TABLE OF CONTENTS FOR ROCKY FLATS LAND USE MANUAL

ADMIN RECORD

Section No.	Title	Rev. No.	Effective Date
	Detailed Table of Contents	2	09/14/95
	Preface	1	09/02/94
	How to Use Manual	1	09/02/94
	Introduction	1	09/02/94
SE 1	Quadrant Southeast 1	2	09/14/95
SE 2	Quadrant Southeast 2	2	09/14/95
SE 3	Quadrant Southeast 3	2	09/14/95
SE 4	Quadrant Southeast 4	2	09/14/95
SW 1	Quadrant Southwest 1	2	09/14/95
SW 2	Quadrant Southwest 2	2	09/14/95
SW 3	Quadrant Southwest 3	2	09/14/95
SW 4	Quadrant Southwest 4	2	09/14/95
NE 1	Quadrant Northeast 1	2	09/14/95
NE 2	Quadrant Northeast 2	2	09/14/95
NE 3	Quadrant Northeast 3	2	09/14/95
NE 4	Quadrant Northeast 4	2	09/14/95
NW 1	Quadrant Northwest 1	2	09/14/95
NW 2	Quadrant Northwest 2	2	09/14/95

DOCUMENT CLASSIFICATION REVIEW WAIVER PER CLASSIFICATION OFFICE

DOCUMENT CLASSIFICATION REVIEW WAIVER
PER R.B. HOFFMAN, CLASSIFICATION OFFICE
JUNE 11, 1991

A-SW-002226

Section No.	Title	Rev. No.	Effective Date
NW 3	Quadrant Northwest 3	2	09/14/95
NW 4	Quadrant Northwest 4	2	09/14/95
CS 1	Case Study 1: Present and Future Sanitary Landfill	1	08/25/94
CS 2	Case Study 2: North and East Live-Firing Rifle Ranges	1	08/25/94
CS 3	Case Study 3: Off-Road Vehicle Use/Environmental Monitoring	1	08/25/94
CS 4	Case Study 4: Off-Road Vehicle Use/WSI - RFP Protective Force	1	08/25/94
CS 5	Case Study 5: Western Aggregate Inc. Quarries	1	08/25/94
CS 6	Case Study 6: RFP 881 Hillside (OU1)/French Drain	1	08/25/94
CS 7	Case Study 7: West Spray Field	1	08/25/94
CS 8	Case Study 8: Borehole and Well Drilling	1	08/25/94
CS 9	Case Study 9: Detention Pond (Series A, B, & C)	1	08/25/94
CS 10	Case Study 10: South Interceptor Ditch	1	08/25/94
CS 11	Case Study 11: Installation of Utilities	1	08/25/94
CS 12	Case Study 12: Buffer Zone Fire	1	08/25/94
GLOS	Glossary	1	09/02/94
LEGE	Legends	0	08/06/93
BIBLIO	Bibliography	0	03/05/93
MAPS	Maps (Located in back of manual)	2	09/14/95

Contents

Preface vii
How To Use This Manual viii
Introduction xii
High-altitude, aerial photograph of Rocky Flats xiii

Site Characterizations and Maps

Quadrant Southeast 1 SE 1 1
MAPS
- Surface Water Sampling Locations
- Wetlands
- Soil Types
- Geologic Units
- Utilities and Vehicle Access
- Mineral Rights
- Borehole Sampling Locations
- Sediment Sampling Locations
- Groundwater Monitoring Well Locations
- Individual Hazardous Substance Sites

Quadrant Southeast 2 SE 2 1
MAPS
- Surface Water Sampling Locations
- Wetlands
- Soil Types
- Geologic Units
- Utilities and Vehicle Access
- Mineral Rights
- Borehole Sampling Locations
- Sediment Sampling Locations
- Groundwater Monitoring Well Locations
- Individual Hazardous Substance Sites

Quadrant Southeast 3 SE 3 1
MAPS
- Surface Water Sampling Locations
- Wetlands
- Soil Types
- Geologic Units
- Utilities and Vehicle Access
- Mineral Rights
- Borehole Sampling Locations
- Sediment Sampling Locations
- Groundwater Monitoring Well Locations

Quadrant Southeast 4 SE 4 1
MAPS
Surface Water Sampling Locations
Wetlands
Soil Types
Geologic Units
Utilities and Vehicle Access
Mineral Rights
Borehole Sampling Locations
Sediment Sampling Locations
Groundwater Monitoring Well Locations
Individual Hazardous Substance Sites

Quadrant Southwest 1 SW 1 1
MAPS
Surface Water Sampling Locations
Wetlands
Soil Types
Geologic Units
Utilities and Vehicle Access
Mineral Rights
Borehole Sampling Locations
Sediment Sampling Locations
Groundwater Monitoring Well Locations
Individual Hazardous Substance Sites

Quadrant Southwest 2 SW 2 1
MAPS
Surface Water Sampling Locations
Wetlands
Soil Types
Geologic Units
Utilities and Vehicle Access
Mineral Rights
Borehole Sampling Locations
Sediment Sampling Locations
Groundwater Monitoring Well Locations
Individual Hazardous Substance Sites

