%	254.6	254.6	45.74	49.58	89.42
Potassium	mg/kg ww	5 - 5	100%	137.9	3804	–	–	901.8
Sodium	mg/kg ww	5 - 5	100%	133.7	632.1	–	–	290.5

Note: 2009 Reference location includes samples collected from Melton Hill Dam.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-244. Raccoon Subcutaneous Fat (2009) Dataset: Impacted

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	3 - 9	33%	1.111	10.34	0.8446	2.08	2.23
Antimony	mg/kg ww	0 - 9	0%	–	–	0.018	0.03986	0.024
Arsenic	mg/kg ww	0 - 9	0%	–	–	0.015	0.03426	0.025
Barium	mg/kg ww	2 - 9	22%	0.02724	0.117	0.01928	0.06678	0.039
Beryllium	mg/kg ww	0 - 9	0%	–	–	0.0031	0.01019	0.0041
Boron	mg/kg ww	0 - 9	0%	–	–	0.061	0.0918	0.067
Cadmium	mg/kg ww	0 - 9	0%	–	–	0.0057	0.01352	0.00676
Chromium	mg/kg ww	2 - 9	22%	0.1482	0.9988	0.1193	0.1272	0.223
Cobalt	mg/kg ww	0 - 9	0%	–	–	0.0047	0.01019	0.00721
Copper	mg/kg ww	6 - 9	67%	0.17	2.374	0.1725	0.1767	0.496
Lead	mg/kg ww	0 - 9	0%	–	–	0.009988	0.01076	0.01
Manganese	mg/kg ww	4 - 9	44%	0.099	0.477	0.08078	0.1674	0.16
Mercury	mg/kg ww	0 - 9	0%	–	–	0.0041	0.004875	0.00429
Molybdenum	mg/kg ww	1 - 9	11%	0.117	0.117	0.01	0.05851	0.037
Nickel	mg/kg ww	3 - 9	33%	0.03397	0.08241	0.032	0.04903	0.0419
Selenium	mg/kg ww	6 - 9	67%	0.05324	0.4325	0.051	0.05371	0.115
Silver	mg/kg ww	0 - 9	0%	–	–	0.002846	0.00299	0.0029
Strontium	mg/kg ww	3 - 9	33%	0.0227	0.0286	0.014	0.01526	0.0182
Thallium	mg/kg ww	0 - 9	0%	–	–	0.014	0.0296	0.021
Vanadium	mg/kg ww	0 - 9	0%	–	–	0.052	0.1113	0.084
Zinc	mg/kg ww	9 - 9	100%	1.6	5.005	–	–	2.461
Inorganic-cations/anions								
Calcium	mg/kg ww	1 - 9	11%	56.56	56.56	47.5	49.86	49.86
Iron	mg/kg ww	3 - 9	33%	12.96	311.2	11.9	12.41	45.93
Magnesium	mg/kg ww	0 - 9	0%	–	–	47.5	49.95	49.1
Potassium	mg/kg ww	9 - 9	100%	142.3	958.2	–	–	293.4
Sodium	mg/kg ww	9 - 9	100%	185.4	3010	–	–	646.3

Note: 2009 Impacted location includes samples collected from the East, West, and North Embayments, the Intake Channel, and Clinch River mile 2.5.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg ww = Milligram per kilogram wet weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-245. Tree Swallow Egg (2009) Dataset: Reference - Fort Loudoun Dam
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	0 - 9	0%	– - –	134.2 - 135.9	135
Antimony	mg/kg dw	0 - 9	0%	– - –	0.537 - 0.5475	0.541
Arsenic	mg/kg dw	0 - 9	0%	– - –	0.537 - 0.5475	0.541
Barium	mg/kg dw	9 - 9	100%	– - –	– - –	6.52
Beryllium	mg/kg dw	0 - 9	0%	– - –	0.537 - 0.5475	0.541
Boron	mg/kg dw	0 - 9	0%	– - –	10.74 - 10.95	10.8
Cadmium	mg/kg dw	0 - 9	0%	– - –	0.537 - 0.5475	0.541
Chromium	mg/kg dw	0 - 9	0%	– - –	0.537 - 0.6061	0.549
Cobalt	mg/kg dw	0 - 9	0%	– - –	0.537 - 0.5475	0.541
Copper	mg/kg dw	3 - 9	33%	2.826 - 4.496	2.618 - 2.735	2.93
Iron	mg/kg dw	6 - 9	67%	146.2 - 343.6	134.2 - 135.8	199
Lead	mg/kg dw	0 - 9	0%	– - –	0.537 - 0.5475	0.541
Manganese	mg/kg dw	7 - 9	78%	2.857 - 9.313	2.638 - 2.678	4.94
Mercury	mg/kg dw	0 - 9	0%	– - –	0.1052 - 0.1109	0.108
Molybdenum	mg/kg dw	0 - 9	0%	– - –	5.37 - 5.475	5.41
Nickel	mg/kg dw	0 - 9	0%	– - –	0.537 - 0.5475	0.541
Selenium	mg/kg dw	9 - 9	100%	1.605 - 3.771	– - –	2.64
Silver	mg/kg dw	0 - 9	0%	– - –	0.2618 - 0.2735	0.268
Strontium	mg/kg dw	9 - 9	100%	2.293 - 8.674	– - –	5.93
Thallium	mg/kg dw	0 - 9	0%	– - –	0.537 - 0.5475	0.541
Vanadium	mg/kg dw	0 - 9	0%	– - –	1.052 - 1.109	1.08
Zinc	mg/kg dw	9 - 9	100%	33.83 - 170.4	– - –	98
Inorganic-cations/anions						
Calcium	mg/kg dw	9 - 9	100%	2179 - 10822	– - –	5990
Magnesium	mg/kg dw	2 - 9	22%	567.4 - 585.2	537.8 - 543.3	549
Potassium	mg/kg dw	9 - 9	100%	6327 - 8761	– - –	7360
Sodium	mg/kg dw	9 - 9	100%	6950 - 9224	– - –	8160

Note: Egg content concentrations presented in mg/kg dw, using a default literature-based percent moisture of 81.6 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-246. Tree Swallow Egg (2009) Dataset: Emory River - Reach B (ERM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 10	0%	–	–	134.3	158.2	138
Antimony	mg/kg dw	0 - 10	0%	–	–	0.5327	0.6522	0.553
Arsenic	mg/kg dw	0 - 10	0%	–	–	0.5327	0.6522	0.553
Barium	mg/kg dw	10 - 10	100%	–	–	–	–	17.4
Beryllium	mg/kg dw	0 - 10	0%	–	–	0.5327	0.6522	0.553
Boron	mg/kg dw	0 - 10	0%	–	–	10.76	12.5	11.1
Cadmium	mg/kg dw	0 - 10	0%	–	–	0.5327	0.6522	0.553
Chromium	mg/kg dw	0 - 10	0%	–	–	0.5327	0.7109	0.57
Cobalt	mg/kg dw	0 - 10	0%	–	–	0.5327	0.6522	0.553
Copper	mg/kg dw	1 - 10	10%	3.37	3.37	2.649	3.152	2.83
Iron	mg/kg dw	8 - 10	80%	156.1	400.6	134.3	135.8	219
Lead	mg/kg dw	0 - 10	0%	–	–	0.5327	0.6522	0.553
Manganese	mg/kg dw	10 - 10	100%	4.063	11.15	–	–	6.61
Mercury	mg/kg dw	1 - 10	10%	0.1745	0.1745	0.1066	0.1957	0.13
Molybdenum	mg/kg dw	0 - 10	0%	–	–	5.327	6.522	5.53
Nickel	mg/kg dw	0 - 10	0%	–	–	0.5327	0.6522	0.553
Selenium	mg/kg dw	10 - 10	100%	2.72	6.995	–	–	4.13
Silver	mg/kg dw	0 - 10	0%	–	–	0.2649	0.3152	0.277
Strontium	mg/kg dw	10 - 10	100%	3.853	20.16	–	–	8.53
Thallium	mg/kg dw	0 - 10	0%	–	–	0.5327	0.6522	0.553
Vanadium	mg/kg dw	0 - 10	0%	–	–	1.066	1.25	1.11
Zinc	mg/kg dw	10 - 10	100%	64.55	192.9	–	–	120
Inorganic-cations/anions								
Calcium	mg/kg dw	10 - 10	100%	2606	7011	–	–	4800
Magnesium	mg/kg dw	3 - 10	30%	547.4	750	537.9	559.8	576
Potassium	mg/kg dw	10 - 10	100%	6009	9674	–	–	7460
Sodium	mg/kg dw	10 - 10	100%	6739	8302	–	–	7650

Note: Egg content concentrations presented in mg/kg dw, using a default literature-based percent moisture of 81.6 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-247. Tree Swallow Egg (2009) Dataset: Emory River - Reach C (ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 13	0%	–	–	134.5	260.3	150
Antimony	mg/kg dw	0 - 13	0%	–	–	0.5387	1.033	0.601
Arsenic	mg/kg dw	0 - 13	0%	–	–	0.5387	1.033	0.601
Barium	mg/kg dw	12 - 13	92%	–	–	0.6522	0.6522	8.69
Beryllium	mg/kg dw	0 - 13	0%	–	–	0.5387	1.033	0.601
Boron	mg/kg dw	0 - 13	0%	–	–	10.74	20.65	12
Cadmium	mg/kg dw	0 - 13	0%	–	–	0.5387	1.033	0.601
Chromium	mg/kg dw	0 - 13	0%	–	–	0.5391	1.033	0.608
Cobalt	mg/kg dw	0 - 13	0%	–	–	0.5387	1.033	0.601
Copper	mg/kg dw	5 - 13	38%	2.715	11.96	2.656	3.478	3.61
Iron	mg/kg dw	9 - 13	69%	157.1	513	134.5	161.4	215
Lead	mg/kg dw	0 - 13	0%	–	–	0.5387	1.033	0.601
Manganese	mg/kg dw	10 - 13	77%	3.043	19.57	2.713	3.207	7.18
Mercury	mg/kg dw	3 - 13	23%	0.1809	0.5	0.105	0.1413	0.159
Molybdenum	mg/kg dw	0 - 13	0%	–	–	5.387	10.33	6.01
Nickel	mg/kg dw	1 - 13	8%	0.5661	0.5661	0.5391	1.033	0.603
Selenium	mg/kg dw	12 - 13	92%	2.459	10.87	1.304	1.304	3.88
Silver	mg/kg dw	0 - 13	0%	–	–	0.2656	0.5217	0.3
Strontium	mg/kg dw	13 - 13	100%	1.087	23.5	–	–	11
Thallium	mg/kg dw	0 - 13	0%	–	–	0.5387	1.033	0.601
Vanadium	mg/kg dw	0 - 13	0%	–	–	1.05	2.065	1.2
Zinc	mg/kg dw	12 - 13	92%	56.63	315.8	13.04	13.04	112
Inorganic-cations/anions								
Calcium	mg/kg dw	13 - 13	100%	673.9	27799	–	–	12600
Magnesium	mg/kg dw	4 - 13	31%	552.3	1793	537	701.1	679
Potassium	mg/kg dw	13 - 13	100%	5304	33043	–	–	9180
Sodium	mg/kg dw	13 - 13	100%	6837	43587	–	–	10900

Note: Egg content concentrations presented in mg/kg dw, using a default literature-based percent moisture of 81.6 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-248. Tree Swallow Egg (2009) Dataset: Clinch River - Reach B (CRM 2.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 11	0%	–	–	132	265.2	158
Antimony	mg/kg dw	0 - 11	0%	–	–	0.5305	1.087	0.635
Arsenic	mg/kg dw	0 - 11	0%	–	–	0.5305	1.087	0.635
Barium	mg/kg dw	11 - 11	100%	–	–	–	–	8.94
Beryllium	mg/kg dw	0 - 11	0%	–	–	0.5305	1.087	0.635
Boron	mg/kg dw	0 - 11	0%	–	–	10.61	21.2	12.7
Cadmium	mg/kg dw	0 - 11	0%	–	–	0.5305	1.087	0.635
Chromium	mg/kg dw	0 - 11	0%	–	–	0.5305	1.314	0.778
Cobalt	mg/kg dw	0 - 11	0%	–	–	0.5305	1.087	0.635
Copper	mg/kg dw	5 - 11	45%	2.714	4.549	2.671	5.397	3.52
Iron	mg/kg dw	5 - 11	45%	150.6	431.7	132	265.2	200
Lead	mg/kg dw	1 - 11	9%	0.8943	0.8943	0.5305	1.087	0.666
Manganese	mg/kg dw	7 - 11	64%	3.595	18.35	2.591	11.41	6.88
Mercury	mg/kg dw	2 - 11	18%	0.113	0.1974	0.1038	0.212	0.147
Molybdenum	mg/kg dw	0 - 11	0%	–	–	5.305	10.87	6.35
Nickel	mg/kg dw	0 - 11	0%	–	–	0.5305	1.087	0.693
Selenium	mg/kg dw	11 - 11	100%	2.465	6.836	–	–	3.58
Silver	mg/kg dw	0 - 11	0%	–	–	0.2591	0.5397	0.317
Strontium	mg/kg dw	11 - 11	100%	3.492	51.45	–	–	17.9
Thallium	mg/kg dw	0 - 11	0%	–	–	0.5305	1.087	0.635
Vanadium	mg/kg dw	0 - 11	0%	–	–	1.038	2.12	1.27
Zinc	mg/kg dw	11 - 11	100%	37.63	237.1	–	–	97.2
Inorganic-cations/anions								
Calcium	mg/kg dw	11 - 11	100%	2311	80700	–	–	22200
Magnesium	mg/kg dw	5 - 11	45%	538	867	529.3	1060	692
Potassium	mg/kg dw	11 - 11	100%	5805	11221	–	–	7920
Sodium	mg/kg dw	11 - 11	100%	6630	12333	–	–	8820

Note: Egg content concentrations presented in mg/kg dw, using a default literature-based percent moisture of 81.6 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-249. Tree Swallow Egg (2009) Dataset: Positive Control - Melton Hill Dam
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min - Max	Detection Limits Min - Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	0 - 16	0%	– - –	134.9 - 407.1	174
Antimony	mg/kg dw	0 - 16	0%	– - –	0.5353 - 1.63	0.696
Arsenic	mg/kg dw	0 - 16	0%	– - –	0.5353 - 1.63	0.696
Barium	mg/kg dw	16 - 16	100%	– - –	– - –	8.38
Beryllium	mg/kg dw	0 - 16	0%	– - –	0.5353 - 1.63	0.696
Boron	mg/kg dw	0 - 16	0%	– - –	10.78 - 32.61	13.9
Cadmium	mg/kg dw	0 - 16	0%	– - –	0.5353 - 1.63	0.696
Chromium	mg/kg dw	0 - 16	0%	– - –	0.5353 - 1.63	0.709
Cobalt	mg/kg dw	0 - 16	0%	– - –	0.5353 - 1.63	0.696
Copper	mg/kg dw	6 - 16	38%	3.083 - 19.02	2.671 - 8.152	4.69
Iron	mg/kg dw	10 - 16	63%	138.3 - 397.8	135.7 - 407.1	235
Lead	mg/kg dw	0 - 16	0%	– - –	0.5353 - 1.63	0.696
Manganese	mg/kg dw	13 - 16	81%	4.022 - 14.24	2.685 - 8.152	6.63
Mercury	mg/kg dw	1 - 16	6%	0.2228 - 0.2228	0.1071 - 0.3261	0.148
Molybdenum	mg/kg dw	0 - 16	0%	– - –	5.353 - 16.3	6.96
Nickel	mg/kg dw	0 - 16	0%	– - –	0.5353 - 1.63	0.696
Selenium	mg/kg dw	15 - 16	94%	2.275 - 5.978	3.261 - 3.261	3.91
Silver	mg/kg dw	0 - 16	0%	– - –	0.2671 - 0.8152	0.349
Strontium	mg/kg dw	16 - 16	100%	2.228 - 19.95	– - –	6.7
Thallium	mg/kg dw	0 - 16	0%	– - –	0.5353 - 1.63	0.696
Vanadium	mg/kg dw	0 - 16	0%	– - –	1.071 - 3.261	1.39
Zinc	mg/kg dw	16 - 16	100%	42.39 - 198.4	– - –	104
Inorganic-cations/anions						
Calcium	mg/kg dw	16 - 16	100%	2016 - 31317	– - –	8350
Magnesium	mg/kg dw	3 - 16	19%	587 - 766.3	540.1 - 1625	709
Potassium	mg/kg dw	16 - 16	100%	5924 - 10652	– - –	7450
Sodium	mg/kg dw	16 - 16	100%	5924 - 13750	– - –	8100

Note: Egg content concentrations presented in mg/kg dw, using a default literature-based percent moisture of 81.6 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-250. Tree Swallow Egg (2010) Dataset: Reference - Fort Loudoun Dam
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 16	0%	–	–	17.93	44.02	24.9
Antimony	mg/kg dw	0 - 16	0%	–	–	0.06522	0.1576	0.09
Arsenic	mg/kg dw	0 - 16	0%	–	–	0.125	0.3152	0.204
Barium	mg/kg dw	16 - 16	100%	–	–	–	–	8.36
Beryllium	mg/kg dw	0 - 16	0%	–	–	0.07065	0.3478	0.243
Boron	mg/kg dw	0 - 16	0%	–	–	1.848	4.565	2.58
Cadmium	mg/kg dw	1 - 16	6%	0.04728	0.04728	0.04293	0.09239	0.069
Chromium	mg/kg dw	2 - 16	13%	0.8152	0.8696	0.5978	1.413	0.798
Cobalt	mg/kg dw	11 - 16	69%	0.07609	0.1685	0.07609	0.09783	0.103
Copper	mg/kg dw	16 - 16	100%	1.848	3.587	–	–	2.57
Iron	mg/kg dw	15 - 16	94%	68.48	300.5	83.15	83.15	179
Lead	mg/kg dw	0 - 16	0%	–	–	0.125	0.3043	0.173
Manganese	mg/kg dw	11 - 16	69%	2.12	12.5	1.902	5.435	6.26
Mercury	mg/kg dw	10 - 16	63%	0.08696	0.1359	0.07609	0.1793	0.111
Molybdenum	mg/kg dw	0 - 16	0%	–	–	0.1576	0.3859	0.218
Nickel	mg/kg dw	2 - 16	13%	7.609	8.152	0.4402	2.065	1.6
Selenium	mg/kg dw	16 - 16	100%	1.304	5.054	–	–	2.87
Silver	mg/kg dw	3 - 16	19%	0.01522	0.0337	0.01522	0.05435	0.0322
Strontium	mg/kg dw	16 - 16	100%	1.848	39.67	–	–	6.9
Thallium	mg/kg dw	0 - 16	0%	–	–	0.05978	0.1522	0.0853
Vanadium	mg/kg dw	0 - 16	0%	–	–	0.2065	0.5163	0.332
Zinc	mg/kg dw	16 - 16	100%	18.48	163	–	–	99.5
Inorganic-cations/anions								
Calcium	mg/kg dw	16 - 16	100%	1565	70652	–	–	8610
Magnesium	mg/kg dw	15 - 16	94%	346.7	760.9	270.1	270.1	506
Potassium	mg/kg dw	16 - 16	100%	7065	9185	–	–	8040
Sodium	mg/kg dw	16 - 16	100%	8043	10000	–	–	9030

Note: Egg content concentrations presented in mg/kg dw, using a default literature-based percent moisture of 81.6 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-251. Tree Swallow Egg (2010) Dataset: Composite Reference
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Concentration [b]
Inorganics								
Aluminum	mg/kg dw	0 - 46	0%	–	–	17.93	48.91	25.6
Antimony	mg/kg dw	1 - 46	2%	–	–	0.06522	0.1793	0.0956
Arsenic	mg/kg dw	0 - 46	0%	–	–	0.125	0.3478	0.21
Barium	mg/kg dw	46 - 46	100%	–	–	–	–	9.18
Beryllium	mg/kg dw	0 - 46	0%	–	–	0.07065	0.7065	0.316
Boron	mg/kg dw	0 - 46	0%	–	–	1.848	5.054	2.65
Cadmium	mg/kg dw	1 - 46	2%	0.04728	0.04728	0.0375	0.1902	0.0709
Chromium	mg/kg dw	2 - 46	4%	0.8152	0.8696	0.5978	1.576	0.816
Cobalt	mg/kg dw	33 - 46	72%	0.07609	0.2337	0.07022	0.1739	0.114
Copper	mg/kg dw	45 - 46	98%	1.848	16.3	10.33	10.33	3.22
Iron	mg/kg dw	43 - 46	93%	68.48	366.3	83.15	147.8	195
Lead	mg/kg dw	1 - 46	2%	0.5978	0.5978	0.125	1.957	0.254
Manganese	mg/kg dw	41 - 46	89%	2.12	15.22	1.902	5.435	6.99
Mercury	mg/kg dw	34 - 46	74%	0.08696	0.2663	0.07609	0.3315	0.135
Molybdenum	mg/kg dw	4 - 46	9%	0.1739	0.2663	0.1576	0.4293	0.227
Nickel	mg/kg dw	2 - 46	4%	7.609	8.152	0.4402	2.065	0.968
Selenium	mg/kg dw	46 - 46	100%	1.304	5.978	–	–	3.04
Silver	mg/kg dw	4 - 46	9%	0.01522	0.0337	0.01404	0.2065	0.0312
Strontium	mg/kg dw	46 - 46	100%	1.848	47.83	–	–	7.71
Thallium	mg/kg dw	0 - 46	0%	–	–	0.05978	0.1685	0.0878
Vanadium	mg/kg dw	0 - 46	0%	–	–	0.2065	3.207	0.454
Zinc	mg/kg dw	46 - 46	100%	18.48	266.3	–	–	111
Inorganic-cations/anions								
Calcium	mg/kg dw	46 - 46	100%	1565	81522	–	–	10300
Magnesium	mg/kg dw	45 - 46	98%	331	826.1	270.1	270.1	533
Potassium	mg/kg dw	46 - 46	100%	6848	17446	–	–	8350
Sodium	mg/kg dw	46 - 46	100%	6630	19185	–	–	9300

Notes: Composite Reference includes samples from Fort Loudon Dam, Tellico Dam, and the Upstream Tennessee River (Above TRM 568.0).
Egg content concentrations presented in mg/kg dw, using a default literature-based percent moisture of 81.6 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-252. Tree Swallow Egg (2010) Dataset: Reference - Little Emory River (LERM 2.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 2	0%	–	–	22.83	67.39	45.1
Antimony	mg/kg dw	0 - 2	0%	–	–	0.08152	0.2446	0.163
Arsenic	mg/kg dw	0 - 2	0%	–	–	0.3152	0.9239	0.62
Barium	mg/kg dw	2 - 2	100%	–	–	–	–	20.9
Beryllium	mg/kg dw	0 - 2	0%	–	–	0.3261	0.4946	0.41
Boron	mg/kg dw	0 - 2	0%	–	–	2.337	7.065	4.7
Cadmium	mg/kg dw	0 - 2	0%	–	–	0.08152	0.1304	0.106
Chromium	mg/kg dw	1 - 2	50%	1.902	1.902	2.12	2.12	2.01
Cobalt	mg/kg dw	1 - 2	50%	0.1522	0.1522	0.2337	0.2337	0.193
Copper	mg/kg dw	2 - 2	100%	2.554	2.609	–	–	2.58
Iron	mg/kg dw	2 - 2	100%	217.4	587	–	–	402
Lead	mg/kg dw	0 - 2	0%	–	–	0.4565	0.4674	0.462
Manganese	mg/kg dw	2 - 2	100%	11.96	16.3	–	–	14.1
Mercury	mg/kg dw	1 - 2	50%	0.1467	0.1467	0.1957	0.1957	0.171
Molybdenum	mg/kg dw	0 - 2	0%	–	–	0.1957	0.5978	0.397
Nickel	mg/kg dw	1 - 2	50%	0.6522	0.6522	1.63	1.63	1.14
Selenium	mg/kg dw	2 - 2	100%	3.967	7.065	–	–	5.52
Silver	mg/kg dw	0 - 2	0%	–	–	0.0163	0.04837	0.0323
Strontium	mg/kg dw	2 - 2	100%	8.152	16.3	–	–	12.2
Thallium	mg/kg dw	0 - 2	0%	–	–	0.07609	0.2337	0.155
Vanadium	mg/kg dw	0 - 2	0%	–	–	0.5109	1.522	1.02
Zinc	mg/kg dw	2 - 2	100%	125	283.7	–	–	204
Inorganic-cations/anions								
Calcium	mg/kg dw	2 - 2	100%	5435	9837	–	–	7640
Magnesium	mg/kg dw	2 - 2	100%	570.7	837	–	–	704
Potassium	mg/kg dw	2 - 2	100%	8152	8261	–	–	8210
Sodium	mg/kg dw	2 - 2	100%	7391	8478	–	–	7930

Note: Egg content concentrations presented in mg/kg dw, using a default literature-based percent moisture of 81.6 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
LERM = Little Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-253. Tree Swallow Egg (2010) Dataset: Emory River - Reach B (ERM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 25	0%	–	–	20.11	57.61	26.1
Antimony	mg/kg dw	1 - 30	3%	–	–	0.07609	0.2065	0.0971
Arsenic	mg/kg dw	0 - 30	0%	–	–	0.1467	0.8152	0.288
Barium	mg/kg dw	30 - 30	100%	–	–	–	–	8.67
Beryllium	mg/kg dw	0 - 30	0%	–	–	0.1522	0.4239	0.225
Boron	mg/kg dw	0 - 30	0%	–	–	2.12	5.978	2.62
Cadmium	mg/kg dw	1 - 30	3%	0.05435	0.05435	0.03967	0.2609	0.065
Chromium	mg/kg dw	4 - 30	13%	0.7065	1.467	0.6522	1.848	0.851
Cobalt	mg/kg dw	20 - 30	67%	0.07609	0.4076	0.07065	0.1902	0.134
Copper	mg/kg dw	30 - 30	100%	2.065	4.022	–	–	2.96
Iron	mg/kg dw	30 - 30	100%	100.5	717.4	–	–	219
Lead	mg/kg dw	0 - 30	0%	–	–	0.1467	0.4022	0.207
Manganese	mg/kg dw	30 - 30	100%	2.935	31.52	–	–	7.98
Mercury	mg/kg dw	7 - 30	23%	0.1359	0.2609	0.1522	0.3696	0.223
Molybdenum	mg/kg dw	5 - 30	17%	0.1957	0.2989	0.1793	0.5054	0.261
Nickel	mg/kg dw	11 - 30	37%	0.6522	33.7	0.4946	1.304	4.97
Selenium	mg/kg dw	30 - 30	100%	2.446	13.04	–	–	4.75
Silver	mg/kg dw	2 - 30	7%	0.025	0.04076	0.01467	0.04185	0.0196
Strontium	mg/kg dw	30 - 30	100%	3.098	33.15	–	–	9.05
Thallium	mg/kg dw	0 - 30	0%	–	–	0.07065	0.1957	0.0884
Vanadium	mg/kg dw	0 - 30	0%	–	–	0.06522	1.304	0.503
Zinc	mg/kg dw	30 - 30	100%	46.74	386.4	–	–	122
Inorganic-cations/anions								
Calcium	mg/kg dw	30 - 30	100%	2527	28533	–	–	7730
Magnesium	mg/kg dw	29 - 30	97%	326.1	1489	657.6	657.6	579
Potassium	mg/kg dw	30 - 30	100%	6902	11033	–	–	9140
Sodium	mg/kg dw	30 - 30	100%	8261	12446	–	–	10100

Note: Egg content concentrations presented in mg/kg dw, using a default literature-based percent moisture of 81.6 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-254. Tree Swallow Egg (2010) Dataset: Embayments
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min Max	Detection Limits Min Max	Mean Concentration [b]
Inorganics						
Aluminum	mg/kg dw	0 - 10	0%	– - –	20.11 - 36.41	24.3
Antimony	mg/kg dw	0 - 10	0%	– - –	0.07065 - 0.1304	0.0878
Arsenic	mg/kg dw	0 - 10	0%	– - –	0.1467 - 0.3152	0.261
Barium	mg/kg dw	10 - 10	100%	– - –	– - –	8.8
Beryllium	mg/kg dw	0 - 10	0%	– - –	0.1467 - 0.5435	0.282
Boron	mg/kg dw	0 - 10	0%	– - –	2.065 - 6.359	2.94
Cadmium	mg/kg dw	0 - 10	0%	– - –	0.01322 - 0.1413	0.0689
Chromium	mg/kg dw	1 - 10	10%	0.7065 - 0.7065	0.6522 - 1.141	0.77
Cobalt	mg/kg dw	7 - 10	70%	0.09913 - 0.1957	0.07609 - 0.1304	0.13
Copper	mg/kg dw	10 - 10	100%	2.12 - 3.098	– - –	2.55
Iron	mg/kg dw	10 - 10	100%	111.4 - 329.3	– - –	205
Lead	mg/kg dw	0 - 10	0%	– - –	0.1413 - 0.4511	0.243
Manganese	mg/kg dw	10 - 10	100%	2.283 - 20.11	– - –	9.71
Mercury	mg/kg dw	6 - 10	60%	0.1413 - 0.2396	0.212 - 0.288	0.212
Molybdenum	mg/kg dw	2 - 10	20%	0.212 - 0.2313	0.1739 - 0.3207	0.219
Nickel	mg/kg dw	4 - 10	40%	4.402 - 34.24	0.5 - 0.8696	5.44
Selenium	mg/kg dw	10 - 10	100%	2.826 - 5.978	– - –	4.38
Silver	mg/kg dw	0 - 10	0%	– - –	0.01467 - 0.04891	0.021
Strontium	mg/kg dw	10 - 10	100%	3.47 - 20.11	– - –	7.76
Thallium	mg/kg dw	1 - 10	10%	0.07065 - 0.07065	0.07065 - 0.2065	0.0972
Vanadium	mg/kg dw	0 - 10	0%	– - –	0.2337 - 0.5054	0.42
Zinc	mg/kg dw	10 - 10	100%	64.67 - 174.5	– - –	111
Inorganic-cations/anions						
Calcium	mg/kg dw	10 - 10	100%	3098 - 24565	– - –	8000
Magnesium	mg/kg dw	10 - 10	100%	385.9 - 880.4	– - –	549
Potassium	mg/kg dw	10 - 10	100%	7446 - 9185	– - –	8590
Sodium	mg/kg dw	10 - 10	100%	8370 - 11250	– - –	9910

Notes: Embayments include samples from the East, West, and North Embayments.
Egg content concentrations presented in mg/kg dw, using a default literature-based percent moisture of 81.6 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-255. Tree Swallow Egg (2010) Dataset: Emory River - Reach C (ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	1 - 12	8%	33.7	33.7	19.57	22.28	22.5
Antimony	mg/kg dw	0 - 12	0%	–	–	0.07065	0.08152	0.0784
Arsenic	mg/kg dw	0 - 12	0%	–	–	0.1467	0.3152	0.264
Barium	mg/kg dw	12 - 12	100%	–	–	–	–	6.28
Beryllium	mg/kg dw	0 - 12	0%	–	–	0.1413	0.3261	0.21
Boron	mg/kg dw	1 - 12	8%	6.522	6.522	2.011	6.848	3.32
Cadmium	mg/kg dw	0 - 12	0%	–	–	0.03967	0.08696	0.0586
Chromium	mg/kg dw	3 - 12	25%	0.7609	5.435	0.5978	0.7065	1.13
Cobalt	mg/kg dw	9 - 12	75%	0.08152	0.1359	0.07609	0.07609	0.0978
Copper	mg/kg dw	12 - 12	100%	2.011	4.348	–	–	2.68
Iron	mg/kg dw	12 - 12	100%	92.39	259.8	–	–	160
Lead	mg/kg dw	0 - 12	0%	–	–	0.1359	0.4511	0.248
Manganese	mg/kg dw	12 - 12	100%	3.315	9.783	–	–	6.15
Mercury	mg/kg dw	6 - 12	50%	0.1522	0.2826	0.1576	0.2391	0.206
Molybdenum	mg/kg dw	0 - 12	0%	–	–	0.1685	0.1957	0.189
Nickel	mg/kg dw	2 - 12	17%	2.717	6.522	0.4728	0.5435	1.21
Selenium	mg/kg dw	12 - 12	100%	2.12	4.185	–	–	3.15
Silver	mg/kg dw	0 - 12	0%	–	–	0.01413	0.05435	0.0216
Strontium	mg/kg dw	12 - 12	100%	3.207	7.609	–	–	4.78
Thallium	mg/kg dw	0 - 12	0%	–	–	0.06522	0.2228	0.0978
Vanadium	mg/kg dw	0 - 12	0%	–	–	0.2391	0.5109	0.447
Zinc	mg/kg dw	12 - 12	100%	63.59	147.8	–	–	96.6
Inorganic-cations/anions								
Calcium	mg/kg dw	12 - 12	100%	2826	5092	–	–	4080
Magnesium	mg/kg dw	12 - 12	100%	322.8	581.5	–	–	452
Potassium	mg/kg dw	12 - 12	100%	6739	9130	–	–	8160
Sodium	mg/kg dw	12 - 12	100%	7337	10815	–	–	9440

Note: Egg content concentrations presented in mg/kg dw, using a default literature-based percent moisture of 81.6 percent.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

ERM = Emory River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-256. Tree Swallow Egg (2010) Dataset: Clinch River - Reach A (CRM 1.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	– - –	–	– - –		– - –		#N/A
Antimony	mg/kg dw	0 - 15	0%	– - –		0.07609 - 0.1522		0.0986
Arsenic	mg/kg dw	0 - 15	0%	– - –		0.1467 - 02935		0.192
Barium	mg/kg dw	15 - 15	100%	– - –		– - –		12.2
Beryllium	mg/kg dw	0 - 15	0%	– - –		0.1522 - 0.3098		0.202
Boron	mg/kg dw	0 - 15	0%	– - –		2.174 - 4.348		2.84
Cadmium	mg/kg dw	0 - 15	0%	– - –		0.04239 - 0.1196		0.0696
Chromium	mg/kg dw	8 - 15	53%	0.7609 - 1.522		0.6522 - 1.304		0.949
Cobalt	mg/kg dw	11 - 15	73%	0.07609 - 0.2554		0.07609 - 0.1467		0.125
Copper	mg/kg dw	15 - 15	100%	2.065 - 3.967		– - –		2.79
Iron	mg/kg dw	14 - 15	93%	125 - 361.4		125.5 - 125.5		202
Lead	mg/kg dw	0 - 15	0%	– - –		0.2826 - 0.5435		0.369
Manganese	mg/kg dw	15 - 15	100%	4.239 - 16.85		– - –		8.12
Mercury	mg/kg dw	0 - 15	0%	– - –		0.125 - 0.3696		0.195
Molybdenum	mg/kg dw	2 - 15	13%	0.2772 - 0.2826		0.1848 - 0.3696		0.243
Nickel	mg/kg dw	1 - 15	7%	2.065 - 2.065		0.5109 - 1.033		0.767
Selenium	mg/kg dw	15 - 15	100%	2.5 - 5.978		– - –		3.71
Silver	mg/kg dw	2 - 15	13%	0.01685 - 0.05435		0.01522 - 0.03043		0.022
Strontium	mg/kg dw	15 - 15	100%	3.587 - 16.85		– - –		6.68
Thallium	mg/kg dw	1 - 15	7%	0.1196 - 0.1196		0.07065 - 0.1413		0.0946
Vanadium	mg/kg dw	0 - 15	0%	– - –		0.2391 - 0.4783		0.312
Zinc	mg/kg dw	15 - 15	100%	68.48 - 195.7		– - –		119
Inorganic-cations/anions								
Calcium	mg/kg dw	15 - 15	100%	3043 - 18098		– - –		6450
Magnesium	mg/kg dw	14 - 15	93%	390.8 - 706.5		503.3 - 503.3		527
Potassium	mg/kg dw	15 - 15	100%	7120 - 10326		– - –		8520
Sodium	mg/kg dw	15 - 15	100%	7880 - 11196		– - –		9860

Note: Egg content concentrations presented in mg/kg dw, using a default literature-based percent moisture of 81.6 percent.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-257. Tree Swallow Egg (2010) Dataset: Clinch River - Reach B (CRM 2.5)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	– - –	–	– - –		– - –		26.5
Antimony	mg/kg dw	0 - 15	0%	– - –		0.06522 - 0.2228		0.0935
Arsenic	mg/kg dw	0 - 15	0%	– - –		0.1304 - 04348		0.182
Barium	mg/kg dw	15 - 15	100%	– - –		– - –		5.72
Beryllium	mg/kg dw	0 - 15	0%	– - –		0.1359 - 0.4565		0.19
Boron	mg/kg dw	0 - 15	0%	– - –		1.902 - 6.522		2.68
Cadmium	mg/kg dw	0 - 15	0%	– - –		0.03533 - 0.1196		0.0503
Chromium	mg/kg dw	0 - 15	0%	– - –		0.5978 - 1.957		0.823
Cobalt	mg/kg dw	10 - 15	67%	0.06522 - 0.2228		0.07065 - 0.2174		0.12
Copper	mg/kg dw	15 - 15	100%	1.848 - 5.054		– - –		3.27
Iron	mg/kg dw	13 - 15	87%	112 - 251.6		72.83 - 185.9		159
Lead	mg/kg dw	0 - 15	0%	– - –		0.1304 - 0.4293		0.18
Manganese	mg/kg dw	15 - 15	100%	3.315 - 9.783		– - –		5.42
Mercury	mg/kg dw	0 - 15	0%	– - –		0.1304 - 0.2989		0.2
Molybdenum	mg/kg dw	0 - 15	0%	– - –		0.3207 - 1.087		0.449
Nickel	mg/kg dw	0 - 15	0%	– - –		0.4565 - 1.522		0.632
Selenium	mg/kg dw	15 - 15	100%	2.446 - 5.978		– - –		3.84
Silver	mg/kg dw	0 - 15	0%	– - –		0.01359 - 0.04457		0.0186
Strontium	mg/kg dw	15 - 15	100%	3.37 - 27.72		– - –		7.33
Thallium	mg/kg dw	1 - 15	7%	0.09239 - 0.09239		0.06522 - 0.212		0.0895
Vanadium	mg/kg dw	0 - 15	0%	– - –		0.4239 - 1.413		0.585
Zinc	mg/kg dw	15 - 15	100%	57.07 - 138.6		– - –		84
Inorganic-cations/anions								
Calcium	mg/kg dw	15 - 15	100%	3228 - 51087		– - –		9560
Magnesium	mg/kg dw	14 - 15	93%	335.9 - 603.3		744.6 - 744.6		506
Potassium	mg/kg dw	15 - 15	100%	7989 - 12337		– - –		9820
Sodium	mg/kg dw	15 - 15	100%	8261 - 12609		– - –		10300

Note: Egg content concentrations presented in mg/kg dw, using a default literature-based percent moisture of 81.6 percent.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

CRM = Clinch River mile.

mg/kg dw = Milligram per kilogram dry weight.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-258. Tree Swallow Egg (2010) Dataset: Tennessee River - Reach B (TRM 566.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 9	0%	–	–	20.65	46.2	26.5
Antimony	mg/kg dw	0 - 9	0%	–	–	0.07609	0.1685	0.0966
Arsenic	mg/kg dw	0 - 9	0%	–	–	0.1576	0.3261	0.269
Barium	mg/kg dw	9 - 9	100%	–	–	–	–	16
Beryllium	mg/kg dw	1 - 9	11%	0.163	0.163	0.1685	0.7065	0.356
Boron	mg/kg dw	0 - 9	0%	–	–	2.12	4.783	2.74
Cadmium	mg/kg dw	0 - 9	0%	–	–	0.04293	0.1793	0.0923
Chromium	mg/kg dw	1 - 9	11%	0.7065	0.7065	0.6522	1.467	0.839
Cobalt	mg/kg dw	7 - 9	78%	0.07065	0.2935	0.07609	0.163	0.151
Copper	mg/kg dw	9 - 9	100%	1.902	2.826	–	–	2.43
Iron	mg/kg dw	9 - 9	100%	161.4	657.6	–	–	303
Lead	mg/kg dw	0 - 9	0%	–	–	0.1576	0.4511	0.344
Manganese	mg/kg dw	9 - 9	100%	5.978	44.57	–	–	14.1
Mercury	mg/kg dw	8 - 9	89%	0.09239	0.1467	0.1359	0.1359	0.121
Molybdenum	mg/kg dw	2 - 9	22%	0.2228	0.2663	0.1793	0.4076	0.239
Nickel	mg/kg dw	0 - 9	0%	–	–	0.5	1.141	0.648
Selenium	mg/kg dw	9 - 9	100%	2.88	5.978	–	–	4.37
Silver	mg/kg dw	0 - 9	0%	–	–	0.01467	0.0337	0.0191
Strontium	mg/kg dw	9 - 9	100%	3.75	10.87	–	–	6.51
Thallium	mg/kg dw	0 - 9	0%	–	–	0.07065	0.1576	0.0906
Vanadium	mg/kg dw	0 - 9	0%	–	–	0.2554	0.5326	0.438
Zinc	mg/kg dw	9 - 9	100%	118.5	262.5	–	–	156
Inorganic-cations/anions								
Calcium	mg/kg dw	9 - 9	100%	3761	8859	–	–	5900
Magnesium	mg/kg dw	9 - 9	100%	461.4	1005	–	–	634
Potassium	mg/kg dw	9 - 9	100%	7174	9837	–	–	7970
Sodium	mg/kg dw	9 - 9	100%	7880	10054	–	–	8950

Note: Egg content concentrations presented in mg/kg dw, using a default literature-based percent moisture of 81.6 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-259. Tree Swallow Egg (2010) Dataset: Positive Control - Melton Hill Dam
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a] Number of Detects / Number of Samples	FOD %	Detected Concentrations Min	Detected Concentrations Max	Detection Limits Min	Detection Limits Max	Mean Concentration [b]
Inorganics								
Aluminum	mg/kg dw	0 - 16	0%	–	–	19.57	53.26	24.8
Antimony	mg/kg dw	0 - 16	0%	–	–	0.07065	0.1957	0.0893
Arsenic	mg/kg dw	0 - 16	0%	–	–	0.1359	0.375	0.204
Barium	mg/kg dw	16 - 16	100%	–	–	–	–	10.5
Beryllium	mg/kg dw	0 - 16	0%	–	–	0.1576	0.8152	0.339
Boron	mg/kg dw	0 - 16	0%	–	–	2.011	5.435	2.56
Cadmium	mg/kg dw	0 - 16	0%	–	–	0.04076	0.2065	0.0873
Chromium	mg/kg dw	0 - 16	0%	–	–	0.5978	1.685	0.781
Cobalt	mg/kg dw	10 - 16	63%	0.09783	0.4076	0.07065	0.1902	0.128
Copper	mg/kg dw	16 - 16	100%	1.902	3.315	–	–	2.54
Iron	mg/kg dw	16 - 16	100%	80.98	443.5	–	–	203
Lead	mg/kg dw	1 - 16	6%	0.375	0.375	0.1359	0.3696	0.187
Manganese	mg/kg dw	10 - 16	63%	5.217	26.09	2.717	5.435	8.89
Mercury	mg/kg dw	11 - 16	69%	0.09239	0.1522	0.09783	0.1848	0.134
Molybdenum	mg/kg dw	0 - 16	0%	–	–	0.1685	0.4674	0.219
Nickel	mg/kg dw	2 - 16	13%	7.609	8.152	0.4728	1.304	1.52
Selenium	mg/kg dw	16 - 16	100%	2.609	8.152	–	–	4.11
Silver	mg/kg dw	0 - 16	0%	–	–	0.01576	0.1304	0.0527
Strontium	mg/kg dw	16 - 16	100%	2.065	15.76	–	–	5.9
Thallium	mg/kg dw	0 - 16	0%	–	–	0.06522	0.1848	0.0846
Vanadium	mg/kg dw	0 - 16	0%	–	–	0.2228	0.5978	0.332
Zinc	mg/kg dw	16 - 16	100%	56.52	297.8	–	–	114
Inorganic-cations/anions								
Calcium	mg/kg dw	16 - 16	100%	2141	26304	–	–	6990
Magnesium	mg/kg dw	16 - 16	100%	311.4	1168	–	–	526
Potassium	mg/kg dw	16 - 16	100%	7011	9674	–	–	8110
Sodium	mg/kg dw	16 - 16	100%	7663	11685	–	–	8800

Note: Egg content concentrations presented in mg/kg dw, using a default literature-based percent moisture of 81.6 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-260. Tree Swallow Eggshell (2010) Dataset: Composite Reference
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 4	0%	–	–	8.144	17.22	13.5
Antimony	mg/kg dw	0 - 4	0%	–	–	0.0299	0.06186	0.049
Arsenic	mg/kg dw	1 - 4	25%	0.06907	0.06907	0.1753	0.2371	0.177
Barium	mg/kg dw	4 - 4	100%	8.866	16.7	–	–	11.8
Beryllium	mg/kg dw	0 - 4	0%	–	–	0.1237	0.2577	0.204
Boron	mg/kg dw	0 - 4	0%	–	–	0.8454	1.753	1.4
Cadmium	mg/kg dw	0 - 4	0%	–	–	0.03093	0.06701	0.0523
Chromium	mg/kg dw	1 - 4	25%	0.7938	0.7938	0.2577	0.5464	0.531
Cobalt	mg/kg dw	0 - 4	0%	–	–	0.02887	0.06082	0.0477
Copper	mg/kg dw	4 - 4	100%	0.7423	2.165	–	–	1.26
Iron	mg/kg dw	1 - 4	25%	33.09	33.09	36.8	51.96	42.9
Lead	mg/kg dw	0 - 4	0%	–	–	0.0567	0.1237	0.0948
Manganese	mg/kg dw	4 - 4	100%	0.8247	1.959	–	–	1.44
Mercury	mg/kg dw	0 - 4	0%	–	–	0.02371	0.04948	0.0389
Molybdenum	mg/kg dw	0 - 4	0%	–	–	0.07113	0.1546	0.118
Nickel	mg/kg dw	1 - 4	25%	0.3918	0.3918	0.1959	0.4227	0.353
Selenium	mg/kg dw	4 - 4	100%	0.3918	0.6289	–	–	0.51
Silver	mg/kg dw	0 - 4	0%	–	–	0.005876	0.01237	0.00987
Strontium	mg/kg dw	4 - 4	100%	58.76	86.19	–	–	77.4
Thallium	mg/kg dw	0 - 4	0%	–	–	0.02784	0.05979	0.0467
Vanadium	mg/kg dw	0 - 4	0%	–	–	0.1856	0.3918	0.307
Zinc	mg/kg dw	3 - 4	75%	8.66	18.25	9.381	9.381	13.3
Inorganic-cations/anions								
Calcium	mg/kg dw	4 - 4	100%	95464	186598	–	–	143000
Magnesium	mg/kg dw	4 - 4	100%	429.9	742.3	–	–	593
Potassium	mg/kg dw	0 - 4	0%	–	–	1474	3113	2440
Sodium	mg/kg dw	4 - 4	100%	1371	2124	–	–	1590

Notes: Composite Reference includes samples from Fort Loudon Dam, Tellico Dam, and the Upstream Tennessee River (Above TRM 568.0).
Eggshell concentrations presented in mg/kg dw, using a default literatuer-based percent moisture of 3 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-261. Tree Swallow Eggshell (2010) Dataset: Emory River - Reach B (ERM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 7	0%	–	–	6.289	13.61	9.43
Antimony	mg/kg dw	0 - 7	0%	–	–	0.02268	0.04948	0.0342
Arsenic	mg/kg dw	5 - 7	71%	0.0567	0.09588	0.1134	0.1546	0.0912
Barium	mg/kg dw	7 - 7	100%	5.258	22.68	–	–	13.5
Beryllium	mg/kg dw	0 - 7	0%	–	–	0.09381	0.2062	0.14
Boron	mg/kg dw	0 - 7	0%	–	–	0.6495	1.443	0.973
Cadmium	mg/kg dw	0 - 7	0%	–	–	0.02474	0.05258	0.0364
Chromium	mg/kg dw	0 - 7	0%	–	–	0.1959	0.433	0.299
Cobalt	mg/kg dw	0 - 7	0%	–	–	0.02268	0.04742	0.0331
Copper	mg/kg dw	7 - 7	100%	0.8247	1.237	–	–	0.962
Iron	mg/kg dw	0 - 7	0%	–	–	18.97	41.03	28.4
Lead	mg/kg dw	0 - 7	0%	–	–	0.04433	0.09485	0.0658
Manganese	mg/kg dw	7 - 7	100%	0.2887	1.443	–	–	0.719
Mercury	mg/kg dw	5 - 7	71%	0.02784	0.04124	0.02887	0.03918	0.0327
Molybdenum	mg/kg dw	0 - 7	0%	–	–	0.05567	0.1237	0.0835
Nickel	mg/kg dw	0 - 7	0%	–	–	0.1546	0.3299	0.23
Selenium	mg/kg dw	7 - 7	100%	0.2887	0.5979	–	–	0.384
Silver	mg/kg dw	0 - 7	0%	–	–	0.004536	0.009897	0.00683
Strontium	mg/kg dw	7 - 7	100%	62.16	147.4	–	–	102
Thallium	mg/kg dw	0 - 7	0%	–	–	0.0268	0.05979	0.0449
Vanadium	mg/kg dw	0 - 7	0%	–	–	0.1443	0.3093	0.214
Zinc	mg/kg dw	0 - 7	0%	–	–	3.402	7.423	5.13
Inorganic-cations/anions								
Calcium	mg/kg dw	7 - 7	100%	101443	196907	–	–	132000
Magnesium	mg/kg dw	7 - 7	100%	363.9	712.4	–	–	496
Potassium	mg/kg dw	2 - 7	29%	1340	1402	1485	2464	1760
Sodium	mg/kg dw	7 - 7	100%	1247	1598	–	–	1460

Note: Eggshell concentrations presented in mg/kg dw, using a default literatuer-based percent moisture of 3 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-262. Tree Swallow Eggshell (2010) Dataset: Embayments
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 4	0%	–	–	11.65	18.97	14.4
Antimony	mg/kg dw	0 - 4	0%	–	–	0.04227	0.06804	0.0521
Arsenic	mg/kg dw	2 - 4	50%	0.09588	0.1031	0.1856	0.268	0.163
Barium	mg/kg dw	4 - 4	100%	9.072	38.56	–	–	21.9
Beryllium	mg/kg dw	0 - 4	0%	–	–	0.1753	0.2784	0.214
Boron	mg/kg dw	0 - 3	0%	–	–	1.237	1.959	1.55
Cadmium	mg/kg dw	0 - 4	0%	–	–	0.04433	0.0732	0.0554
Chromium	mg/kg dw	0 - 4	0%	–	–	0.3711	0.5979	0.456
Cobalt	mg/kg dw	0 - 4	0%	–	–	0.04124	0.06701	0.0508
Copper	mg/kg dw	4 - 4	100%	0.7526	1.443	–	–	1.05
Iron	mg/kg dw	0 - 4	0%	–	–	35.05	57.01	43.4
Lead	mg/kg dw	0 - 4	0%	–	–	0.08144	0.134	0.101
Manganese	mg/kg dw	3 - 4	75%	0.8866	1.649	0.8041	0.8041	1.12
Mercury	mg/kg dw	0 - 4	0%	–	–	0.03402	0.05464	0.0415
Molybdenum	mg/kg dw	0 - 4	0%	–	–	0.1021	0.1649	0.126
Nickel	mg/kg dw	0 - 4	0%	–	–	0.2887	0.4639	0.351
Selenium	mg/kg dw	3 - 4	75%	0.3505	0.4536	–	–	0.299
Silver	mg/kg dw	0 - 4	0%	–	–	0.008454	0.0134	0.0103
Strontium	mg/kg dw	4 - 4	100%	87.11	176.3	–	–	123
Thallium	mg/kg dw	0 - 4	0%	–	–	0.04536	0.1443	0.076
Vanadium	mg/kg dw	0 - 4	0%	–	–	0.268	0.433	0.327
Zinc	mg/kg dw	0 - 4	0%	–	–	6.289	10.31	7.81
Inorganic-cations/anions								
Calcium	mg/kg dw	4 - 4	100%	151546	208247	–	–	176000
Magnesium	mg/kg dw	4 - 4	100%	584.5	826.8	–	–	679
Potassium	mg/kg dw	0 - 4	0%	–	–	2103	3423	2600
Sodium	mg/kg dw	4 - 4	100%	1443	1701	–	–	1520

Notes: Embayments include samples from the East, West, and North Embayments.
Eggshell concentrations presented in mg/kg dw, using a default literatuer-based percent moisture of 3 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-263. Tree Swallow Eggshell (2010) Dataset: Tennessee River - Reach B (TRM 566.0)

Tennessee Valley Authority **Kingston, Tennessee**

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 2	0%	–	–	10.62	14.85	12.7
Antimony	mg/kg dw	0 - 2	0%	–	–	0.03814	0.05361	0.0459
Arsenic	mg/kg dw	1 - 2	50%	0.1031	0.1031	0.1443	0.1443	0.124
Barium	mg/kg dw	2 - 2	100%	41.24	100.2	–	–	70.7
Beryllium	mg/kg dw	0 - 2	0%	–	–	0.1546	0.2268	0.191
Boron	mg/kg dw	0 - 2	0%	–	–	1.134	1.546	1.34
Cadmium	mg/kg dw	0 - 2	0%	–	–	0.04124	0.05773	0.0495
Chromium	mg/kg dw	0 - 2	0%	–	–	0.3402	0.4742	0.407
Cobalt	mg/kg dw	0 - 2	0%	–	–	0.03711	0.05258	0.0448
Copper	mg/kg dw	2 - 2	100%	1.134	1.34	–	–	1.24
Iron	mg/kg dw	0 - 2	0%	–	–	31.86	44.74	38.3
Lead	mg/kg dw	0 - 2	0%	–	–	0.07423	0.1031	0.0887
Manganese	mg/kg dw	2 - 2	100%	1.237	2.268	–	–	1.75
Mercury	mg/kg dw	0 - 2	0%	–	–	0.03093	0.0433	0.0371
Molybdenum	mg/kg dw	0 - 2	0%	–	–	0.09278	0.134	0.113
Nickel	mg/kg dw	0 - 2	0%	–	–	0.2577	0.3608	0.309
Selenium	mg/kg dw	2 - 2	100%	0.268	0.4124	–	–	0.34
Silver	mg/kg dw	0 - 2	0%	–	–	0.007629	0.01031	0.00897
Strontium	mg/kg dw	2 - 2	100%	123.7	126.8	–	–	125
Thallium	mg/kg dw	0 - 2	0%	–	–	0.03608	0.05155	0.0438
Vanadium	mg/kg dw	0 - 2	0%	–	–	0.2371	0.3402	0.289
Zinc	mg/kg dw	1 - 2	50%	10.31	10.31	5.773	5.773	8.04
Inorganic-cations/anions								
Calcium	mg/kg dw	2 - 2	100%	165979	174227	–	–	170000
Magnesium	mg/kg dw	2 - 2	100%	653.6	668	–	–	661
Potassium	mg/kg dw	0 - 2	0%	–	–	1918	2680	2300
Sodium	mg/kg dw	2 - 2	100%	1309	1588	–	–	1450

Note: Eggshell concentrations presented in mg/kg dw, using a default literatuer-based percent moisture of 3 percent.

– = Not detected/ not analyzed/ not applicable.

% = Percent.

mg/kg dw = Milligram per kilogram dry weight.

TRM = Tennessee River mile.

[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.

[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-264. Tree Swallow Eggshell (2010) Dataset: Positive Control - Melton Hill Dam
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 3	0%	–	–	7.835	10.62	9.21
Antimony	mg/kg dw	0 - 3	0%	–	–	0.02784	0.03814	0.033
Arsenic	mg/kg dw	2 - 3	67%	0.08351	0.0866	0.1134	0.1134	0.0945
Barium	mg/kg dw	3 - 3	100%	8.763	32.16	–	–	20.5
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.1134	0.1546	0.134
Boron	mg/kg dw	0 - 3	0%	–	–	0.8144	1.134	0.966
Cadmium	mg/kg dw	0 - 3	0%	–	–	0.0299	0.04124	0.0354
Chromium	mg/kg dw	0 - 3	0%	–	–	0.2474	0.3402	0.292
Cobalt	mg/kg dw	0 - 3	0%	–	–	0.02784	0.03711	0.0323
Copper	mg/kg dw	3 - 3	100%	0.7113	1.237	–	–	0.986
Iron	mg/kg dw	0 - 3	0%	–	–	23.61	31.86	27.7
Lead	mg/kg dw	0 - 3	0%	–	–	0.05464	0.07423	0.0643
Manganese	mg/kg dw	3 - 3	100%	0.4845	1.959	–	–	1.04
Mercury	mg/kg dw	1 - 3	33%	0.02577	0.02577	0.0268	0.03093	0.0278
Molybdenum	mg/kg dw	0 - 3	0%	–	–	0.06907	0.09278	0.0808
Nickel	mg/kg dw	0 - 3	0%	–	–	0.1959	0.2577	0.227
Selenium	mg/kg dw	3 - 3	100%	0.3402	0.5979	–	–	0.433
Silver	mg/kg dw	0 - 3	0%	–	–	0.00567	0.007629	0.00663
Strontium	mg/kg dw	3 - 3	100%	52.89	80.41	–	–	65
Thallium	mg/kg dw	0 - 3	0%	–	–	0.03093	0.05258	0.0406
Vanadium	mg/kg dw	0 - 3	0%	–	–	0.1753	0.2371	0.206
Zinc	mg/kg dw	1 - 3	33%	10.21	10.21	4.227	5.773	6.74
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	104124	149485	–	–	133000
Magnesium	mg/kg dw	3 - 3	100%	424.7	548.5	–	–	507
Potassium	mg/kg dw	1 - 3	33%	1423	1423	1660	1918	1670
Sodium	mg/kg dw	3 - 3	100%	1299	1567	–	–	1470

Note: Eggshell concentrations presented in mg/kg dw, using a default literatuer-based percent moisture of 3 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-265. Tree Swallow Nestling (2009) Dataset: Reference - Fort Loudoun Dam
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 3	0%	–	–	67.9	78	73.5
Antimony	mg/kg dw	0 - 3	0%	–	–	0.27	0.31	0.293
Arsenic	mg/kg dw	0 - 3	0%	–	–	0.27	0.31	0.293
Barium	mg/kg dw	3 - 3	100%	1.4	6.9	–	–	3.93
Beryllium	mg/kg dw	0 - 3	0%	–	–	0.27	0.31	0.293
Boron	mg/kg dw	0 - 3	0%	–	–	5.4	6.2	5.87
Cadmium	mg/kg dw	0 - 3	0%	–	–	0.27	0.31	0.293
Chromium	mg/kg dw	0 - 3	0%	–	–	0.33	0.37	0.347
Cobalt	mg/kg dw	0 - 3	0%	–	–	0.27	0.31	0.293
Copper	mg/kg dw	3 - 3	100%	6.1	11.7	–	–	8.93
Iron	mg/kg dw	3 - 3	100%	177	254	–	–	222
Lead	mg/kg dw	0 - 3	0%	–	–	0.27	0.31	0.293
Manganese	mg/kg dw	3 - 3	100%	2.5	7	–	–	4.97
Mercury	mg/kg dw	0 - 3	0%	–	–	0.054	0.062	0.0587
Molybdenum	mg/kg dw	0 - 3	0%	–	–	2.7	3.1	2.93
Nickel	mg/kg dw	0 - 3	0%	–	–	0.3	0.59	0.4
Selenium	mg/kg dw	3 - 3	100%	1.8	4.9	–	–	3.1
Silver	mg/kg dw	0 - 3	0%	–	–	0.14	0.16	0.15
Strontium	mg/kg dw	3 - 3	100%	5.9	15	–	–	11.8
Thallium	mg/kg dw	0 - 3	0%	–	–	0.27	0.31	0.293
Vanadium	mg/kg dw	0 - 3	0%	–	–	0.54	0.62	0.587
Zinc	mg/kg dw	3 - 3	100%	76.1	106	–	–	90.7
Inorganic-cations/anions								
Calcium	mg/kg dw	3 - 3	100%	11300	22500	–	–	18200
Magnesium	mg/kg dw	3 - 3	100%	651	985	–	–	841
Potassium	mg/kg dw	3 - 3	100%	5170	8110	–	–	6580
Sodium	mg/kg dw	3 - 3	100%	2840	3730	–	–	3290

Note: Nestling concentrations presented in mg/kg dw, using a default site-specfic percent moisture of 67 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-266. Tree Swallow Nestling (2009) Dataset: Emory River - Reach B (ERM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 9	0%	–	–	72	96.3	82.4
Antimony	mg/kg dw	0 - 9	0%	–	–	0.29	0.39	0.329
Arsenic	mg/kg dw	0 - 9	0%	–	–	0.29	0.39	0.329
Barium	mg/kg dw	9 - 9	100%	2.193	56.2	–	–	12.9
Beryllium	mg/kg dw	0 - 9	0%	–	–	0.29	0.39	0.329
Boron	mg/kg dw	0 - 9	0%	–	–	5.8	7.7	6.6
Cadmium	mg/kg dw	0 - 9	0%	–	–	0.29	0.39	0.329
Chromium	mg/kg dw	0 - 9	0%	–	–	0.2924	0.53	0.405
Cobalt	mg/kg dw	0 - 9	0%	–	–	0.29	0.39	0.329
Copper	mg/kg dw	9 - 9	100%	5.5	10.4	–	–	7.61
Iron	mg/kg dw	9 - 9	100%	166.9	287	–	–	201
Lead	mg/kg dw	0 - 9	0%	–	–	0.29	0.39	0.329
Manganese	mg/kg dw	9 - 9	100%	1.827	47.6	–	–	11.2
Mercury	mg/kg dw	2 - 9	22%	0.076	0.1182	0.068	0.11	0.0876
Molybdenum	mg/kg dw	0 - 9	0%	–	–	2.9	3.9	3.29
Nickel	mg/kg dw	0 - 9	0%	–	–	0.29	0.39	0.335
Selenium	mg/kg dw	9 - 9	100%	3	4.1	–	–	3.41
Silver	mg/kg dw	0 - 9	0%	–	–	0.14	0.19	0.165
Strontium	mg/kg dw	9 - 9	100%	3.533	47.7	–	–	17.8
Thallium	mg/kg dw	0 - 9	0%	–	–	0.29	0.39	0.329
Vanadium	mg/kg dw	0 - 9	0%	–	–	0.58	0.77	0.66
Zinc	mg/kg dw	9 - 9	100%	90.75	125	–	–	101
Inorganic-cations/anions								
Calcium	mg/kg dw	9 - 9	100%	6067	44200	–	–	16800
Magnesium	mg/kg dw	9 - 9	100%	603	1470	–	–	914
Potassium	mg/kg dw	9 - 9	100%	5830	9600	–	–	7410
Sodium	mg/kg dw	9 - 9	100%	3120	5200	–	–	3990

Note: Nestling concentrations presented in mg/kg dw, using a default site-specfic percent moisture of 67 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-267. Tree Swallow Nestling (2009) Dataset: Emory River - Reach C (ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 11	0%	–	–	62	89.1	76.3
Antimony	mg/kg dw	0 - 11	0%	–	–	0.25	0.36	0.306
Arsenic	mg/kg dw	0 - 11	0%	–	–	0.25	0.36	0.306
Barium	mg/kg dw	11 - 11	100%	0.45	11.7	–	–	4.36
Beryllium	mg/kg dw	0 - 11	0%	–	–	0.25	0.36	0.306
Boron	mg/kg dw	0 - 11	0%	–	–	5	7.1	6.09
Cadmium	mg/kg dw	0 - 11	0%	–	–	0.25	0.36	0.306
Chromium	mg/kg dw	1 - 11	9%	0.48	0.48	0.27	0.83	0.397
Cobalt	mg/kg dw	0 - 11	0%	–	–	0.25	0.36	0.306
Copper	mg/kg dw	11 - 11	100%	5.5	10.8	–	–	7.56
Iron	mg/kg dw	11 - 11	100%	167	264	–	–	193
Lead	mg/kg dw	0 - 11	0%	–	–	0.25	0.36	0.306
Manganese	mg/kg dw	8 - 11	73%	1.8	6.1	1.6	6.4	3.78
Mercury	mg/kg dw	1 - 11	9%	0.061	0.061	0.07	0.11	0.0875
Molybdenum	mg/kg dw	0 - 11	0%	–	–	2.5	3.6	3.06
Nickel	mg/kg dw	1 - 11	9%	1.8	1.8	0.25	0.36	0.441
Selenium	mg/kg dw	11 - 11	100%	2.3	4.1	–	–	3.12
Silver	mg/kg dw	0 - 11	0%	–	–	0.12	0.18	0.154
Strontium	mg/kg dw	11 - 11	100%	2	19.1	–	–	9.37
Thallium	mg/kg dw	0 - 11	0%	–	–	0.25	0.36	0.306
Vanadium	mg/kg dw	0 - 11	0%	–	–	0.5	0.71	0.609
Zinc	mg/kg dw	11 - 11	100%	54.7	123	–	–	92.2
Inorganic-cations/anions								
Calcium	mg/kg dw	11 - 11	100%	3920	24800	–	–	14600
Magnesium	mg/kg dw	11 - 11	100%	510	1150	–	–	849
Potassium	mg/kg dw	11 - 11	100%	4960	9090	–	–	6890
Sodium	mg/kg dw	11 - 11	100%	2310	4930	–	–	3540

Note: Nestling concentrations presented in mg/kg dw, using a default site-specfic percent moisture of 67 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-268. Tree Swallow Nestling (2009) Dataset: Clinch River - Reach B (CRM 2.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 12	0%	–	–	60.1	124.2	78.3
Antimony	mg/kg dw	0 - 12	0%	–	–	0.24	0.4848	0.311
Arsenic	mg/kg dw	0 - 12	0%	–	–	0.24	0.4848	0.311
Barium	mg/kg dw	12 - 12	100%	1.2	23.33	–	–	5.72
Beryllium	mg/kg dw	0 - 12	0%	–	–	0.24	0.4848	0.311
Boron	mg/kg dw	0 - 12	0%	–	–	4.8	10	6.27
Cadmium	mg/kg dw	0 - 12	0%	–	–	0.24	0.4848	0.311
Chromium	mg/kg dw	0 - 12	0%	–	–	0.25	0.69	0.385
Cobalt	mg/kg dw	1 - 12	8%	0.86	0.86	0.25	0.4848	0.363
Copper	mg/kg dw	12 - 12	100%	5.3	11.7	–	–	7.59
Iron	mg/kg dw	12 - 12	100%	137	264.5	–	–	180
Lead	mg/kg dw	0 - 12	0%	–	–	0.24	0.4848	0.311
Manganese	mg/kg dw	12 - 12	100%	1.7	17.27	–	–	5.37
Mercury	mg/kg dw	6 - 12	50%	0.057	0.2303	0.053	0.079	0.0865
Molybdenum	mg/kg dw	0 - 12	0%	–	–	2.4	4.848	3.11
Nickel	mg/kg dw	1 - 12	8%	1.2	1.2	0.25	0.4848	0.402
Selenium	mg/kg dw	12 - 12	100%	2.5	6.667	–	–	3.64
Silver	mg/kg dw	0 - 12	0%	–	–	0.12	0.2485	0.157
Strontium	mg/kg dw	12 - 12	100%	3.8	50.61	–	–	14.1
Thallium	mg/kg dw	0 - 12	0%	–	–	0.24	0.4848	0.311
Vanadium	mg/kg dw	0 - 12	0%	–	–	0.48	1	0.627
Zinc	mg/kg dw	12 - 12	100%	69.3	149.1	–	–	98.1
Inorganic-cations/anions								
Calcium	mg/kg dw	12 - 12	100%	5740	90303	–	–	23500
Magnesium	mg/kg dw	12 - 12	100%	590	1350	–	–	871
Potassium	mg/kg dw	12 - 12	100%	4730	16576	–	–	7710
Sodium	mg/kg dw	12 - 12	100%	2730	19303	–	–	4970

Note: Nestling concentrations presented in mg/kg dw, using a default site-specfic percent moisture of 67 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-269. Tree Swallow Nestling (2009) Dataset: Positive Control - Melton Hill Dam
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 9	0%	–	–	61.1	81.3	69.7
Antimony	mg/kg dw	0 - 9	0%	–	–	0.24	0.33	0.28
Arsenic	mg/kg dw	0 - 9	0%	–	–	0.24	0.33	0.28
Barium	mg/kg dw	9 - 9	100%	1	4.9	–	–	2.6
Beryllium	mg/kg dw	0 - 9	0%	–	–	0.24	0.33	0.28
Boron	mg/kg dw	0 - 9	0%	–	–	4.9	6.5	5.57
Cadmium	mg/kg dw	0 - 9	0%	–	–	0.24	0.33	0.28
Chromium	mg/kg dw	0 - 9	0%	–	–	0.24	0.71	0.351
Cobalt	mg/kg dw	0 - 9	0%	–	–	0.24	0.33	0.28
Copper	mg/kg dw	9 - 9	100%	5.2	10	–	–	6.7
Iron	mg/kg dw	9 - 9	100%	144	315	–	–	186
Lead	mg/kg dw	0 - 9	0%	–	–	0.24	0.33	0.28
Manganese	mg/kg dw	9 - 9	100%	1.5	3.4	–	–	2.38
Mercury	mg/kg dw	1 - 9	11%	0.056	0.056	0.05	0.065	0.0572
Molybdenum	mg/kg dw	0 - 9	0%	–	–	2.4	3.3	2.8
Nickel	mg/kg dw	0 - 9	0%	–	–	0.24	0.46	0.317
Selenium	mg/kg dw	9 - 9	100%	3.3	9	–	–	6.22
Silver	mg/kg dw	0 - 9	0%	–	–	0.12	0.16	0.139
Strontium	mg/kg dw	9 - 9	100%	3	11.2	–	–	5.11
Thallium	mg/kg dw	0 - 9	0%	–	–	0.24	0.33	0.28
Vanadium	mg/kg dw	0 - 9	0%	–	–	0.49	0.65	0.557
Zinc	mg/kg dw	9 - 9	100%	64.1	98.6	–	–	83.9
Inorganic-cations/anions								
Calcium	mg/kg dw	9 - 9	100%	4970	25000	–	–	10800
Magnesium	mg/kg dw	9 - 9	100%	518	985	–	–	691
Potassium	mg/kg dw	9 - 9	100%	5170	8570	–	–	6360
Sodium	mg/kg dw	9 - 9	100%	2590	3570	–	–	3000

Note: Nestling concentrations presented in mg/kg dw, using a default site-specfic percent moisture of 67 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-270. Tree Swallow Nestling (2010) Dataset: Reference - Fort Loudoun Dam
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 10	0%	–	–	10.2	14.7	12.4
Antimony	mg/kg dw	0 - 10	0%	–	–	0.037	0.053	0.0448
Arsenic	mg/kg dw	0 - 10	0%	–	–	0.072	0.2	0.112
Barium	mg/kg dw	10 - 10	100%	0.87	9.8	–	–	4.22
Beryllium	mg/kg dw	0 - 10	0%	–	–	0.075	0.11	0.0917
Boron	mg/kg dw	0 - 10	0%	–	–	1.1	1.5	1.28
Cadmium	mg/kg dw	7 - 10	70%	0.03	0.067	0.039	0.046	0.0466
Chromium	mg/kg dw	0 - 10	0%	–	–	0.32	0.919	0.474
Cobalt	mg/kg dw	0 - 10	0%	–	–	0.036	0.052	0.0435
Copper	mg/kg dw	10 - 10	100%	5.8	8.1	–	–	7.23
Iron	mg/kg dw	10 - 10	100%	183	399	–	–	251
Lead	mg/kg dw	2 - 10	20%	0.08	2.7	0.076	0.1	0.348
Manganese	mg/kg dw	10 - 10	100%	2.5	5.6	–	–	3.65
Mercury	mg/kg dw	3 - 10	30%	0.034	0.047	0.03	0.042	0.0365
Molybdenum	mg/kg dw	9 - 10	90%	0.15	0.32	0.19	0.19	0.217
Nickel	mg/kg dw	0 - 10	0%	–	–	0.25	0.707	0.337
Selenium	mg/kg dw	10 - 10	100%	1.9	4.8	–	–	2.99
Silver	mg/kg dw	2 - 10	20%	0.0084	0.012	0.0076	0.035	0.0141
Strontium	mg/kg dw	10 - 10	100%	3.8	12.8	–	–	7.19
Thallium	mg/kg dw	0 - 10	0%	–	–	0.035	0.051	0.0426
Vanadium	mg/kg dw	0 - 10	0%	–	–	0.12	0.33	0.185
Zinc	mg/kg dw	10 - 10	100%	64.5	113	–	–	94.6
Inorganic-cations/anions								
Calcium	mg/kg dw	10 - 10	100%	8890	30800	–	–	17600
Magnesium	mg/kg dw	10 - 10	100%	700	1290	–	–	997
Potassium	mg/kg dw	10 - 10	100%	7340	11400	–	–	8710
Sodium	mg/kg dw	10 - 10	100%	3770	6380	–	–	4490

Note: Nestling concentrations presented in mg/kg dw, using a default site-specfic percent moisture of 67 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-271. Tree Swallow Nestling (2010) Dataset: Emory River - Reach B (ERM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	1 - 15	7%	13.2	13.2	11.1	14.3	12.4
Antimony	mg/kg dw	0 - 15	0%	–	–	0.04	0.052	0.0445
Arsenic	mg/kg dw	0 - 15	0%	–	–	0.078	0.1	0.0865
Barium	mg/kg dw	15 - 15	100%	2.1	17.7	–	–	6.09
Beryllium	mg/kg dw	0 - 15	0%	–	–	0.082	0.21	0.109
Boron	mg/kg dw	1 - 15	7%	1.3	1.3	0.4	1.5	1.22
Cadmium	mg/kg dw	13 - 15	87%	0.024	0.1	0.023	0.045	0.0485
Chromium	mg/kg dw	1 - 15	7%	1.4	1.4	0.35	0.45	0.458
Cobalt	mg/kg dw	0 - 15	0%	–	–	0.039	0.05	0.0433
Copper	mg/kg dw	15 - 15	100%	6.6	12.7	–	–	8.27
Iron	mg/kg dw	15 - 15	100%	143	264	–	–	213
Lead	mg/kg dw	1 - 15	7%	0.11	0.11	0.077	0.1	0.0875
Manganese	mg/kg dw	15 - 15	100%	2.3	9.2	–	–	5.01
Mercury	mg/kg dw	15 - 15	100%	0.055	0.12	–	–	0.0951
Molybdenum	mg/kg dw	7 - 15	47%	0.16	0.24	0.13	0.22	0.183
Nickel	mg/kg dw	2 - 15	13%	0.34	0.58	0.28	0.35	0.323
Selenium	mg/kg dw	15 - 15	100%	2.8	4.4	–	–	3.41
Silver	mg/kg dw	0 - 15	0%	–	–	0.008	0.031	0.0119
Strontium	mg/kg dw	15 - 15	100%	4.3	36.2	–	–	14
Thallium	mg/kg dw	0 - 15	0%	–	–	0.038	0.049	0.0425
Vanadium	mg/kg dw	0 - 15	0%	–	–	0.13	0.29	0.159
Zinc	mg/kg dw	15 - 15	100%	82	158	–	–	103
Inorganic-cations/anions								
Calcium	mg/kg dw	15 - 15	100%	2810	37200	–	–	17700
Magnesium	mg/kg dw	15 - 15	100%	756	1500	–	–	1020
Potassium	mg/kg dw	15 - 15	100%	6960	10200	–	–	8210
Sodium	mg/kg dw	15 - 15	100%	3160	5570	–	–	4030

Note: Nestling concentrations presented in mg/kg dw, using a default site-specfic percent moisture of 67 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-272. Tree Swallow Nestling (2010) Dataset: Emory River - Reach C (ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 10	0%	–	–	11.2	14.6	12.9
Antimony	mg/kg dw	0 - 10	0%	–	–	0.04	0.053	0.0466
Arsenic	mg/kg dw	3 - 10	30%	0.089	0.12	0.079	0.2	0.115
Barium	mg/kg dw	10 - 10	100%	1.6	6.2	–	–	3.87
Beryllium	mg/kg dw	0 - 10	0%	–	–	0.083	0.11	0.0945
Boron	mg/kg dw	0 - 10	0%	–	–	1.2	1.5	1.33
Cadmium	mg/kg dw	9 - 10	90%	0.027	0.17	0.049	0.049	0.0813
Chromium	mg/kg dw	3 - 10	30%	0.46	0.99	0.36	0.46	0.495
Cobalt	mg/kg dw	0 - 10	0%	–	–	0.039	0.052	0.0455
Copper	mg/kg dw	10 - 10	100%	5.9	11.2	–	–	8.44
Iron	mg/kg dw	10 - 10	100%	162	267	–	–	212
Lead	mg/kg dw	1 - 10	10%	0.12	0.12	0.078	0.1	0.0917
Manganese	mg/kg dw	10 - 10	100%	2.1	14.7	–	–	5.04
Mercury	mg/kg dw	10 - 10	100%	0.064	0.12	–	–	0.101
Molybdenum	mg/kg dw	10 - 10	100%	0.15	0.28	–	–	0.213
Nickel	mg/kg dw	2 - 10	20%	0.43	0.54	0.27	0.36	0.352
Selenium	mg/kg dw	10 - 10	100%	2.6	4.3	–	–	3.44
Silver	mg/kg dw	2 - 10	20%	0.017	0.042	0.0085	0.023	0.0153
Strontium	mg/kg dw	10 - 10	100%	7.3	17.4	–	–	12.3
Thallium	mg/kg dw	0 - 10	0%	–	–	0.041	0.05	0.0457
Vanadium	mg/kg dw	1 - 10	10%	0.17	0.17	0.13	0.33	0.166
Zinc	mg/kg dw	10 - 10	100%	88.1	124	–	–	108
Inorganic-cations/anions								
Calcium	mg/kg dw	10 - 10	100%	9600	42600	–	–	21200
Magnesium	mg/kg dw	10 - 10	100%	833	1540	–	–	1130
Potassium	mg/kg dw	10 - 10	100%	7760	10400	–	–	8830
Sodium	mg/kg dw	10 - 10	100%	3860	5900	–	–	4460

Note: Nestling concentrations presented in mg/kg dw, using a default site-specfic percent moisture of 67 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-273. Tree Swallow Nestling (2010) Dataset: Clinch River - Reach B (CRM 2.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 15	0%	–	–	11	15.3	12.5
Antimony	mg/kg dw	0 - 15	0%	–	–	0.04	0.055	0.0451
Arsenic	mg/kg dw	0 - 15	0%	–	–	0.077	0.21	0.141
Barium	mg/kg dw	15 - 15	100%	2.9	7.6	–	–	4.75
Beryllium	mg/kg dw	0 - 15	0%	–	–	0.081	0.175	0.0981
Boron	mg/kg dw	0 - 15	0%	–	–	1.1	1.6	1.29
Cadmium	mg/kg dw	13 - 15	87%	0.031	0.093	0.022	0.044	0.0552
Chromium	mg/kg dw	3 - 15	20%	0.57	4.1	0.35	0.46	0.657
Cobalt	mg/kg dw	1 - 15	7%	0.05	0.05	0.039	0.054	0.0442
Copper	mg/kg dw	15 - 15	100%	6.2	11.4	–	–	8.45
Iron	mg/kg dw	15 - 15	100%	132	327	–	–	206
Lead	mg/kg dw	2 - 15	13%	0.096	0.31	0.077	0.11	0.104
Manganese	mg/kg dw	15 - 15	100%	2	9.6	–	–	4.95
Mercury	mg/kg dw	15 - 15	100%	0.064	0.15	–	–	0.0933
Molybdenum	mg/kg dw	14 - 15	93%	0.11	0.31	0.21	0.21	0.207
Nickel	mg/kg dw	2 - 15	13%	0.6	0.77	0.27	0.37	0.353
Selenium	mg/kg dw	15 - 15	100%	2.2	3.7	–	–	2.95
Silver	mg/kg dw	1 - 15	7%	0.0097	0.0097	0.008	0.011	0.00906
Strontium	mg/kg dw	15 - 15	100%	5.6	17.7	–	–	10.3
Thallium	mg/kg dw	0 - 15	0%	–	–	0.038	0.07	0.0479
Vanadium	mg/kg dw	0 - 15	0%	–	–	0.13	0.17	0.143
Zinc	mg/kg dw	15 - 15	100%	82	161	–	–	108
Inorganic-cations/anions								
Calcium	mg/kg dw	15 - 15	100%	9810	24500	–	–	15900
Magnesium	mg/kg dw	15 - 15	100%	827	1170	–	–	975
Potassium	mg/kg dw	15 - 15	100%	7100	9370	–	–	8080
Sodium	mg/kg dw	15 - 15	100%	3680	6380	–	–	4430

Note: Nestling concentrations presented in mg/kg dw, using a default site-specfic percent moisture of 67 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-274. Tree Swallow Nestling (2010) Dataset: Positive Control - Melton Hill Dam
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 15	0%	–	–	10.7	15.1	12.5
Antimony	mg/kg dw	0 - 15	0%	–	–	0.039	0.054	0.0453
Arsenic	mg/kg dw	2 - 15	13%	0.11	0.15	0.075	0.19	0.104
Barium	mg/kg dw	15 - 15	100%	1.7	8.7	–	–	4.87
Beryllium	mg/kg dw	0 - 15	0%	–	–	0.079	0.11	0.0921
Boron	mg/kg dw	0 - 15	0%	–	–	1.1	1.6	1.31
Cadmium	mg/kg dw	14 - 15	93%	0.041	0.18	0.024	0.024	0.0807
Chromium	mg/kg dw	4 - 15	27%	0.48	4.1	0.34	0.43	0.807
Cobalt	mg/kg dw	2 - 15	13%	0.047	0.052	0.037	0.053	0.0444
Copper	mg/kg dw	15 - 15	100%	5.9	10.7	–	–	7.89
Iron	mg/kg dw	15 - 15	100%	180	308	–	–	225
Lead	mg/kg dw	0 - 15	0%	–	–	0.074	0.1	0.0869
Manganese	mg/kg dw	15 - 15	100%	1.6	7	–	–	3.93
Mercury	mg/kg dw	14 - 15	93%	0.02	0.081	0.036	0.036	0.0579
Molybdenum	mg/kg dw	10 - 15	67%	0.18	0.34	0.11	0.19	0.21
Nickel	mg/kg dw	3 - 15	20%	0.28	1.9	0.26	0.33	0.468
Selenium	mg/kg dw	15 - 15	100%	1.6	8.5	–	–	5.23
Silver	mg/kg dw	1 - 15	7%	0.009	0.009	0.0077	0.013	0.00985
Strontium	mg/kg dw	15 - 15	100%	2.2	10.6	–	–	6.77
Thallium	mg/kg dw	0 - 15	0%	–	–	0.037	0.12	0.0477
Vanadium	mg/kg dw	2 - 15	13%	0.35	1.1	0.12	0.3	0.246
Zinc	mg/kg dw	15 - 15	100%	49.9	127	–	–	96.1
Inorganic-cations/anions								
Calcium	mg/kg dw	15 - 15	100%	7470	22800	–	–	14700
Magnesium	mg/kg dw	15 - 15	100%	734	1640	–	–	969
Potassium	mg/kg dw	15 - 15	100%	6130	10200	–	–	8440
Sodium	mg/kg dw	15 - 15	100%	3410	5270	–	–	4430

Note: Nestling concentrations presented in mg/kg dw, using a default site-specfic percent moisture of 67 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-275. Spring Peeper Whole Body (2009) Dataset: Reference
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 23	0%	–	–	108.1	123.2	110
Antimony	mg/kg dw	0 - 23	0%	–	–	0.4303	0.4906	0.44
Arsenic	mg/kg dw	1 - 23	4%	0.6629	0.6629	0.4303	0.4906	0.45
Barium	mg/kg dw	23 - 23	100%	–	–	–	–	51.6
Beryllium	mg/kg dw	0 - 23	0%	–	–	0.4303	0.4906	0.44
Boron	mg/kg dw	0 - 23	0%	–	–	8.631	9.931	8.79
Cadmium	mg/kg dw	0 - 23	0%	–	–	0.4303	0.4906	0.44
Chromium	mg/kg dw	1 - 23	4%	2.959	2.959	0.4303	0.6581	0.566
Cobalt	mg/kg dw	0 - 23	0%	–	–	0.4303	0.4906	0.44
Copper	mg/kg dw	21 - 23	91%	7.301	31.1	5.967	6.267	12.3
Iron	mg/kg dw	23 - 23	100%	111.9	424	–	–	182
Lead	mg/kg dw	4 - 23	17%	0.4795	0.721	0.4303	0.4906	0.462
Manganese	mg/kg dw	23 - 23	100%	15.79	98.77	–	–	48
Mercury	mg/kg dw	5 - 23	22%	0.08929	0.12	0.08631	0.09441	0.0907
Molybdenum	mg/kg dw	0 - 23	0%	–	–	4.303	4.906	4.4
Nickel	mg/kg dw	0 - 23	0%	–	–	0.4303	0.5504	0.452
Selenium	mg/kg dw	23 - 23	100%	0.9607	2.2	–	–	1.54
Silver	mg/kg dw	0 - 23	0%	–	–	0.2131	0.2513	0.22
Strontium	mg/kg dw	23 - 23	100%	21.53	121.5	–	–	42.6
Thallium	mg/kg dw	0 - 23	0%	–	–	0.4303	0.4906	0.44
Vanadium	mg/kg dw	0 - 23	0%	–	–	0.8631	0.9931	0.879
Zinc	mg/kg dw	23 - 23	100%	75.84	156.7	–	–	104
Inorganic-cations/anions								
Calcium	mg/kg dw	23 - 23	100%	31972	69401	–	–	46900
Magnesium	mg/kg dw	23 - 23	100%	1381	2056	–	–	1700
Potassium	mg/kg dw	23 - 23	100%	7770	10135	–	–	9170
Sodium	mg/kg dw	14 - 23	61%	4424	5140	3825	4812	4610

Note: Whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77.1 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-276. Spring Peeper Whole Body (2009) Dataset: West Embayment
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 11	0%	–	–	75.5	109.5	97.3
Antimony	mg/kg dw	0 - 11	0%	–	–	0.3	0.441	0.389
Arsenic	mg/kg dw	0 - 11	0%	–	–	0.3	0.441	0.389
Barium	mg/kg dw	11 - 11	100%	–	–	–	–	69.7
Beryllium	mg/kg dw	0 - 11	0%	–	–	0.3	0.441	0.389
Boron	mg/kg dw	0 - 11	0%	–	–	6	8.803	7.78
Cadmium	mg/kg dw	0 - 11	0%	–	–	0.3	0.441	0.389
Chromium	mg/kg dw	1 - 11	9%	2.285	2.285	0.35	7.7	1.64
Cobalt	mg/kg dw	2 - 11	18%	0.5658	0.6026	0.3	0.441	0.417
Copper	mg/kg dw	11 - 11	100%	8.525	46.87	–	–	26.7
Iron	mg/kg dw	11 - 11	100%	147	359.3	–	–	235
Lead	mg/kg dw	4 - 11	36%	0.48	0.9472	0.39	7.7	1.57
Manganese	mg/kg dw	11 - 11	100%	31.1	87.7	–	–	60.1
Mercury	mg/kg dw	5 - 11	45%	0.09021	0.1794	0.06	0.08803	0.0942
Molybdenum	mg/kg dw	0 - 11	0%	–	–	3	4.41	3.89
Nickel	mg/kg dw	0 - 11	0%	–	–	0.3	0.441	0.389
Selenium	mg/kg dw	11 - 11	100%	1.2	2.893	–	–	2.09
Silver	mg/kg dw	9 - 11	82%	0.27	0.63	0.16	0.2181	0.385
Strontium	mg/kg dw	11 - 11	100%	30.4	124.9	–	–	68.2
Thallium	mg/kg dw	0 - 11	0%	–	–	0.3	0.441	0.389
Vanadium	mg/kg dw	0 - 11	0%	–	–	0.6	0.8803	0.778
Zinc	mg/kg dw	11 - 11	100%	97.5	168.7	–	–	124
Inorganic-cations/anions								
Calcium	mg/kg dw	11 - 11	100%	32300	63738	–	–	48300
Magnesium	mg/kg dw	11 - 11	100%	1330	2254	–	–	1750
Potassium	mg/kg dw	11 - 11	100%	6580	12629	–	–	9930
Sodium	mg/kg dw	10 - 11	91%	4200	6228	2940	2940	5140

Note: Whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77.1 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-277. Spring Peeper Whole Body (2010) Dataset: Reference
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	6 - 31	19%	38.09	69.78	26.1	36.22	39.4
Antimony	mg/kg dw	0 - 31	0%	–	–	0.094	0.1341	0.125
Arsenic	mg/kg dw	2 - 31	6%	0.2592	0.3904	0.18	0.2571	0.247
Barium	mg/kg dw	31 - 31	100%	–	–	–	–	60.9
Beryllium	mg/kg dw	0 - 31	0%	–	–	0.2279	0.541	0.355
Boron	mg/kg dw	0 - 31	0%	–	–	2.7	3.801	3.6
Cadmium	mg/kg dw	5 - 31	16%	0.07885	0.1824	0.06481	0.1166	0.0882
Chromium	mg/kg dw	1 - 31	3%	29.74	29.74	0.83	1.19	2.02
Cobalt	mg/kg dw	26 - 31	84%	0.1289	0.6248	0.092	0.1268	0.238
Copper	mg/kg dw	31 - 31	100%	4.638	32.77	–	–	10
Iron	mg/kg dw	29 - 31	94%	113.9	417	103.7	108.6	165
Lead	mg/kg dw	4 - 31	13%	0.579	3.177	0.18	0.4973	0.428
Manganese	mg/kg dw	31 - 31	100%	29.28	147	–	–	74.1
Mercury	mg/kg dw	0 - 31	0%	–	–	0.076	0.109	0.1
Molybdenum	mg/kg dw	1 - 31	3%	0.42	0.42	0.23	0.3228	0.31
Nickel	mg/kg dw	0 - 31	0%	–	–	0.64	0.8831	0.846
Selenium	mg/kg dw	31 - 31	100%	0.8646	2.323	–	–	1.39
Silver	mg/kg dw	5 - 31	16%	0.02963	0.08543	0.019	0.02652	0.029
Strontium	mg/kg dw	31 - 31	100%	18	94.07	–	–	48.6
Thallium	mg/kg dw	0 - 31	0%	–	–	0.09	0.1292	0.12
Vanadium	mg/kg dw	1 - 31	3%	1.677	1.677	0.3	0.4164	0.437
Zinc	mg/kg dw	31 - 31	100%	87.8	204.9	–	–	117
Inorganic-cations/anions								
Calcium	mg/kg dw	31 - 31	100%	35135	63500	–	–	49000
Magnesium	mg/kg dw	31 - 31	100%	1180	2114	–	–	1760
Potassium	mg/kg dw	31 - 31	100%	5950	11291	–	–	9070
Sodium	mg/kg dw	31 - 31	100%	2840	5129	–	–	4190

Note: Whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77.1 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-278. Spring Peeper Whole Body (2010) Dataset: North Embayment
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	2 - 5	40%	116.9	187.1	33.41	35.22	81.4
Antimony	mg/kg dw	0 - 5	0%	–	–	0.1226	0.1293	0.125
Arsenic	mg/kg dw	2 - 5	40%	0.734	0.7841	0.235	0.2472	0.449
Barium	mg/kg dw	5 - 5	100%	–	–	–	–	68.1
Beryllium	mg/kg dw	0 - 5	0%	–	–	0.2452	0.5365	0.411
Boron	mg/kg dw	0 - 5	0%	–	–	3.474	3.714	3.58
Cadmium	mg/kg dw	1 - 5	20%	0.1234	0.1234	0.09057	0.1431	0.115
Chromium	mg/kg dw	0 - 5	0%	–	–	1.022	1.142	1.09
Cobalt	mg/kg dw	4 - 5	80%	0.1124	0.3503	0.1236	0.1236	0.212
Copper	mg/kg dw	4 - 5	80%	7.868	13.18	4.049	4.049	9.93
Iron	mg/kg dw	4 - 5	80%	120.4	335.3	100.5	100.5	206
Lead	mg/kg dw	0 - 5	0%	–	–	0.2472	0.4264	0.337
Manganese	mg/kg dw	5 - 5	100%	63.27	218.5	–	–	120
Mercury	mg/kg dw	0 - 5	0%	–	–	0.09707	0.1032	0.0998
Molybdenum	mg/kg dw	2 - 5	40%	0.4003	0.4814	0.2963	0.309	0.357
Nickel	mg/kg dw	0 - 5	0%	–	–	0.8175	0.8803	0.848
Selenium	mg/kg dw	5 - 5	100%	1.359	1.926	–	–	1.69
Silver	mg/kg dw	0 - 5	0%	–	–	0.02451	0.02614	0.0252
Strontium	mg/kg dw	5 - 5	100%	51.29	86.41	–	–	61.5
Thallium	mg/kg dw	0 - 5	0%	–	–	0.1124	0.2338	0.14
Vanadium	mg/kg dw	0 - 5	0%	–	–	0.3837	0.7909	0.548
Zinc	mg/kg dw	5 - 5	100%	108.7	158.3	–	–	132
Inorganic-cations/anions								
Calcium	mg/kg dw	5 - 5	100%	40658	64143	–	–	55400
Magnesium	mg/kg dw	5 - 5	100%	1817	2486	–	–	2110
Potassium	mg/kg dw	5 - 5	100%	9820	15347	–	–	11500
Sodium	mg/kg dw	5 - 5	100%	4060	7006	–	–	5090

Note: Whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77.1 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-279. Spring Peeper Whole Body (2010) Dataset: West Embayment
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 9	0%	–	–	33.03	36.25	35.5
Antimony	mg/kg dw	0 - 9	0%	–	–	0.1167	0.1364	0.129
Arsenic	mg/kg dw	0 - 9	0%	–	–	0.2262	0.2568	0.246
Barium	mg/kg dw	9 - 9	100%	–	–	–	–	77.7
Beryllium	mg/kg dw	0 - 9	0%	–	–	0.2441	0.5457	0.443
Boron	mg/kg dw	0 - 9	0%	–	–	3.393	3.734	3.64
Cadmium	mg/kg dw	2 - 9	22%	0.1795	0.2738	0.06261	0.1431	0.132
Chromium	mg/kg dw	0 - 9	0%	–	–	1.051	1.196	1.13
Cobalt	mg/kg dw	9 - 9	100%	0.124	0.6098	–	–	0.227
Copper	mg/kg dw	9 - 9	100%	7.125	43.31	–	–	16
Iron	mg/kg dw	6 - 9	67%	129.9	470.4	124.2	268	224
Lead	mg/kg dw	1 - 9	11%	0.5624	0.5624	0.2262	0.4108	0.322
Manganese	mg/kg dw	9 - 9	100%	42.98	108	–	–	69.1
Mercury	mg/kg dw	2 - 9	22%	0.1555	0.1991	0.095	0.1053	0.119
Molybdenum	mg/kg dw	1 - 9	11%	0.448	0.448	0.2865	0.3231	0.328
Nickel	mg/kg dw	0 - 9	0%	–	–	0.803	0.8859	0.866
Selenium	mg/kg dw	9 - 9	100%	1.061	3.858	–	–	1.81
Silver	mg/kg dw	3 - 9	33%	0.0359	0.08961	0.02375	0.02623	0.0373
Strontium	mg/kg dw	9 - 9	100%	44.79	132.2	–	–	83.7
Thallium	mg/kg dw	0 - 9	0%	–	–	0.1131	0.1245	0.121
Vanadium	mg/kg dw	0 - 9	0%	–	–	0.3732	0.4188	0.406
Zinc	mg/kg dw	9 - 9	100%	97.21	156.8	–	–	117
Inorganic-cations/anions								
Calcium	mg/kg dw	9 - 9	100%	40294	66760	–	–	53900
Magnesium	mg/kg dw	9 - 9	100%	1761	2477	–	–	2050
Potassium	mg/kg dw	9 - 9	100%	8284	10609	–	–	9550
Sodium	mg/kg dw	9 - 9	100%	3931	6011	–	–	4730

Note: Whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77.1 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-280. Upland Chorus Frog Whole Body (2009) Dataset: North Embayment
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 9	0%	–	–	84.5	109.4	105
Antimony	mg/kg dw	0 - 9	0%	–	–	0.34	0.4402	0.421
Arsenic	mg/kg dw	5 - 9	56%	0.444	1.644	0.42	0.4402	0.696
Barium	mg/kg dw	9 - 9	100%	–	–	–	–	57.1
Beryllium	mg/kg dw	0 - 9	0%	–	–	0.34	0.4402	0.421
Boron	mg/kg dw	0 - 9	0%	–	–	6.8	8.803	8.43
Cadmium	mg/kg dw	0 - 9	0%	–	–	0.34	0.4402	0.421
Chromium	mg/kg dw	0 - 9	0%	–	–	0.34	0.4402	0.421
Cobalt	mg/kg dw	0 - 9	0%	–	–	0.34	0.4402	0.421
Copper	mg/kg dw	9 - 9	100%	7.077	26.31	–	–	15.4
Iron	mg/kg dw	7 - 9	78%	110	207.9	108	109	133
Lead	mg/kg dw	2 - 9	22%	0.4873	0.8192	0.34	0.4399	0.469
Manganese	mg/kg dw	9 - 9	100%	21.53	71.16	–	–	42.5
Mercury	mg/kg dw	0 - 9	0%	–	–	0.068	0.08803	0.0843
Molybdenum	mg/kg dw	0 - 9	0%	–	–	3.4	4.402	4.21
Nickel	mg/kg dw	1 - 9	11%	0.61	0.61	0.34	0.4402	0.443
Selenium	mg/kg dw	9 - 9	100%	1.243	1.863	–	–	1.54
Silver	mg/kg dw	0 - 9	0%	–	–	0.17	0.224	0.211
Strontium	mg/kg dw	9 - 9	100%	30.47	70.61	–	–	49.8
Thallium	mg/kg dw	0 - 9	0%	–	–	0.34	0.4402	0.421
Vanadium	mg/kg dw	0 - 9	0%	–	–	0.68	0.8803	0.843
Zinc	mg/kg dw	9 - 9	100%	116.2	272.7	–	–	160
Inorganic-cations/anions								
Calcium	mg/kg dw	9 - 9	100%	42200	113712	–	–	57600
Magnesium	mg/kg dw	9 - 9	100%	1348	2079	–	–	1610
Potassium	mg/kg dw	9 - 9	100%	6857	8655	–	–	8000
Sodium	mg/kg dw	7 - 9	78%	4120	4960	3895	4010	4490

Note: Whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77.1 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-281. Upland Chorus Frog Whole Body (2009) Dataset: West Embayment
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 2	0%	–	–	109.4	109.6	110
Antimony	mg/kg dw	0 - 2	0%	–	–	0.4339	0.4362	0.435
Arsenic	mg/kg dw	1 - 2	50%	1.745	1.745	0.4339	0.4339	1.09
Barium	mg/kg dw	2 - 2	100%	–	–	–	–	63.8
Beryllium	mg/kg dw	0 - 2	0%	–	–	0.4339	0.4362	0.435
Boron	mg/kg dw	0 - 2	0%	–	–	8.725	8.798	8.76
Cadmium	mg/kg dw	0 - 2	0%	–	–	0.4339	0.4362	0.435
Chromium	mg/kg dw	0 - 2	0%	–	–	0.4362	0.5183	0.477
Cobalt	mg/kg dw	0 - 2	0%	–	–	0.4339	0.4362	0.435
Copper	mg/kg dw	2 - 2	100%	30.83	33.87	–	–	32.4
Iron	mg/kg dw	2 - 2	100%	150.7	207.9	–	–	179
Lead	mg/kg dw	1 - 2	50%	1.381	1.381	0.5183	0.5183	0.95
Manganese	mg/kg dw	2 - 2	100%	33.15	35.31	–	–	34.2
Mercury	mg/kg dw	0 - 2	0%	–	–	0.08725	0.08798	0.0876
Molybdenum	mg/kg dw	0 - 2	0%	–	–	4.339	4.362	4.35
Nickel	mg/kg dw	0 - 2	0%	–	–	0.4339	0.4362	0.435
Selenium	mg/kg dw	2 - 2	100%	1.808	1.89	–	–	1.85
Silver	mg/kg dw	1 - 2	50%	0.3977	0.3977	0.2181	0.2181	0.308
Strontium	mg/kg dw	2 - 2	100%	54.39	67.61	–	–	61
Thallium	mg/kg dw	0 - 2	0%	–	–	0.4339	0.4362	0.435
Vanadium	mg/kg dw	0 - 2	0%	–	–	0.8725	0.8798	0.876
Zinc	mg/kg dw	2 - 2	100%	144.6	219.6	–	–	182
Inorganic-cations/anions								
Calcium	mg/kg dw	2 - 2	100%	56285	67182	–	–	61700
Magnesium	mg/kg dw	2 - 2	100%	1555	2094	–	–	1820
Potassium	mg/kg dw	2 - 2	100%	10269	12288	–	–	11300
Sodium	mg/kg dw	2 - 2	100%	5689	6209	–	–	5950

Note: Whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77.1 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-282. Upland Chorus Frog Whole Body (2010) Dataset: Reference
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	1 - 13	8%	219.1	219.1	27.5	36.11	48.3
Antimony	mg/kg dw	0 - 13	0%	–	–	0.099	0.1336	0.124
Arsenic	mg/kg dw	5 - 13	38%	0.2366	0.3179	0.19	0.2536	0.251
Barium	mg/kg dw	13 - 13	100%	–	–	–	–	60.8
Beryllium	mg/kg dw	0 - 13	0%	–	–	0.2476	0.5345	0.29
Boron	mg/kg dw	0 - 13	0%	–	–	2.9	3.757	3.56
Cadmium	mg/kg dw	0 - 13	0%	–	–	0.06456	0.1602	0.0942
Chromium	mg/kg dw	0 - 13	0%	–	–	0.87	1.149	1.08
Cobalt	mg/kg dw	10 - 13	77%	0.1336	0.6548	0.1158	0.1252	0.213
Copper	mg/kg dw	13 - 13	100%	6.225	46.37	–	–	16.3
Iron	mg/kg dw	12 - 13	92%	107.2	304.7	102.4	102.4	165
Lead	mg/kg dw	3 - 13	23%	0.6931	0.8675	0.22	0.3459	0.39
Manganese	mg/kg dw	13 - 13	100%	23.89	70.93	–	–	48.9
Mercury	mg/kg dw	0 - 13	0%	–	–	0.08	0.1044	0.0991
Molybdenum	mg/kg dw	0 - 13	0%	–	–	0.24	0.3207	0.302
Nickel	mg/kg dw	0 - 13	0%	–	–	0.67	0.8819	0.836
Selenium	mg/kg dw	13 - 13	100%	0.96	2.157	–	–	1.34
Silver	mg/kg dw	1 - 13	8%	0.06013	0.06013	0.02	0.03357	0.0279
Strontium	mg/kg dw	13 - 13	100%	26	99.28	–	–	57.6
Thallium	mg/kg dw	0 - 13	0%	–	–	0.095	0.1268	0.117
Vanadium	mg/kg dw	0 - 13	0%	–	–	0.31	0.4142	0.391
Zinc	mg/kg dw	13 - 13	100%	110.4	311	–	–	173
Inorganic-cations/anions								
Calcium	mg/kg dw	13 - 13	100%	40044	66812	–	–	55000
Magnesium	mg/kg dw	13 - 13	100%	1570	2165	–	–	1850
Potassium	mg/kg dw	13 - 13	100%	7920	11014	–	–	9860
Sodium	mg/kg dw	13 - 13	100%	4130	6041	–	–	5490

Note: Whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77.1 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-283. Upland Chorus Frog Whole Body (2010) Dataset: North Embayment
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	3 - 11	27%	43.07	56.68	30.94	38.2	38.7
Antimony	mg/kg dw	0 - 11	0%	–	–	0.1074	0.14	0.125
Arsenic	mg/kg dw	2 - 11	18%	0.4	0.8164	0.2257	0.5852	0.406
Barium	mg/kg dw	11 - 11	100%	–	–	–	–	62.1
Beryllium	mg/kg dw	0 - 11	0%	–	–	0.1373	0.57	0.27
Boron	mg/kg dw	0 - 11	0%	–	–	3.223	4	3.59
Cadmium	mg/kg dw	8 - 11	73%	0.089	0.2224	0.1268	0.1373	0.147
Chromium	mg/kg dw	0 - 11	0%	–	–	0.9776	1.2	1.09
Cobalt	mg/kg dw	7 - 11	64%	0.1373	0.2494	0.1074	0.1278	0.159
Copper	mg/kg dw	11 - 11	100%	10.2	25.3	–	–	14.7
Iron	mg/kg dw	10 - 11	91%	121	167.5	93.24	93.24	136
Lead	mg/kg dw	0 - 11	0%	–	–	0.2306	0.4096	0.308
Manganese	mg/kg dw	11 - 11	100%	44.41	118	–	–	63.7
Mercury	mg/kg dw	0 - 11	0%	–	–	0.08916	0.11	0.0995
Molybdenum	mg/kg dw	3 - 11	27%	0.29	0.4	0.2851	0.316	0.313
Nickel	mg/kg dw	0 - 11	0%	–	–	0.752	0.93	0.84
Selenium	mg/kg dw	11 - 11	100%	1.1	2.709	–	–	1.72
Silver	mg/kg dw	1 - 11	9%	0.05734	0.05734	0.02256	0.028	0.0278
Strontium	mg/kg dw	11 - 11	100%	40.58	109.6	–	–	64.3
Thallium	mg/kg dw	1 - 11	9%	0.34	0.34	0.1093	0.64	0.228
Vanadium	mg/kg dw	0 - 11	0%	–	–	0.44	0.81	0.743
Zinc	mg/kg dw	11 - 11	100%	104.8	173.6	–	–	149
Inorganic-cations/anions								
Calcium	mg/kg dw	11 - 11	100%	37121	71222	–	–	51800
Magnesium	mg/kg dw	11 - 11	100%	1499	2417	–	–	1800
Potassium	mg/kg dw	11 - 11	100%	7680	11100	–	–	9770
Sodium	mg/kg dw	11 - 11	100%	4199	5887	–	–	4990

Note: Whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77.1 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-284. Upland Chorus Frog Whole Body (2010) Dataset: West Embayment
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 11	0%	–	–	30.68	36.19	34.6
Antimony	mg/kg dw	0 - 11	0%	–	–	0.1079	0.1341	0.127
Arsenic	mg/kg dw	0 - 11	0%	–	–	0.2155	0.9061	0.348
Barium	mg/kg dw	11 - 11	100%	–	–	–	–	73.2
Beryllium	mg/kg dw	0 - 11	0%	–	–	0.4618	0.5456	0.517
Boron	mg/kg dw	0 - 11	0%	–	–	3.181	3.786	3.59
Cadmium	mg/kg dw	5 - 11	45%	0.1402	0.1747	0.1231	0.1402	0.142
Chromium	mg/kg dw	0 - 11	0%	–	–	0.9749	1.186	1.09
Cobalt	mg/kg dw	10 - 11	91%	0.1283	0.4314	0.1214	0.1214	0.213
Copper	mg/kg dw	11 - 11	100%	4.496	15.39	–	–	10.1
Iron	mg/kg dw	10 - 11	91%	99.13	226	107.3	107.3	132
Lead	mg/kg dw	2 - 11	18%	0.524	0.6086	0.2157	0.431	0.328
Manganese	mg/kg dw	11 - 11	100%	50.72	161.6	–	–	83.1
Mercury	mg/kg dw	3 - 11	27%	0.1201	0.1528	0.08825	0.1047	0.109
Molybdenum	mg/kg dw	0 - 11	0%	–	–	0.2668	0.3229	0.305
Nickel	mg/kg dw	0 - 11	0%	–	–	0.7491	0.8831	0.845
Selenium	mg/kg dw	11 - 11	100%	0.8686	2.511	–	–	1.96
Silver	mg/kg dw	3 - 11	27%	0.02838	0.04258	0.02258	0.02575	0.028
Strontium	mg/kg dw	11 - 11	100%	34.85	117.6	–	–	77.4
Thallium	mg/kg dw	0 - 11	0%	–	–	0.1026	0.123	0.117
Vanadium	mg/kg dw	0 - 11	0%	–	–	0.3489	0.4148	0.396
Zinc	mg/kg dw	11 - 11	100%	96.36	283.2	–	–	136
Inorganic-cations/anions								
Calcium	mg/kg dw	11 - 11	100%	39642	66590	–	–	52700
Magnesium	mg/kg dw	11 - 11	100%	1581	2282	–	–	1890
Potassium	mg/kg dw	11 - 11	100%	7607	9905	–	–	8780
Sodium	mg/kg dw	11 - 11	100%	4283	5975	–	–	4920

Note: Whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77.1 percent.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-285. American Toad Whole Body (2009) Dataset: Reference
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	6 - 10	60%	118.6	1430	108.1	109.5	308
Antimony	mg/kg dw	0 - 10	0%	–	–	0.39	0.47	0.429
Arsenic	mg/kg dw	10 - 10	100%	0.71	6.48	–	–	2.38
Barium	mg/kg dw	10 - 10	100%	–	–	–	–	87.8
Beryllium	mg/kg dw	0 - 10	0%	–	–	0.39	0.47	0.429
Boron	mg/kg dw	0 - 10	0%	–	–	7.9	9.4	8.62
Cadmium	mg/kg dw	1 - 10	10%	0.4469	0.4469	0.39	0.47	0.43
Chromium	mg/kg dw	1 - 10	10%	18.4	18.4	0.4346	1.247	2.56
Cobalt	mg/kg dw	2 - 10	20%	0.61	0.634	0.39	0.47	0.471
Copper	mg/kg dw	6 - 10	60%	8	12.1	4.528	6.931	8.02
Iron	mg/kg dw	10 - 10	100%	171.5	1470	–	–	440
Lead	mg/kg dw	9 - 10	90%	0.5638	2.1	0.4339	0.4339	1.03
Manganese	mg/kg dw	10 - 10	100%	48.55	126.5	–	–	85.7
Mercury	mg/kg dw	1 - 10	10%	0.1191	0.1191	0.079	0.094	0.0893
Molybdenum	mg/kg dw	0 - 10	0%	–	–	3.9	4.7	4.29
Nickel	mg/kg dw	3 - 10	30%	0.9463	8.7	0.4346	0.7452	1.46
Selenium	mg/kg dw	10 - 10	100%	0.8928	2.3	–	–	1.73
Silver	mg/kg dw	0 - 10	0%	–	–	0.2	0.24	0.217
Strontium	mg/kg dw	10 - 10	100%	67	172.5	–	–	106
Thallium	mg/kg dw	0 - 10	0%	–	–	0.39	0.47	0.429
Vanadium	mg/kg dw	3 - 10	30%	1.032	1.4	0.79	0.94	0.976
Zinc	mg/kg dw	10 - 10	100%	90	134.1	–	–	112
Inorganic-cations/anions								
Calcium	mg/kg dw	10 - 10	100%	36600	91859	–	–	68700
Magnesium	mg/kg dw	10 - 10	100%	1651	2390	–	–	1880
Potassium	mg/kg dw	10 - 10	100%	8170	9747	–	–	9120
Sodium	mg/kg dw	10 - 10	100%	4580	6700	–	–	5670

Note: Whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77.1 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-286. American Toad Whole Body (2009) Dataset: North Embayment
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	0 - 10	0%	–	–	89.6	117	103
Antimony	mg/kg dw	0 - 10	0%	–	–	0.36	0.47	0.413
Arsenic	mg/kg dw	0 - 10	0%	–	–	0.36	0.47	0.413
Barium	mg/kg dw	10 - 10	100%	–	–	–	–	66.1
Beryllium	mg/kg dw	0 - 10	0%	–	–	0.36	0.47	0.413
Boron	mg/kg dw	0 - 10	0%	–	–	7.2	9.4	8.26
Cadmium	mg/kg dw	0 - 10	0%	–	–	0.36	0.47	0.413
Chromium	mg/kg dw	0 - 10	0%	–	–	0.39	0.73	0.5
Cobalt	mg/kg dw	0 - 10	0%	–	–	0.36	0.47	0.413
Copper	mg/kg dw	3 - 10	30%	6.8	10.4	3.9	6.5	6.17
Iron	mg/kg dw	7 - 10	70%	121	260	105	117	140
Lead	mg/kg dw	4 - 10	40%	0.43	1.1	0.36	0.43	0.564
Manganese	mg/kg dw	10 - 10	100%	15.4	128	–	–	52.9
Mercury	mg/kg dw	5 - 10	50%	0.085	0.11	0.072	0.085	0.0876
Molybdenum	mg/kg dw	0 - 10	0%	–	–	3.6	4.7	4.13
Nickel	mg/kg dw	0 - 10	0%	–	–	0.39	0.47	0.421
Selenium	mg/kg dw	10 - 10	100%	0.93	2.3	–	–	1.4
Silver	mg/kg dw	0 - 10	0%	–	–	0.18	0.23	0.206
Strontium	mg/kg dw	10 - 10	100%	42.9	133	–	–	81
Thallium	mg/kg dw	0 - 10	0%	–	–	0.36	0.47	0.413
Vanadium	mg/kg dw	0 - 10	0%	–	–	0.72	0.94	0.826
Zinc	mg/kg dw	10 - 10	100%	80	140	–	–	112
Inorganic-cations/anions								
Calcium	mg/kg dw	10 - 10	100%	36200	111000	–	–	70500
Magnesium	mg/kg dw	10 - 10	100%	990	2600	–	–	1700
Potassium	mg/kg dw	10 - 10	100%	6320	8810	–	–	7880
Sodium	mg/kg dw	8 - 10	80%	4080	6670	3960	4200	5120

Note: Whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77.1 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-287. American Toad Whole Body (2009) Dataset: West Embayment
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	6 - 11	55%	121	378	101	184	186
Antimony	mg/kg dw	0 - 11	0%	–	–	0.39	0.74	0.465
Arsenic	mg/kg dw	0 - 11	0%	–	–	0.39	0.74	0.465
Barium	mg/kg dw	11 - 11	100%	–	–	–	–	84.1
Beryllium	mg/kg dw	0 - 11	0%	–	–	0.39	0.74	0.465
Boron	mg/kg dw	0 - 11	0%	–	–	7.9	14.8	9.27
Cadmium	mg/kg dw	0 - 11	0%	–	–	0.39	0.74	0.465
Chromium	mg/kg dw	4 - 11	36%	0.64	8.6	0.41	0.74	1.47
Cobalt	mg/kg dw	1 - 11	9%	0.51	0.51	0.39	0.74	0.475
Copper	mg/kg dw	10 - 11	91%	7	13.1	5.1	5.1	8.73
Iron	mg/kg dw	9 - 11	82%	103	400	109	184	240
Lead	mg/kg dw	6 - 11	55%	0.51	2.1	0.41	0.74	0.741
Manganese	mg/kg dw	11 - 11	100%	44.2	174	–	–	96.8
Mercury	mg/kg dw	6 - 11	55%	0.083	0.18	0.081	0.15	0.111
Molybdenum	mg/kg dw	0 - 11	0%	–	–	3.9	7.4	4.65
Nickel	mg/kg dw	6 - 11	55%	0.46	13.1	0.41	0.74	1.77
Selenium	mg/kg dw	11 - 11	100%	1.176	3.3	–	–	2.03
Silver	mg/kg dw	0 - 11	0%	–	–	0.2	0.37	0.232
Strontium	mg/kg dw	11 - 11	100%	47	206	–	–	114
Thallium	mg/kg dw	0 - 11	0%	–	–	0.39	0.74	0.465
Vanadium	mg/kg dw	0 - 11	0%	–	–	0.79	1.5	0.932
Zinc	mg/kg dw	11 - 11	100%	106	161	–	–	124
Inorganic-cations/anions								
Calcium	mg/kg dw	11 - 11	100%	24600	121000	–	–	59600
Magnesium	mg/kg dw	11 - 11	100%	1180	6710	–	–	2070
Potassium	mg/kg dw	11 - 11	100%	6560	9840	–	–	7950
Sodium	mg/kg dw	9 - 11	82%	4330	7280	3991	4810	5350

Note: Whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77.1 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-288. American Toad Whole Body (2010) Dataset: Reference
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	5 - 13	38%	75.7	2340	31.1	41	282
Antimony	mg/kg dw	0 - 13	0%	–	–	0.11	0.15	0.128
Arsenic	mg/kg dw	6 - 13	46%	0.29	1.1	0.22	0.29	0.399
Barium	mg/kg dw	13 - 13	100%	–	–	–	–	72.8
Beryllium	mg/kg dw	0 - 13	0%	–	–	0.2623	0.61	0.5
Boron	mg/kg dw	0 - 13	0%	–	–	3.1	4.2	3.63
Cadmium	mg/kg dw	4 - 13	31%	0.14	0.28	0.07743	0.127	0.136
Chromium	mg/kg dw	1 - 13	8%	5.2	5.2	0.96	1.3	1.42
Cobalt	mg/kg dw	11 - 13	85%	0.13	1.3	0.12	0.14	0.335
Copper	mg/kg dw	11 - 13	85%	4.1	8.5	3.411	3.6	5.54
Iron	mg/kg dw	13 - 13	100%	127	1770	–	–	336
Lead	mg/kg dw	7 - 13	54%	0.57	3.1	0.379	2.2	0.97
Manganese	mg/kg dw	13 - 13	100%	37.2	227	–	–	95.8
Mercury	mg/kg dw	1 - 13	8%	0.12	0.12	0.09	0.12	0.103
Molybdenum	mg/kg dw	0 - 13	0%	–	–	0.27	0.36	0.308
Nickel	mg/kg dw	1 - 13	8%	2.4	2.4	0.74	1	0.973
Selenium	mg/kg dw	13 - 13	100%	1.1	2.248	–	–	1.6
Silver	mg/kg dw	2 - 13	15%	0.025	0.029	0.022	0.03	0.0258
Strontium	mg/kg dw	13 - 13	100%	34.2	121	–	–	67
Thallium	mg/kg dw	0 - 13	0%	–	–	0.1	0.14	0.12
Vanadium	mg/kg dw	1 - 13	8%	3.8	3.8	0.34	0.48	0.664
Zinc	mg/kg dw	13 - 13	100%	102.3	254.8	–	–	139
Inorganic-cations/anions								
Calcium	mg/kg dw	13 - 13	100%	34800	85200	–	–	54200
Magnesium	mg/kg dw	13 - 13	100%	1280	2398	–	–	1730
Potassium	mg/kg dw	13 - 13	100%	8000	10700	–	–	9210
Sodium	mg/kg dw	13 - 13	100%	3520	6368	–	–	5170

Note: Whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77.1 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-289. American Toad Whole Body (2010) Dataset: North Embayment
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	5 - 10	50%	38.8	1980	33	43.3	300
Antimony	mg/kg dw	1 - 10	10%	0.59	0.59	0.11	0.16	0.176
Arsenic	mg/kg dw	10 - 10	100%	0.27	25.9	–	–	3.45
Barium	mg/kg dw	10 - 10	100%	–	–	–	–	102
Beryllium	mg/kg dw	0 - 10	0%	–	–	0.44	0.65	0.539
Boron	mg/kg dw	0 - 10	0%	–	–	3.1	4.5	3.75
Cadmium	mg/kg dw	5 - 10	50%	0.21	0.29	0.068	0.15	0.173
Chromium	mg/kg dw	2 - 10	20%	1	23.6	1	1.4	3.4
Cobalt	mg/kg dw	10 - 10	100%	0.14	2.2	–	–	0.482
Copper	mg/kg dw	9 - 10	90%	4.4	15.4	4.3	4.3	6.92
Iron	mg/kg dw	10 - 10	100%	111	18600	–	–	2070
Lead	mg/kg dw	8 - 10	80%	0.61	9.9	0.27	0.44	1.8
Manganese	mg/kg dw	10 - 10	100%	28.8	489	–	–	131
Mercury	mg/kg dw	1 - 10	10%	0.1	0.1	0.085	0.13	0.106
Molybdenum	mg/kg dw	1 - 10	10%	1	1	0.26	0.38	0.384
Nickel	mg/kg dw	1 - 10	10%	1.3	1.3	0.72	1.1	0.923
Selenium	mg/kg dw	10 - 10	100%	0.92	2.9	–	–	2.01
Silver	mg/kg dw	2 - 10	20%	0.031	0.049	0.021	0.028	0.0284
Strontium	mg/kg dw	10 - 10	100%	61.7	186	–	–	112
Thallium	mg/kg dw	0 - 10	0%	–	–	0.1	0.15	0.125
Vanadium	mg/kg dw	3 - 10	30%	0.88	36.4	0.38	0.49	4.11
Zinc	mg/kg dw	10 - 10	100%	96	141	–	–	113
Inorganic-cations/anions								
Calcium	mg/kg dw	10 - 10	100%	30100	104000	–	–	63300
Magnesium	mg/kg dw	10 - 10	100%	1260	2640	–	–	1820
Potassium	mg/kg dw	10 - 10	100%	8170	11400	–	–	9740
Sodium	mg/kg dw	10 - 10	100%	4850	7520	–	–	5870

Note: Whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77.1 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-290. American Toad Whole Body (2010) Dataset: West Embayment
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg dw	7 - 10	70%	36.4	180	34.4	41.2	85.6
Antimony	mg/kg dw	0 - 10	0%	–	–	0.11	0.15	0.126
Arsenic	mg/kg dw	6 - 10	60%	0.24	0.65	0.22	0.29	0.309
Barium	mg/kg dw	10 - 10	100%	–	–	–	–	71.8
Beryllium	mg/kg dw	0 - 10	0%	–	–	0.23	0.3	0.258
Boron	mg/kg dw	0 - 10	0%	–	–	3.3	4.3	3.66
Cadmium	mg/kg dw	5 - 10	50%	0.15	0.27	0.065	0.12	0.147
Chromium	mg/kg dw	0 - 10	0%	–	–	1	1.3	1.12
Cobalt	mg/kg dw	10 - 10	100%	0.16	0.45	–	–	0.275
Copper	mg/kg dw	9 - 10	90%	5.5	11.1	3.3	3.3	6.9
Iron	mg/kg dw	1 - 10	10%	634	634	104	265	238
Lead	mg/kg dw	7 - 10	70%	0.41	1.5	0.25	0.29	0.629
Manganese	mg/kg dw	10 - 10	100%	19.3	173	–	–	73.5
Mercury	mg/kg dw	2 - 10	20%	0.13	0.14	0.091	0.12	0.11
Molybdenum	mg/kg dw	0 - 10	0%	–	–	0.28	0.36	0.309
Nickel	mg/kg dw	0 - 10	0%	–	–	0.77	1	0.859
Selenium	mg/kg dw	10 - 10	100%	1.4	3	–	–	2.11
Silver	mg/kg dw	4 - 10	40%	0.035	0.047	0.025	0.03	0.0313
Strontium	mg/kg dw	10 - 10	100%	42.1	241	–	–	108
Thallium	mg/kg dw	0 - 10	0%	–	–	0.11	0.14	0.122
Vanadium	mg/kg dw	0 - 10	0%	–	–	0.36	0.47	0.402
Zinc	mg/kg dw	10 - 10	100%	84.9	131	–	–	106
Inorganic-cations/anions								
Calcium	mg/kg dw	10 - 10	100%	35800	113000	–	–	55600
Magnesium	mg/kg dw	10 - 10	100%	1280	2510	–	–	1610
Potassium	mg/kg dw	10 - 10	100%	7970	9480	–	–	8710
Sodium	mg/kg dw	10 - 10	100%	4540	6810	–	–	5550

Note: Whole body concentrations presented in mg/kg dw, using a default site-specific percent moisture of 77.1 percent where individual sample percent moisture value was rejected.
– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg dw = Milligram per kilogram dry weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-291. Common Musk/Mud Turtle Blood (2009) Dataset: Ash Release Area
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations	Detection Limits	Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min Max	Min Max	
Inorganics						
Aluminum	mg/kg ww	0 - 13	0%	– - –	0.79 - 25.2	9.98
Antimony	mg/kg ww	0 - 13	0%	– - –	0.017 - 0.1	0.0491
Arsenic	mg/kg ww	1 - 13	8%	0.096 - 0.096	0.015 - 0.1	0.0561
Barium	mg/kg ww	7 - 13	54%	0.026 - 0.48	0.018 - 0.1	0.143
Beryllium	mg/kg ww	0 - 13	0%	– - –	0.0029 - 0.1	0.0396
Boron	mg/kg ww	0 - 13	0%	– - –	0.057 - 2	0.799
Cadmium	mg/kg ww	0 - 13	0%	– - –	0.0053 - 0.1	0.0412
Chromium	mg/kg ww	0 - 13	0%	– - –	0.095 - 0.2	0.118
Cobalt	mg/kg ww	2 - 13	15%	0.06 - 0.07	0.017 - 0.1	0.0601
Copper	mg/kg ww	13 - 13	100%	0.52 - 1.5	– - –	0.704
Lead	mg/kg ww	8 - 13	62%	0.011 - 0.032	0.095 - 0.1	0.0481
Manganese	mg/kg ww	8 - 13	62%	0.14 - 0.39	0.48 - 0.5	0.339
Mercury	mg/kg ww	1 - 13	8%	0.036 - 0.036	0.0089 - 0.025	0.0178
Molybdenum	mg/kg ww	0 - 13	0%	– - –	0.0096 - 1	0.384
Nickel	mg/kg ww	5 - 13	38%	0.034 - 0.052	0.03 - 0.1	0.061
Selenium	mg/kg ww	13 - 13	100%	0.42 - 1.3	– - –	0.672
Silver	mg/kg ww	0 - 13	0%	– - –	0.0027 - 0.05	0.0207
Strontium	mg/kg ww	12 - 13	92%	0.05 - 0.41	0.1 - 0.1	0.157
Thallium	mg/kg ww	0 - 13	0%	– - –	0.013 - 0.1	0.0465
Vanadium	mg/kg ww	0 - 13	0%	– - –	0.049 - 0.2	0.108
Zinc	mg/kg ww	13 - 13	100%	3.7 - 7.3	– - –	5.26
Inorganic-cations/anions						
Calcium	mg/kg ww	9 - 13	69%	64.5 - 150	97.3 - 101	95.75
Iron	mg/kg ww	13 - 13	100%	117 - 301	– - –	221.77
Magnesium	mg/kg ww	8 - 13	62%	54.2 - 75.6	95.2 - 101	77.94
Potassium	mg/kg ww	13 - 13	100%	664 - 1110	– - –	860
Sodium	mg/kg ww	13 - 13	100%	1850 - 2210	– - –	2089

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg ww = Milligram per kilogram wet weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-292. Common Musk/Mud Turtle Blood (2009) Dataset: Emory River - Reaches A and B (ERM 0.0 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 5	0%	–	–	0.88	25.3	15.35
Antimony	mg/kg ww	0 - 5	0%	–	–	0.019	0.1	0.0674
Arsenic	mg/kg ww	0 - 5	0%	–	–	0.016	0.1	0.0662
Barium	mg/kg ww	3 - 5	60%	0.046	0.45	0.099	0.1	0.189
Beryllium	mg/kg ww	0 - 5	0%	–	–	0.0033	0.1	0.0611
Boron	mg/kg ww	0 - 5	0%	–	–	0.064	2	1.23
Cadmium	mg/kg ww	0 - 5	0%	–	–	0.006	0.1	0.0622
Chromium	mg/kg ww	0 - 5	0%	–	–	0.099	0.12	0.108
Cobalt	mg/kg ww	2 - 5	40%	0.1	0.14	0.099	0.1	0.108
Copper	mg/kg ww	5 - 5	100%	0.38	0.7	–	–	0.564
Lead	mg/kg ww	1 - 5	20%	0.027	0.027	0.011	0.1	0.067
Manganese	mg/kg ww	1 - 5	20%	0.25	0.25	0.084	0.51	0.367
Mercury	mg/kg ww	0 - 5	0%	–	–	0.0043	0.02	0.0159
Molybdenum	mg/kg ww	0 - 5	0%	–	–	0.011	1	0.602
Nickel	mg/kg ww	1 - 5	20%	0.051	0.051	0.033	0.1	0.0766
Selenium	mg/kg ww	5 - 5	100%	0.52	0.73	–	–	0.64
Silver	mg/kg ww	0 - 5	0%	–	–	0.003	0.051	0.0312
Strontium	mg/kg ww	4 - 5	80%	0.094	0.28	0.099	0.099	0.169
Thallium	mg/kg ww	0 - 5	0%	–	–	0.015	0.1	0.0658
Vanadium	mg/kg ww	0 - 5	0%	–	–	0.055	0.2	0.142
Zinc	mg/kg ww	5 - 5	100%	4.9	7.1	–	–	5.74
Inorganic-cations/anions								
Calcium	mg/kg ww	2 - 5	40%	82.4	121	49.6	99.8	90.32
Iron	mg/kg ww	5 - 5	100%	135	281	-		208.2
Magnesium	mg/kg ww	0 - 5	0%	–	–	49.6	101	79.82
Potassium	mg/kg ww	5 - 5	100%	583	889	–	–	780.6
Sodium	mg/kg ww	5 - 5	100%	1990	2260	–	–	2166

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg ww = Milligram per kilogram wet weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-293. Common Musk/Mud Turtle Blood (2009) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 6	0%	–	–	0.83	0.88	0.865
Antimony	mg/kg ww	0 - 6	0%	–	–	0.018	0.019	0.019
Arsenic	mg/kg ww	0 - 6	0%	–	–	0.015	0.016	0.0155
Barium	mg/kg ww	6 - 6	100%	0.032	0.35	–	–	0.0905
Beryllium	mg/kg ww	0 - 6	0%	–	–	0.0031	0.0033	0.0032
Boron	mg/kg ww	0 - 6	0%	–	–	0.061	0.14	0.0915
Cadmium	mg/kg ww	0 - 6	0%	–	–	0.0056	0.02	0.00822
Chromium	mg/kg ww	0 - 6	0%	–	–	0.12	0.12	0.12
Cobalt	mg/kg ww	6 - 6	100%	0.051	0.16	–	–	0.0998
Copper	mg/kg ww	6 - 6	100%	0.5	1	–	–	0.732
Lead	mg/kg ww	5 - 6	83%	0.01	0.022	0.01	0.01	0.0143
Manganese	mg/kg ww	6 - 6	100%	0.13	0.39	–	–	0.273
Mercury	mg/kg ww	0 - 6	0%	–	–	0.0058	0.014	0.0111
Molybdenum	mg/kg ww	0 - 6	0%	–	–	0.011	0.022	0.0145
Nickel	mg/kg ww	6 - 6	100%	0.036	0.45	–	–	0.112
Selenium	mg/kg ww	6 - 6	100%	0.56	1.2	–	–	0.79
Silver	mg/kg ww	0 - 6	0%	–	–	0.0028	0.0099	0.00408
Strontium	mg/kg ww	6 - 6	100%	0.085	0.36	–	–	0.143
Thallium	mg/kg ww	0 - 6	0%	–	–	0.014	0.015	0.0145
Vanadium	mg/kg ww	0 - 6	0%	–	–	0.052	0.055	0.0538
Zinc	mg/kg ww	6 - 6	100%	4.6	5.9	–	–	5.17
Inorganic-cations/anions								
Calcium	mg/kg ww	6 - 6	100%	62.7	184	–	–	90.37
Iron	mg/kg ww	6 - 6	100%	128	304	–	–	216.5
Magnesium	mg/kg ww	5 - 6	83%	58.2	70.8	48.8	48.8	62.57
Potassium	mg/kg ww	6 - 6	100%	545	1050	–	–	812
Sodium	mg/kg ww	6 - 6	100%	1980	2390	–	–	2145

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg ww = Milligram per kilogram wet weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-294. Common Musk/Mud Turtle Blood (2010) Dataset: Tennessee River - Reference (Above TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 20	0%	–	–	3.5	4.1	3.95
Antimony	mg/kg ww	0 - 20	0%	–	–	0.013	0.015	0.0144
Arsenic	mg/kg ww	1 - 20	5%	0.026	0.026	0.025	0.058	0.044
Barium	mg/kg ww	9 - 20	45%	0.041	0.45	0.043	0.047	0.0972
Beryllium	mg/kg ww	0 - 20	0%	–	–	0.026	0.062	0.0502
Boron	mg/kg ww	0 - 20	0%	–	–	0.37	0.43	0.409
Cadmium	mg/kg ww	0 - 20	0%	–	–	0.0067	0.016	0.0123
Chromium	mg/kg ww	0 - 20	0%	–	–	0.11	0.13	0.125
Cobalt	mg/kg ww	20 - 20	100%	0.064	0.22	–	–	0.115
Copper	mg/kg ww	20 - 20	100%	0.57	1.1	–	–	0.8
Lead	mg/kg ww	3 - 20	15%	0.033	0.042	0.025	0.029	0.029
Manganese	mg/kg ww	20 - 20	100%	0.23	0.6	–	–	0.371
Mercury	mg/kg ww	13 - 20	65%	0.012	0.019	0.011	0.012	0.0135
Molybdenum	mg/kg ww	0 - 20	0%	–	–	0.031	0.036	0.0348
Nickel	mg/kg ww	0 - 20	0%	–	–	0.086	0.1	0.0963
Selenium	mg/kg ww	20 - 20	100%	0.22	0.73	–	–	0.425
Silver	mg/kg ww	0 - 20	0%	–	–	0.0026	0.003	0.00286
Strontium	mg/kg ww	20 - 20	100%	0.079	0.44	–	–	0.143
Thallium	mg/kg ww	0 - 20	0%	–	–	0.012	0.014	0.0136
Vanadium	mg/kg ww	0 - 20	0%	–	–	0.043	0.094	0.0728
Zinc	mg/kg ww	20 - 20	100%	4.4	10.1	–	–	6.82
Inorganic-cations/anions								
Calcium	mg/kg ww	20 - 20	100%	68.1	162	–	–	90.04
Iron	mg/kg ww	20 - 20	100%	114	298	–	–	213.4
Magnesium	mg/kg ww	20 - 20	100%	54.4	79.3	–	–	67.03
Potassium	mg/kg ww	19 - 20	95%	762	1170	731	731	912.1
Sodium	mg/kg ww	20 - 20	100%	1850	2480	–	–	2176

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg ww = Milligram per kilogram wet weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-295. Common Musk/Mud Turtle Blood (2010) Dataset: Emory River - Reaches A, B, and C (ERM 0.0 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics	mg/kg ww							
Aluminum	mg/kg ww	0 - 21	0%	–	–	3.5	4.5	3.88
Antimony	mg/kg ww	0 - 21	0%	–	–	0.012	0.016	0.014
Arsenic	mg/kg ww	0 - 21	0%	–	–	0.024	0.058	0.045
Barium	mg/kg ww	10 - 21	48%	0.043	0.88	0.04	0.048	0.131
Beryllium	mg/kg ww	0 - 21	0%	–	–	0.026	0.059	0.0375
Boron	mg/kg ww	0 - 21	0%	–	–	0.36	0.47	0.401
Cadmium	mg/kg ww	7 - 21	33%	0.0068	0.019	0.0066	0.0085	0.0081
Chromium	mg/kg ww	0 - 21	0%	–	–	0.11	0.19	0.128
Cobalt	mg/kg ww	20 - 21	95%	0.048	0.19	0.016	0.016	0.11
Copper	mg/kg ww	21 - 21	100%	0.41	1.7	–	–	0.78
Lead	mg/kg ww	5 - 21	24%	0.035	0.14	0.024	0.029	0.0356
Manganese	mg/kg ww	17 - 21	81%	0.17	1.5	0.16	0.18	0.326
Mercury	mg/kg ww	9 - 21	43%	0.013	0.17	0.011	0.026	0.025
Molybdenum	mg/kg ww	0 - 21	0%	–	–	0.03	0.04	0.034
Nickel	mg/kg ww	0 - 21	0%	–	–	0.084	0.11	0.094
Selenium	mg/kg ww	21 - 21	100%	0.18	0.92	–	–	0.455
Silver	mg/kg ww	0 - 21	0%	–	–	0.0025	0.0032	0.0028
Strontium	mg/kg ww	21 - 21	100%	0.074	0.52	-		0.159
Thallium	mg/kg ww	0 - 21	0%	–	–	0.012	0.015	0.013
Vanadium	mg/kg	0 - 21	0%	–	–	0.04	0.09	0.055
Zinc	mg/kg ww	21 - 21	100%	3.2	10.9	–	–	5.92
Inorganic-cations/anions	mg/kg ww							
Calcium	mg/kg ww	21 - 21	100%	47.3	152	–	–	87.29
Iron	mg/kg ww	21 - 21	100%	30.9	273	–	–	150.9
Magnesium	mg/kg ww	17 - 21	81%	48.6	76.1	44.6	49.6	57.15
Potassium	mg/kg	19 - 21	90%	472	1200	693	705	738.7
Sodium	= Not detected/ no	21 - 21	1	2060	2700	–	–	2344

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg ww = Milligram per kilogram wet weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-296. Common Musk/Mud Turtle Blood (2010) Dataset: Clinch River - Reach A (CRM 0.0 to CRM 3.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 21	0%	–	–	3.5	4.2	3.89
Antimony	mg/kg ww	0 - 21	0%	–	–	0.013	0.015	0.014
Arsenic	mg/kg ww	17 - 21	81%	0.041	0.11	0.024	0.058	0.0619
Barium	mg/kg ww	14 - 21	67%	0.044	1.1	0.043	0.048	0.253
Beryllium	mg/kg ww	0 - 21	0%	–	–	0.026	0.062	0.0329
Boron	mg/kg ww	0 - 21	0%	–	–	0.36	0.43	0.402
Cadmium	mg/kg ww	5 - 21	24%	0.0072	0.018	0.0066	0.016	0.0096
Chromium	mg/kg ww	1 - 21	5%	0.15	0.15	0.11	0.13	0.124
Cobalt	mg/kg ww	21 - 21	100%	0.054	0.26	–	–	0.166
Copper	mg/kg ww	21 - 21	100%	0.39	1.1	–	–	0.77
Lead	mg/kg ww	4 - 21	19%	0.03	0.051	0.024	0.053	0.032
Manganese	mg/kg ww	20 - 21	95%	0.19	0.61	0.15	0.15	0.373
Mercury	mg/kg ww	14 - 21	67%	0.011	0.02	0.01	0.012	0.014
Molybdenum	mg/kg ww	0 - 21	0%	–	–	0.031	0.036	0.0341
Nickel	mg/kg ww	1 - 21	5%	0.27	0.27	0.085	0.1	0.103
Selenium	mg/kg ww	21 - 21	100%	0.36	1.1	–	–	0.888
Silver	mg/kg ww	0 - 21	0%	–	–	0.0025	0.003	0.0028
Strontium	mg/kg ww	21 - 21	100%	0.087	1	–	–	0.31
Thallium	mg/kg ww	0 - 21	0%	–	–	0.012	0.014	0.0133
Vanadium	mg/kg ww	0 - 21	0%	–	–	0.04	0.094	0.055
Zinc	mg/kg ww	21 - 21	100%	4.3	8.2	–	–	6.46
Inorganic-cations/anions								
Calcium	mg/kg ww	21 - 21	100%	71	306	–	–	114.1
Iron	mg/kg ww	21 - 21	100%	53.7	290	–	–	198.89
Magnesium	mg/kg ww	20 - 21	95%	53.3	77.4	42.1	42.1	64.38
Potassium	mg/kg ww	17 - 21	81%	778	1090	631	750	866.9
Sodium	mg/kg ww	21 - 21	100%	1940	2630	–	–	2218

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg ww = Milligram per kilogram wet weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-297. Common Musk/Mud Turtle Blood (2010) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 15	0%	–	–	3.7	4.2	3.99
Antimony	mg/kg ww	1 - 20	5%	0.036	0.036	0.012	0.015	0.0154
Arsenic	mg/kg ww	10 - 20	50%	0.03	0.083	0.026	0.047	0.0401
Barium	mg/kg ww	6 - 20	30%	0.043	0.48	0.043	0.048	0.0853
Beryllium	mg/kg ww	0 - 20	0%	–	–	0.028	0.06	0.0417
Boron	mg/kg ww	1 - 20	5%	0.64	0.64	0.35	0.43	0.424
Cadmium	mg/kg ww	11 - 20	55%	0.0075	0.14	0.0071	0.013	0.0161
Chromium	mg/kg ww	0 - 20	0%	–	–	0.11	0.13	0.126
Cobalt	mg/kg ww	20 - 20	100%	0.039	0.2	–	–	0.114
Copper	mg/kg ww	20 - 20	100%	0.46	1.1	–	–	0.811
Lead	mg/kg ww	5 - 20	25%	0.024	0.056	0.026	0.029	0.0296
Manganese	mg/kg ww	19 - 20	95%	0.2	0.93	0.17	0.17	0.384
Mercury	mg/kg ww	7 - 20	35%	0.014	0.029	0.011	0.02	0.016
Molybdenum	mg/kg ww	0 - 20	0%	–	–	0.03	0.036	0.035
Nickel	mg/kg ww	0 - 20	0%	–	–	0.082	0.1	0.0964
Selenium	mg/kg ww	20 - 20	100%	0.46	1.6	–	–	0.944
Silver	mg/kg ww	1 - 20	5%	0.0034	0.0034	0.0024	0.003	0.0029
Strontium	mg/kg ww	20 - 20	100%	0.073	0.52	–	–	0.152
Thallium	mg/kg ww	0 - 20	0%	–	–	0.012	0.014	0.0136
Vanadium	mg/kg ww	0 - 20	0%	–	–	0.038	0.089	0.0511
Zinc	mg/kg ww	20 - 20	100%	2.3	8.9	–	–	5.87
Inorganic-cations/anions								
Calcium	mg/kg ww	20 - 20	100%	50.8	164	–	–	84.63
Iron	mg/kg ww	20 - 20	100%	45.8	335	–	–	218.6
Magnesium	mg/kg ww	18 - 20	90%	54.2	89.2	47.8	50	67.49
Potassium	mg/kg ww	20 - 20	100%	611	1280	–	–	953.15
Sodium	mg/kg ww	20 - 20	100%	2020	2440	–	–	2222

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg ww = Milligram per kilogram wet weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-298. Common Musk/Mud Turtle Blood (2010) Dataset: Tennessee River - Reach B (TRM 566.0 to TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 22	0%	–	–	3.6	4.2	3.995
Antimony	mg/kg ww	0 - 22	0%	–	–	0.013	0.015	0.0145
Arsenic	mg/kg ww	5 - 22	23%	0.03	0.036	0.025	0.029	0.029
Barium	mg/kg ww	13 - 22	59%	0.047	0.44	0.043	0.048	0.0854
Beryllium	mg/kg ww	0 - 22	0%	–	–	0.027	0.062	0.0323
Boron	mg/kg ww	0 - 22	0%	–	–	0.37	0.43	0.413
Cadmium	mg/kg ww	2 - 22	9%	0.008	0.0082	0.0068	0.0079	0.00761
Chromium	mg/kg ww	0 - 22	0%	–	–	0.11	0.13	0.126
Cobalt	mg/kg ww	22 - 22	100%	0.066	0.18	–	–	0.127
Copper	mg/kg ww	22 - 22	100%	0.45	1	–	–	0.79
Lead	mg/kg ww	4 - 22	18%	0.031	0.065	0.025	0.029	0.031
Manganese	mg/kg ww	20 - 22	91%	0.18	0.74	0.16	0.17	0.328
Mercury	mg/kg ww	6 - 22	27%	0.012	0.017	0.01	0.012	0.0121
Molybdenum	mg/kg ww	0 - 22	0%	–	–	0.032	0.036	0.035
Nickel	mg/kg ww	1 - 22	5%	0.12	0.12	0.088	0.1	0.098
Selenium	mg/kg ww	22 - 22	100%	0.33	0.69	–	–	0.511
Silver	mg/kg ww	0 - 22	0%	–	–	0.0026	0.003	0.00288
Strontium	mg/kg ww	22 - 22	100%	0.09	0.32	–	–	0.137
Thallium	mg/kg ww	0 - 22	0%	–	–	0.012	0.014	0.014
Vanadium	mg/kg ww	0 - 22	0%	–	–	0.041	0.094	0.062
Zinc	mg/kg ww	22 - 22	100%	4.5	11.5	–	–	7.382
Inorganic-cations/anions								
Calcium	mg/kg ww	22 - 22	100%	64.4	144	–	–	86.81
Iron	mg/kg ww	22 - 22	100%	58	253	–	–	158.1
Magnesium	mg/kg ww	18 - 22	82%	49.6	77	46.3	49.4	59.17
Potassium	mg/kg ww	17 - 22	77%	730	1190	710	1680	1019
Sodium	mg/kg ww	22 - 22	100%	2000	2740	-		2219

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg ww = Milligram per kilogram wet weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-299. Common Snapping Turtle Blood (2009) Dataset: Timberlake Reference
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 10	0%	–	–	24.6	25.6	25.3
Antimony	mg/kg ww	0 - 10	0%	–	–	0.098	0.1	0.0998
Arsenic	mg/kg ww	0 - 10	0%	–	–	0.098	0.1	0.0998
Barium	mg/kg ww	6 - 10	60%	0.17	0.39	0.1	0.11	0.182
Beryllium	mg/kg ww	0 - 10	0%	–	–	0.098	0.1	0.0998
Boron	mg/kg ww	0 - 10	0%	–	–	2	2	2
Cadmium	mg/kg ww	0 - 10	0%	–	–	0.098	0.1	0.0998
Chromium	mg/kg ww	0 - 10	0%	–	–	0.1	0.11	0.102
Cobalt	mg/kg ww	0 - 10	0%	–	–	0.098	0.1	0.0998
Copper	mg/kg ww	2 - 10	20%	0.55	0.86	0.5	0.51	0.546
Lead	mg/kg ww	1 - 10	10%	0.1	0.1	0.098	0.1	0.0998
Manganese	mg/kg ww	7 - 10	70%	0.57	2.1	0.5	0.51	1.057
Mercury	mg/kg ww	2 - 10	20%	0.022	0.031	0.02	0.02	0.0213
Molybdenum	mg/kg ww	0 - 10	0%	–	–	0.98	1	0.998
Nickel	mg/kg ww	0 - 10	0%	–	–	0.098	0.1	0.0998
Selenium	mg/kg ww	5 - 10	50%	0.24	0.4	0.2	0.2	0.254
Silver	mg/kg ww	0 - 10	0%	–	–	0.049	0.051	0.0505
Strontium	mg/kg ww	10 - 10	100%	0.18	0.43	–	–	0.279
Thallium	mg/kg ww	0 - 10	0%	–	–	0.098	0.1	0.0998
Vanadium	mg/kg ww	0 - 10	0%	–	–	0.2	0.2	0.2
Zinc	mg/kg ww	10 - 10	100%	2.3	6.7	–	–	4.44
Inorganic-cations/anions								
Calcium	mg/kg ww	5 - 10	50%	108	181	100	102	117.4
Iron	mg/kg ww	10 - 10	100%	26.9	176	–	–	99.41
Magnesium	mg/kg ww	0 - 10	0%	–	–	98.2	102	101.12
Potassium	mg/kg ww	10 - 10	100%	203	876	–	–	547.5
Sodium	mg/kg ww	10 - 10	100%	2380	3580	–	–	2816

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg ww = Milligram per kilogram wet weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-300. Common Snapping Turtle Blood (2009) Dataset: Clinch River - Reference (Above CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations	Detection Limits	Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min Max	Min Max	
Inorganics						
Aluminum	mg/kg ww	0 - 3	0%	– - –	0.84 - 0.88	0.867
Antimony	mg/kg ww	0 - 3	0%	– - –	0.018 - 0.019	0.0187
Arsenic	mg/kg ww	0 - 3	0%	– - –	0.015 - 0.016	0.0157
Barium	mg/kg ww	3 - 3	100%	0.026 - 0.11	– - –	0.054
Beryllium	mg/kg ww	0 - 3	0%	– - –	0.0031 - 0.0033	0.00323
Boron	mg/kg ww	0 - 3	0%	– - –	0.061 - 0.064	0.063
Cadmium	mg/kg ww	0 - 3	0%	– - –	0.0057 - 0.0059	0.00583
Chromium	mg/kg ww	0 - 3	0%	– - –	0.12 - 0.12	0.12
Cobalt	mg/kg ww	0 - 3	0%	– - –	0.017 - 0.034	0.0257
Copper	mg/kg ww	3 - 3	100%	0.34 - 0.48	– - –	0.43
Lead	mg/kg ww	1 - 3	33%	0.038 - 0.038	0.01 - 0.01	0.0193
Manganese	mg/kg ww	3 - 3	100%	0.32 - 0.8	– - –	0.517
Mercury	mg/kg ww	1 - 3	33%	0.041 - 0.041	0.011 - 0.033	0.0283
Molybdenum	mg/kg ww	0 - 3	0%	– - –	0.01 - 0.013	0.0113
Nickel	mg/kg ww	3 - 3	100%	0.034 - 0.057	– - –	0.0433
Selenium	mg/kg ww	3 - 3	100%	0.19 - 0.44	– - –	0.32
Silver	mg/kg ww	0 - 3	0%	– - –	0.0029 - 0.003	0.00297
Strontium	mg/kg ww	3 - 3	100%	0.084 - 0.29	– - –	0.1647
Thallium	mg/kg ww	0 - 3	0%	– - –	0.014 - 0.015	0.0147
Vanadium	mg/kg ww	0 - 3	0%	– - –	0.052 - 0.054	0.0533
Zinc	mg/kg ww	3 - 3	100%	2.1 - 4.1	– - –	3.43
Inorganic-cations/anions						
Calcium	mg/kg ww	3 - 3	100%	77.7 - 111	– - –	98.9
Iron	mg/kg ww	3 - 3	100%	64.4 - 160	– - –	124
Magnesium	mg/kg ww	2 - 3	67%	58.1 - 60.8	49.5 - 49.5	56.13
Potassium	mg/kg ww	3 - 3	100%	407 - 855	– - –	696
Sodium	mg/kg ww	3 - 3	100%	2210 - 2770	– - –	2413

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg ww = Milligram per kilogram wet weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-301. Common Snapping Turtle Blood (2009) Dataset: Emory River - Reaches A and B (ERM 0.0 to ERM 3.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 9	0%	–	–	0.82	1.2	0.9
Antimony	mg/kg ww	0 - 9	0%	–	–	0.018	0.026	0.02
Arsenic	mg/kg ww	1 - 9	11%	0.22	0.22	0.015	0.021	0.039
Barium	mg/kg ww	4 - 9	44%	0.024	0.12	0.02	0.053	0.039
Beryllium	mg/kg ww	0 - 9	0%	–	–	0.0031	0.015	0.0059
Boron	mg/kg ww	0 - 9	0%	–	–	0.06	0.54	0.119
Cadmium	mg/kg ww	0 - 9	0%	–	–	0.0056	0.019	0.0093
Chromium	mg/kg ww	0 - 9	0%	–	–	0.12	0.17	0.126
Cobalt	mg/kg ww	1 - 9	11%	0.047	0.047	0.0049	0.022	0.017
Copper	mg/kg ww	8 - 9	89%	0.29	0.63	0.18	0.18	0.444
Lead	mg/kg ww	5 - 9	56%	0.011	0.083	0.011	0.06	0.0281
Manganese	mg/kg ww	9 - 9	100%	0.19	1.3	–	–	0.642
Mercury	mg/kg ww	4 - 9	44%	0.058	0.1	0.0042	0.041	0.052
Molybdenum	mg/kg ww	0 - 9	0%	–	–	0.01	0.015	0.012
Nickel	mg/kg ww	5 - 9	56%	0.04	0.44	0.033	0.046	0.09
Selenium	mg/kg ww	9 - 9	100%	0.21	4.5	–	–	0.91
Silver	mg/kg ww	0 - 9	0%	–	–	0.0028	0.0041	0.0031
Strontium	mg/kg ww	7 - 9	78%	0.05	0.29	0.015	0.046	0.105
Thallium	mg/kg ww	0 - 9	0%	–	–	0.014	0.02	0.0151
Vanadium	mg/kg ww	0 - 9	0%	–	–	0.051	0.11	0.0679
Zinc	mg/kg ww	9 - 9	100%	3	9.7	–	–	6.34
Inorganic-cations/anions								
Calcium	mg/kg ww	8 - 9	89%	67.3	165	49.9	49.9	90.91
Iron	mg/kg ww	9 - 9	100%	78.5	250	–	–	168
Magnesium	mg/kg ww	6 - 9	67%	56.4	71.6	48.2	49.9	59.5
Potassium	mg/kg ww	9 - 9	100%	491	1150	–	–	848
Sodium	mg/kg ww	9 - 9	100%	1990	2920	–	–	2384

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg ww = Milligram per kilogram wet weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-302. Common Snapping Turtle Blood (2009) Dataset: Tennessee River - Reference (Above TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 21	0%	–	–	3.6	4.2	3.87
Antimony	mg/kg ww	0 - 21	0%	–	–	0.013	0.015	0.014
Arsenic	mg/kg ww	1 - 21	5%	0.037	0.037	0.025	0.057	0.0419
Barium	mg/kg ww	10 - 21	48%	0.045	0.37	0.041	0.048	0.104
Beryllium	mg/kg ww	0 - 21	0%	–	–	0.026	0.061	0.0343
Boron	mg/kg ww	0 - 21	0%	–	–	0.37	0.43	0.401
Cadmium	mg/kg ww	0 - 21	0%	–	–	0.0068	0.016	0.01
Chromium	mg/kg ww	0 - 21	0%	–	–	0.11	0.13	0.122
Cobalt	mg/kg ww	9 - 21	43%	0.015	0.056	0.013	0.015	0.0177
Copper	mg/kg ww	21 - 21	100%	0.24	0.75	–	–	0.459
Lead	mg/kg ww	17 - 21	81%	0.029	0.14	0.026	0.028	0.06
Manganese	mg/kg ww	21 - 21	100%	0.37	1.7	–	–	0.919
Mercury	mg/kg ww	21 - 21	100%	0.017	0.16	–	–	0.0709
Molybdenum	mg/kg ww	0 - 21	0%	–	–	0.031	0.036	0.0339
Nickel	mg/kg ww	0 - 21	0%	–	–	0.087	0.1	0.094
Selenium	mg/kg ww	21 - 21	100%	0.24	0.44	–	–	0.347
Silver	mg/kg ww	0 - 21	0%	–	–	0.0026	0.0099	0.0034
Strontium	mg/kg ww	21 - 21	100%	0.046	0.78	-		0.229
Thallium	mg/kg ww	0 - 21	0%	–	–	0.012	0.014	0.0133
Vanadium	mg/kg ww	0 - 21	0%	–	–	0.041	0.093	0.06
Zinc	mg/kg ww	21 - 21	100%	6.5	13.5	–	–	9.7
Inorganic-cations/anions								
Calcium	mg/kg ww	21 - 21	100%	67.2	253	–	–	120.2
Iron	mg/kg ww	21 - 21	100%	167	256	–	–	214
Magnesium	mg/kg ww	21 - 21	100%	56.6	85.3	–	–	65.72
Potassium	mg/kg ww	21 - 21	100%	924	1340	–	–	1096
Sodium	mg/kg ww	21 - 21	100%	1790	2370	–	–	2142

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg ww = Milligram per kilogram wet weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-303. Common Snapping Turtle Blood (2010) Dataset: Emory River - Reaches A, B, and C (ERM 0.0 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 8	0%	–	–	3.3	4.2	3.84
Antimony	mg/kg ww	2 - 8	25%	0.014	0.11	0.012	0.015	0.026
Arsenic	mg/kg ww	0 - 8	0%	–	–	0.027	0.058	0.043
Barium	mg/kg ww	4 - 8	50%	0.047	0.33	0.038	0.048	0.123
Beryllium	mg/kg ww	0 - 8	0%	–	–	0.024	0.06	0.032
Boron	mg/kg ww	0 - 8	0%	–	–	0.34	0.43	0.395
Cadmium	mg/kg ww	1 - 8	13%	0.095	0.095	0.0063	0.015	0.0192
Chromium	mg/kg ww	0 - 8	0%	–	–	0.11	0.13	0.121
Cobalt	mg/kg ww	5 - 8	63%	0.014	0.12	0.012	0.014	0.0299
Copper	mg/kg ww	8 - 8	100%	0.35	0.72	–	–	0.471
Lead	mg/kg ww	3 - 8	38%	0.046	0.13	0.024	0.029	0.045
Manganese	mg/kg ww	8 - 8	100%	0.2	1.1	–	–	0.589
Mercury	mg/kg ww	7 - 8	88%	0.024	0.17	0.012	0.012	0.068
Molybdenum	mg/kg ww	0 - 8	0%	–	–	0.029	0.036	0.0335
Nickel	mg/kg ww	1 - 8	13%	0.12	0.12	0.081	0.1	0.096
Selenium	mg/kg ww	8 - 8	100%	0.15	0.45	–	–	0.34
Silver	mg/kg ww	0 - 8	0%	–	–	0.0024	0.0097	0.00363
Strontium	mg/kg ww	8 - 8	100%	0.05	0.32	–	–	0.169
Thallium	mg/kg ww	1 - 8	13%	0.1	0.1	0.011	0.014	0.0239
Vanadium	mg/kg ww	0 - 8	0%	–	–	0.044	0.091	0.0645
Zinc	mg/kg ww	8 - 8	100%	3.3	9	–	–	6.81
Inorganic-cations/anions								
Calcium	mg/kg ww	8 - 8	100%	77.3	182	–	–	112
Iron	mg/kg ww	8 - 8	100%	56.8	206	–	–	157
Magnesium	mg/kg ww	7 - 8	88%	52.6	68.2	50	50	58.69
Potassium	mg/kg ww	8 - 8	100%	422	1180	–	–	823
Sodium	mg/kg ww	8 - 8	100%	2180	3400	–	–	2526

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg ww = Milligram per kilogram wet weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-304. Common Snapping Turtle Blood (2009) Dataset: Clinch River - Reach B (CRM 3.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 5	0%	–	–	2.2	3.9	3.42
Antimony	mg/kg ww	1 - 5	20%	0.044	0.044	0.013	0.014	0.0196
Arsenic	mg/kg ww	0 - 5	0%	–	–	0.026	0.053	0.042
Barium	mg/kg ww	3 - 5	60%	0.04	0.17	0.043	0.044	0.0894
Beryllium	mg/kg ww	0 - 5	0%	–	–	0.016	0.058	0.031
Boron	mg/kg ww	0 - 5	0%	–	–	0.23	0.4	0.354
Cadmium	mg/kg ww	1 - 5	20%	0.013	0.013	0.0068	0.015	0.00978
Chromium	mg/kg ww	0 - 5	0%	–	–	0.069	0.12	0.1078
Cobalt	mg/kg ww	3 - 5	60%	0.014	0.03	0.012	0.013	0.0178
Copper	mg/kg ww	5 - 5	100%	0.48	0.71	–	–	0.576
Lead	mg/kg ww	5 - 5	100%	0.032	0.12	–	–	0.0614
Manganese	mg/kg ww	5 - 5	100%	0.94	1.4	–	–	1.078
Mercury	mg/kg ww	5 - 5	100%	0.073	0.12	–	–	0.096
Molybdenum	mg/kg ww	1 - 5	20%	0.021	0.021	0.031	0.034	0.0302
Nickel	mg/kg ww	0 - 5	0%	–	–	0.053	0.094	0.083
Selenium	mg/kg ww	5 - 5	100%	0.29	0.45	–	–	0.376
Silver	mg/kg ww	1 - 5	20%	0.019	0.019	0.0026	0.0028	0.00596
Strontium	mg/kg ww	5 - 5	100%	0.051	0.26	–	–	0.134
Thallium	mg/kg ww	1 - 5	20%	0.02	0.02	0.012	0.013	0.0142
Vanadium	mg/kg ww	1 - 5	20%	0.031	0.031	0.046	0.087	0.0654
Zinc	mg/kg ww	5 - 5	100%	7.5	11.9	–	–	9
Inorganic-cations/anions								
Calcium	mg/kg ww	5 - 5	100%	75	212	–	–	130.8
Iron	mg/kg ww	5 - 5	100%	174	217	–	–	199.4
Magnesium	mg/kg ww	5 - 5	100%	57.9	80.7	–	–	68.92
Potassium	mg/kg ww	5 - 5	100%	738	1290	–	–	940.4
Sodium	mg/kg ww	5 - 5	100%	2130	2500	–	–	2380

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg ww = Milligram per kilogram wet weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-305. Common Snapping Turtle Blood (2010) Dataset: Tennessee River - Reaches A and B (TRM 550.0 to TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 17	0%	–	–	3.5	4.1	3.8
Antimony	mg/kg ww	0 - 17	0%	–	–	0.013	0.015	0.0137
Arsenic	mg/kg ww	0 - 17	0%	–	–	0.025	0.052	0.0282
Barium	mg/kg ww	5 - 17	29%	0.045	0.084	0.041	0.047	0.0505
Beryllium	mg/kg ww	0 - 17	0%	–	–	0.026	0.059	0.0346
Boron	mg/kg ww	0 - 17	0%	–	–	0.37	0.43	0.395
Cadmium	mg/kg ww	0 - 17	0%	–	–	0.0067	0.014	0.00765
Chromium	mg/kg ww	0 - 17	0%	–	–	0.11	0.13	0.119
Cobalt	mg/kg ww	11 - 17	65%	0.014	0.052	0.012	0.014	0.0187
Copper	mg/kg ww	17 - 17	100%	0.32	0.64	–	–	0.471
Lead	mg/kg ww	13 - 17	76%	0.029	0.14	0.026	0.028	0.059
Manganese	mg/kg ww	17 - 17	100%	0.19	1.4	–	–	0.912
Mercury	mg/kg ww	17 - 17	100%	0.037	0.11	–	–	0.0696
Molybdenum	mg/kg ww	0 - 17	0%	–	–	0.031	0.036	0.0334
Nickel	mg/kg ww	0 - 17	0%	–	–	0.086	0.1	0.0929
Selenium	mg/kg ww	17 - 17	100%	0.27	0.5	-		0.389
Silver	mg/kg ww	0 - 17	0%	–	–	0.0026	0.003	0.00275
Strontium	mg/kg ww	17 - 17	100%	0.043	0.18	-		0.089
Thallium	mg/kg ww	0 - 17	0%	–	–	0.012	0.014	0.0131
Vanadium	mg/kg ww	0 - 17	0%	–	–	0.04	0.089	0.056
Zinc	mg/kg ww	17 - 17	100%	6.7	12.2	–	–	8.81
Inorganic-cations/anions								
Calcium	mg/kg ww	17 - 17	100%	69.8	139	–	–	95.52
Iron	mg/kg ww	17 - 17	100%	138	271	–	–	208
Magnesium	mg/kg ww	17 - 17	100%	54	76.8	–	–	61.47
Potassium	mg/kg ww	17 - 17	100%	820	1300	–	–	1057
Sodium	mg/kg ww	17 - 17	100%	2040	2400	–	–	2218

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg ww = Milligram per kilogram wet weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-306. Eastern Spiny Softshell Turtle Blood (2010) Dataset: Tennessee River - Reference (Above TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 10	0%	–	–	3.5	4.2	3.86
Antimony	mg/kg ww	0 - 10	0%	–	–	0.013	0.015	0.014
Arsenic	mg/kg ww	0 - 10	0%	–	–	0.025	0.054	0.0297
Barium	mg/kg ww	2 - 10	20%	0.075	0.078	0.041	0.048	0.0508
Beryllium	mg/kg ww	0 - 10	0%	–	–	0.026	0.058	0.0313
Boron	mg/kg ww	0 - 10	0%	–	–	0.37	0.43	0.399
Cadmium	mg/kg ww	0 - 10	0%	–	–	0.0067	0.015	0.00809
Chromium	mg/kg ww	0 - 10	0%	–	–	0.11	0.22	0.132
Cobalt	mg/kg ww	10 - 10	100%	0.015	0.12	–	–	0.0792
Copper	mg/kg ww	9 - 10	90%	0.18	0.43	0.13	0.13	0.272
Lead	mg/kg ww	2 - 10	20%	0.036	0.041	0.026	0.029	0.0294
Manganese	mg/kg ww	0 - 10	0%	–	–	0.15	0.18	0.163
Mercury	mg/kg ww	4 - 10	40%	0.01	0.023	0.011	0.012	0.0128
Molybdenum	mg/kg ww	0 - 10	0%	–	–	0.031	0.036	0.0338
Nickel	mg/kg ww	0 - 10	0%	–	–	0.086	0.1	0.0939
Selenium	mg/kg ww	9 - 10	90%	0.098	0.83	0.062	0.062	0.392
Silver	mg/kg ww	3 - 10	30%	0.0039	0.01	0.0026	0.003	0.00416
Strontium	mg/kg ww	10 - 10	100%	0.05	0.28	–	–	0.1015
Thallium	mg/kg ww	0 - 10	0%	–	–	0.012	0.014	0.0132
Vanadium	mg/kg ww	0 - 10	0%	–	–	0.04	0.088	0.0482
Zinc	mg/kg ww	10 - 10	100%	3.3	9.7	–	–	6.33
Inorganic-cations/anions								
Calcium	mg/kg ww	10 - 10	100%	53.3	163	–	–	77.01
Iron	mg/kg ww	10 - 10	100%	46	331	–	–	214.9
Magnesium	mg/kg ww	9 - 10	90%	50	85.6	44.4	44.4	66.62
Potassium	mg/kg ww	8 - 10	80%	772	1230	666	679	972.7
Sodium	mg/kg ww	10 - 10	100%	1780	2970	–	–	2262

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg ww = Milligram per kilogram wet weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-307. Eastern Spiny Softshell Turtle Blood (2010) Dataset: Emory River - Reaches A, B, and C (ERM 0.0 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 20	0%	–	–	3.4	4.2	3.85
Antimony	mg/kg ww	1 - 20	5%	0.018	0.018	0.012	0.015	0.014
Arsenic	mg/kg ww	7 - 20	35%	0.031	0.24	0.025	0.058	0.057
Barium	mg/kg ww	4 - 20	20%	0.067	0.12	0.039	0.048	0.054
Beryllium	mg/kg ww	0 - 20	0%	–	–	0.026	0.062	0.036
Boron	mg/kg ww	0 - 20	0%	–	–	0.36	0.43	0.4
Cadmium	mg/kg ww	0 - 20	0%	–	–	0.0068	0.016	0.0088
Chromium	mg/kg ww	0 - 20	0%	–	–	0.11	0.14	0.123
Cobalt	mg/kg ww	18 - 20	90%	0.018	0.11	0.012	0.013	0.0507
Copper	mg/kg ww	17 - 20	85%	0.14	0.4	0.13	0.14	0.23
Lead	mg/kg ww	3 - 20	15%	0.028	0.03	0.024	0.029	0.027
Manganese	mg/kg ww	0 - 20	0%	–	–	0.15	0.18	0.164
Mercury	mg/kg ww	10 - 20	50%	0.011	0.12	0.0099	0.012	0.0227
Molybdenum	mg/kg ww	0 - 20	0%	–	–	0.03	0.036	0.034
Nickel	mg/kg ww	0 - 20	0%	–	–	0.084	0.1	0.094
Selenium	mg/kg ww	19 - 20	95%	0.075	1.4	0.063	0.063	0.567
Silver	mg/kg ww	7 - 20	35%	0.0031	0.025	0.0026	0.003	0.0054
Strontium	mg/kg ww	20 - 20	100%	0.045	0.27	–	–	0.109
Thallium	mg/kg ww	0 - 20	0%	–	–	0.012	0.014	0.0132
Vanadium	mg/kg ww	0 - 20	0%	–	–	0.041	0.093	0.0613
Zinc	mg/kg ww	19 - 20	95%	2.4	8.3	2	2	4.66
Inorganic-cations/anions								
Calcium	mg/kg ww	20 - 20	100%	58.9	141	–	–	78.71
Iron	mg/kg ww	20 - 20	100%	29	318	–	–	145.7
Magnesium	mg/kg ww	11 - 20	55%	44.2	86.2	42.7	50	56.44
Potassium	mg/kg ww	9 - 20	45%	689	1260	641	741	811
Sodium	mg/kg ww	20 - 20	100%	1970	3190	–	–	2612

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg ww = Milligram per kilogram wet weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-308. Eastern Spiny Softshell Turtle Blood (2010) Dataset: Clinch River - Reaches A and B (CRM 0.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 16	0%	–	–	3.5	5	3.975
Antimony	mg/kg ww	0 - 16	0%	–	–	0.012	0.018	0.0144
Arsenic	mg/kg ww	6 - 16	38%	0.03	0.09	0.025	0.07	0.045
Barium	mg/kg ww	1 - 16	6%	0.049	0.049	0.04	0.057	0.046
Beryllium	mg/kg ww	0 - 16	0%	–	–	0.026	0.075	0.044
Boron	mg/kg ww	0 - 16	0%	–	–	0.36	0.52	0.41
Cadmium	mg/kg ww	0 - 16	0%	–	–	0.0068	0.019	0.0104
Chromium	mg/kg ww	0 - 16	0%	–	–	0.11	0.16	0.126
Cobalt	mg/kg ww	16 - 16	100%	0.014	0.17	–	–	0.0586
Copper	mg/kg ww	13 - 16	81%	0.17	0.37	0.13	0.18	0.241
Lead	mg/kg ww	3 - 16	19%	0.031	0.045	0.024	0.035	0.0299
Manganese	mg/kg ww	1 - 16	6%	0.3	0.3	0.15	0.21	0.176
Mercury	mg/kg ww	12 - 16	75%	0.011	0.054	0.01	0.014	0.0176
Molybdenum	mg/kg ww	0 - 16	0%	–	–	0.03	0.044	0.0348
Nickel	mg/kg ww	0 - 16	0%	–	–	0.084	0.12	0.0963
Selenium	mg/kg ww	16 - 16	100%	0.11	1.5	–	–	0.732
Silver	mg/kg ww	5 - 16	31%	0.0047	0.019	0.0025	0.009	0.00557
Strontium	mg/kg ww	16 - 16	100%	0.06	0.17	–	–	0.0786
Thallium	mg/kg ww	0 - 16	0%	–	–	0.012	0.017	0.014
Vanadium	mg/kg ww	0 - 16	0%	–	–	0.041	0.11	0.0671
Zinc	mg/kg ww	15 - 16	94%	2.4	10.6	1.9	1.9	6.24
Inorganic-cations/anions								
Calcium	mg/kg ww	16 - 16	100%	47.2	107	–	–	67.98
Iron	mg/kg ww	16 - 16	100%	45.4	325	–	–	187.01
Magnesium	mg/kg ww	12 - 16	75%	49.3	80.2	43.1	60.2	62.86
Potassium	mg/kg ww	12 - 16	75%	697	1230	647	904	922
Sodium	mg/kg ww	16 - 16	100%	2010	2820	–	–	2374

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg ww = Milligram per kilogram wet weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-309. Eastern Spiny Softshell Turtle Blood (2010) Dataset: Tennessee River - Reaches A and B (TRM 550.0 to TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	0 - 18	0%	–	–	3.1	4.1	3.77
Antimony	mg/kg ww	0 - 18	0%	–	–	0.011	0.015	0.0137
Arsenic	mg/kg ww	0 - 18	0%	–	–	0.022	0.056	0.0295
Barium	mg/kg ww	2 - 18	11%	0.052	0.078	0.036	0.047	0.046
Beryllium	mg/kg ww	0 - 18	0%	–	–	0.023	0.059	0.0342
Boron	mg/kg ww	0 - 18	0%	–	–	0.32	0.42	0.391
Cadmium	mg/kg ww	0 - 18	0%	–	–	0.006	0.015	0.00803
Chromium	mg/kg ww	0 - 18	0%	–	–	0.099	0.13	0.121
Cobalt	mg/kg ww	18 - 18	100%	0.015	0.16	–	–	0.0626
Copper	mg/kg ww	15 - 18	83%	0.16	0.46	0.13	0.15	0.241
Lead	mg/kg ww	4 - 18	22%	0.028	0.086	0.022	0.028	0.0308
Manganese	mg/kg ww	0 - 18	0%	–	–	0.13	0.17	0.159
Mercury	mg/kg ww	7 - 18	39%	0.012	0.027	0.0091	0.012	0.0124
Molybdenum	mg/kg ww	0 - 18	0%	–	–	0.028	0.036	0.0332
Nickel	mg/kg ww	0 - 18	0%	–	–	0.077	0.1	0.0921
Selenium	mg/kg ww	15 - 18	83%	0.081	0.65	0.06	0.068	0.346
Silver	mg/kg ww	3 - 18	17%	0.0055	0.024	0.0023	0.0092	0.00477
Strontium	mg/kg ww	17 - 18	94%	0.044	0.25	0.041	0.041	0.0914
Thallium	mg/kg ww	0 - 18	0%	–	–	0.011	0.014	0.0131
Vanadium	mg/kg ww	0 - 18	0%	–	–	0.036	0.091	0.0574
Zinc	mg/kg ww	17 - 18	94%	2.9	8	1.9	1.9	5.24
Inorganic-cations/anions								
Calcium	mg/kg ww	18 - 18	100%	53.8	124	–	–	71.46
Iron	mg/kg ww	18 - 18	100%	12.8	237	–	–	154
Magnesium	mg/kg ww	13 - 18	72%	44.2	68.9	40.5	48.6	55.91
Potassium	mg/kg ww	12 - 18	67%	595	1060	608	730	847.7
Sodium	mg/kg ww	18 - 18	100%	2180	3190	–	–	2511

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg ww = Milligram per kilogram wet weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-310. Eastern Spiny Softshell Turtle Carapace (2010) Dataset: Tennessee River - Reference (Above TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	2 - 11	18%	33	53	8.9	296	86.36
Antimony	mg/kg ww	0 - 11	0%	–	–	0.032	1.1	0.306
Arsenic	mg/kg ww	0 - 11	0%	–	–	0.062	2.1	0.639
Barium	mg/kg ww	3 - 11	27%	0.11	1.1	0.25	3.4	1.04
Beryllium	mg/kg ww	0 - 11	0%	–	–	0.066	2.2	0.65
Boron	mg/kg ww	0 - 11	0%	–	–	0.92	30.7	8.7
Cadmium	mg/kg ww	0 - 11	0%	–	–	0.017	0.56	0.159
Chromium	mg/kg ww	0 - 11	0%	–	–	0.31	10.8	3.07
Cobalt	mg/kg ww	2 - 11	18%	0.062	0.1	0.077	1	0.29
Copper	mg/kg ww	0 - 11	0%	–	–	0.32	10.7	3.04
Lead	mg/kg ww	0 - 11	0%	–	–	0.062	2.1	0.59
Manganese	mg/kg ww	7 - 11	64%	0.74	16.1	2.1	11	4.55
Mercury	mg/kg ww	0 - 11	0%	–	–	0.026	0.86	0.24
Molybdenum	mg/kg ww	0 - 11	0%	–	–	0.078	2.6	0.74
Nickel	mg/kg ww	0 - 11	0%	–	–	0.22	7.2	2.05
Selenium	mg/kg ww	1 - 11	9%	0.39	0.39	0.15	5	1.5
Silver	mg/kg ww	5 - 11	45%	0.013	2.5	0.021	0.21	0.35
Strontium	mg/kg ww	2 - 11	18%	0.33	0.41	0.24	3.3	0.96
Thallium	mg/kg ww	0 - 11	0%	–	–	0.031	1	0.29
Vanadium	mg/kg ww	0 - 11	0%	–	–	0.2	3.4	1.14
Zinc	mg/kg ww	5 - 11	45%	12.6	37.2	11.9	161	48.51
Inorganic-cations/anions								
Calcium	mg/kg ww	1 - 11	9%	134	134	263	3570	1013
Iron	mg/kg ww	0 - 11	0%	–	–	26.8	893	252.8
Magnesium	mg/kg ww	0 - 11	0%	–	–	107	3570	1011
Potassium	mg/kg ww	0 - 11	0%	–	–	1610	53600	15175
Sodium	mg/kg ww	9 - 11	82%	2220	3530	3120	3570	2680

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg ww = Milligram per kilogram wet weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-311. Eastern Spiny Softshell Turtle Carapace (2010) Dataset: Emory River - Reaches A, B, and C (ERM 0.0 to ERM 6.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	1 - 21	5%	61.5	61.5	15.1	173	50.49
Antimony	mg/kg ww	0 - 21	0%	–	–	0.055	0.63	0.177
Arsenic	mg/kg ww	1 - 21	5%	0.55	0.55	0.11	1.316	0.49
Barium	mg/kg ww	7 - 21	33%	0.3	14.6	0.26	1.3	1.30
Beryllium	mg/kg ww	0 - 21	0%	–	–	0.11	1.3	0.46
Boron	mg/kg ww	0 - 21	0%	–	–	1.6	17.9	5.1
Cadmium	mg/kg ww	0 - 21	0%	–	–	0.029	0.33	0.094
Chromium	mg/kg ww	0 - 21	0%	–	–	0.61	6.3	2.018
Cobalt	mg/kg ww	2 - 21	10%	0.06	0.09	0.062	0.61	0.174
Copper	mg/kg ww	0 - 21	0%	–	–	0.55	6.2	1.77
Lead	mg/kg ww	1 - 21	5%	0.54	0.54	0.11	1.2	0.357
Manganese	mg/kg ww	4 - 21	19%	2	4.9	0.64	7.4	2.59
Mercury	mg/kg ww	5 - 21	24%	0.072	0.46	0.051	0.5	0.17
Molybdenum	mg/kg ww	0 - 21	0%	–	–	0.13	1.5	0.432
Nickel	mg/kg ww	1 - 21	5%	0.9	0.9	0.37	4.2	1.21
Selenium	mg/kg ww	14 - 21	67%	0.33	1.4	0.58	2.9	1.02
Silver	mg/kg ww	7 - 21	33%	0.06	0.65	0.011	0.12	0.095
Strontium	mg/kg ww	5 - 21	24%	0.26	0.48	0.25	1.9	0.566
Thallium	mg/kg ww	0 - 21	0%	–	–	0.052	0.6	0.17
Vanadium	mg/kg ww	0 - 21	0%	–	–	0.17	2.184	0.68
Zinc	mg/kg ww	7 - 21	33%	14.3	26.3	16.8	94	28.52
Inorganic-cations/anions								
Calcium	mg/kg ww	0 - 21	0%	–	–	182	2080	593
Iron	mg/kg ww	1 - 21	5%	1080	1080	45.6	521	196.4
Magnesium	mg/kg ww	0 - 21	0%	–	–	182	2080	593
Potassium	mg/kg ww	0 - 21	0%	–	–	2740	31200	8889
Sodium	mg/kg ww	21 - 21	100%	2070	2720	–	–	2418

– = Not detected/ not analyzed/ not applicable.
% = Percent.
ERM = Emory River mile.
mg/kg ww = Milligram per kilogram wet weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-312. Eastern Spiny Softshell Turtle Carapace (2010) Dataset: Clinch River - Reaches A and B (CRM 0.0 to CRM 4.5)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	1 - 18	6%	36.8	36.8	17.6	148	65.59
Antimony	mg/kg ww	0 - 18	0%	–	–	0.064	0.54	0.24
Arsenic	mg/kg ww	0 - 18	0%	–	–	0.12	2.07	0.82
Barium	mg/kg ww	3 - 18	17%	0.23	1.3	0.34	1.7	0.819
Beryllium	mg/kg ww	0 - 18	0%	–	–	0.13	2.2	0.757
Boron	mg/kg ww	0 - 18	0%	–	–	1.8	15.4	6.79
Cadmium	mg/kg ww	0 - 18	0%	–	–	0.033	0.28	0.125
Chromium	mg/kg ww	1 - 18	6%	12.8	12.8	0.66	6.2	3.13
Cobalt	mg/kg ww	2 - 18	11%	0.16	0.17	0.062	0.52	0.236
Copper	mg/kg ww	0 - 18	0%	–	–	0.63	5.4	2.37
Lead	mg/kg ww	0 - 18	0%	–	–	0.12	1	0.46
Manganese	mg/kg ww	6 - 18	33%	1.3	28.9	1.3	6.3	4.71
Mercury	mg/kg ww	1 - 18	6%	0.12	0.12	0.086	0.43	0.193
Molybdenum	mg/kg ww	0 - 18	0%	–	–	0.15	1.3	0.57
Nickel	mg/kg ww	1 - 18	6%	27.4	27.4	0.43	3.6	2.97
Selenium	mg/kg ww	8 - 18	44%	0.39	1.2	0.76	5	1.76
Silver	mg/kg ww	7 - 18	39%	0.087	10.8	0.013	0.11	0.79
Strontium	mg/kg ww	2 - 18	11%	0.54	0.64	0.33	1.6	0.751
Thallium	mg/kg ww	0 - 18	0%	–	–	0.061	0.51	0.226
Vanadium	mg/kg ww	0 - 18	0%	–	–	0.4	2.77	0.959
Zinc	mg/kg ww	5 - 18	28%	18	31.3	19.5	80.6	37.23
Inorganic-cations/anions								
Calcium	mg/kg ww	1 - 18	6%	232	232	357	1790	792
Iron	mg/kg ww	1 - 18	6%	6390	6390	53	446	545
Magnesium	mg/kg ww	0 - 18	0%	–	–	212	1790	791
Potassium	mg/kg ww	0 - 18	0%	–	–	3180	26800	11846
Sodium	mg/kg ww	18 - 18	100%	1330	4680	–	–	2537

– = Not detected/ not analyzed/ not applicable.
% = Percent.
CRM = Clinch River mile.
mg/kg ww = Milligram per kilogram wet weight.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.

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Table 2-313. Eastern Spiny Softshell Turtle Carapace (2010) Dataset: Tennessee River - Reaches A and B (TRM 550.0 to TRM 568.0)
Tennessee Valley Authority Kingston, Tennessee

Constituent	Units	Frequency of Detection (FOD) [a]		Detected Concentrations		Detection Limits		Mean Concentration [b]
		Number of Detects / Number of Samples	FOD %	Min	Max	Min	Max	
Inorganics								
Aluminum	mg/kg ww	2 - 20	10%	33.6	41.6	17.6	415	79.21
Antimony	mg/kg ww	0 - 20	0%	–	–	0.064	1.5	0.278
Arsenic	mg/kg ww	0 - 20	0%	–	–	0.12	4.75	0.804
Barium	mg/kg ww	3 - 20	15%	0.21	0.86	0.2	4.8	0.926
Beryllium	mg/kg ww	0 - 20	0%	–	–	0.13	3.1	0.686
Boron	mg/kg ww	1 - 20	5%	3.9	3.9	1.8	43	8.14
Cadmium	mg/kg ww	0 - 20	0%	–	–	0.033	0.79	0.148
Chromium	mg/kg ww	0 - 20	0%	–	–	0.64	15.1	3.19
Cobalt	mg/kg ww	2 - 20	10%	0.083	0.4	0.062	1.5	0.29
Copper	mg/kg ww	0 - 20	0%	–	–	0.63	15	2.803
Lead	mg/kg ww	0 - 20	0%	–	–	0.12	2.9	0.542
Manganese	mg/kg ww	8 - 20	40%	0.78	10.3	0.75	17.7	4.31
Mercury	mg/kg ww	1 - 20	5%	0.091	0.091	0.051	1.2	0.227
Molybdenum	mg/kg ww	0 - 20	0%	–	–	0.15	3.6	0.68
Nickel	mg/kg ww	2 - 20	10%	9.7	14	0.43	10.1	2.6
Selenium	mg/kg ww	1 - 20	5%	0.45	0.45	0.3	11.67	1.94
Silver	mg/kg ww	9 - 20	45%	0.053	65.9	0.013	0.25	3.38
Strontium	mg/kg ww	6 - 20	30%	0.21	0.78	0.32	4.6	0.921
Thallium	mg/kg ww	0 - 20	0%	–	–	0.061	1.4	0.266
Vanadium	mg/kg ww	0 - 20	0%	–	–	0.2	6.17	1.05
Zinc	mg/kg ww	6 - 20	30%	10.8	28.1	14.3	226	44.24
Inorganic-cations/anions								
Calcium	mg/kg ww	0 - 20	0%	–	–	212	5000	937.4
Iron	mg/kg ww	0 - 20	0%	–	–	53	1250	234.1
Magnesium	mg/kg ww	0 - 20	0%	–	–	212	5000	937.4
Potassium	mg/kg ww	0 - 20	0%	–	–	3180	75000	14059
Sodium	mg/kg ww	18 - 20	90%	1860	8560	316	4170	2635

– = Not detected/ not analyzed/ not applicable.
% = Percent.
mg/kg ww = Milligram per kilogram wet weight.
TRM = Tennessee River mile.
[a] Frequency of detection (FOD) = number of detects / total number of samples analyzed.
For duplicate samples, the highest detected value or the lowest detection limit were used.
For constituents analyzed in two methods, the result of the more precise method was used.
[b] Mean concentration calculated using full reporting limits for non-detect values.