Quadrant Southwest 3 SW 3 1
MAPS
Surface Water Sampling Locations
Wetlands
Soil Types
Geologic Units
Utilities and Vehicle Access
Mineral Rights
Borehole Sampling Locations
Sediment Sampling Locations
Groundwater Monitoring Well Locations

Quadrant Southwest 4 SW 4 1
MAPS
Surface Water Sampling Locations
Wetlands
Soil Types
Geologic Units
Utilities and Vehicle Access
Mineral Rights
Borehole Sampling Locations
Sediment Sampling Locations
Groundwater Monitoring Well Locations

Quadrant Northeast 1 NE 1 1
MAPS
Surface Water Sampling Locations
Wetlands
Soil Types
Geologic Units
Utilities and Vehicle Access
Mineral Rights
Borehole Sampling Locations
Sediment Sampling Locations
Groundwater Monitoring Well Locations
Individual Hazardous Substance Sites

Quadrant Northeast 2 NE 2 1
MAPS
Surface Water Sampling Locations
Wetlands
Soil Types
Geologic Units
Utilities and Vehicle Access
Mineral Rights
Borehole Sampling Locations
Sediment Sampling Locations
Groundwater Monitoring Well Locations

Quadrant Northeast 3 NE 3 1
MAPS
Surface Water Sampling Locations
Wetlands
Soil Types
Geologic Units
Utilities and Vehicle Access
Mineral Rights
Borehole Sampling Locations
Sediment Sampling Locations
Groundwater Monitoring Well Locations
Individual Hazardous Substance Sites

Quadrant Northeast 4 NE 4 1
MAPS
Surface Water Sampling Locations
Wetlands
Soil Types
Geologic Units
Utilities and Vehicle Access
Mineral Rights
Borehole Sampling Locations
Sediment Sampling Locations
Groundwater Monitoring Well Locations

Quadrant Northwest 1 NW 1 1
MAPS
Surface Water Sampling Locations
Wetlands
Soil Types
Geologic Units
Utilities and Vehicle Access
Mineral Rights
Borehole Sampling Locations
Sediment Sampling Locations
Groundwater Monitoring Well Locations
Individual Hazardous Substance Sites

Quadrant Northwest 2 NW 2 1
MAPS
Surface Water Sampling Locations
Wetlands
Soil Types
Geologic Units
Utilities and Vehicle Access
Mineral Rights
Borehole Sampling Locations
Sediment Sampling Locations
Groundwater Monitoring Well Locations

Quadrant Northwest 3 NW 3 1
MAPS
Surface Water Sampling Locations
Wetlands
Soil Types
Geologic Units
Utilities and Vehicle Access
Mineral Rights
Borehole Sampling Locations
Sediment Sampling Locations
Groundwater Monitoring Well Locations
Individual Hazardous Substance Sites

Site Characterizations and Maps (continued)

Quadrant Northwest 4 NW 4 1

MAPS
- Surface Water Sampling Locations
- Wetlands
- Soil Types
- Geologic Units
- Utilities and Vehicle Access
- Mineral Rights
- Borehole Sampling Locations
- Sediment Sampling Locations
- Groundwater Monitoring Well Locations
- Individual Hazardous Substance Sites

Case Studies and Photographs

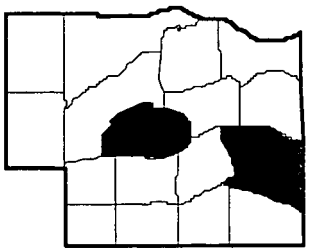
Present Landfill	CS 1-1
Sanitary Landfill - spoils piles	CS 1-3
Sanitary Landfill - landfill pond	CS 1-5
North and East Live-Fire Rifle Ranges	CS 2-1
East Live-Fire Rifle Range	CS 2-3
Off-Road Vehicle Use/Environmental Monitoring	CS 3-1
Off-Road Vehicle Use/WSI-Rocky Flats Protective Force	CS 4-1
Jefferson County and Western Aggregate, Inc., Quarries	CS 5-1
Western Aggregate, Inc., Quarry - water-filled pit	CS 5-3
Western Aggregate, Inc., Quarry	CS 5-5
Rocky Flats 881 Hillside (OU 1)/French Drain	CS 6-1
881 Hillside - contaminated groundwater plumes	CS 6-5
881 Hillside - hay bales prevent soil erosion	CS 6-7
881 Hillside - revegetation with barley	CS 6-9
881 Hillside - scarifying soil	CS 6-11
881 Hillside - hydroseeding with barley	CS 6-13
881 Hillside - germinating barley	CS 6-15
West Spray Field	CS 7-1
West Spray Field	CS 7-3
Borehole and Well Drilling	CS 8-1
Borehole and Well Drilling - typical drilling rig	CS 8-3
Detention Ponds (Series A, B, and C)	CS 9-1
A and B Series Detention Ponds	CS 9-3
South Interceptor Ditch	CS 10-1
South Interceptor Ditch - termination at Pond C-2	CS 10-3
South Interceptor Ditch - SID near Pond C-1	CS 10-5

Case Studies and Photographs (continued)

Installation of Utilities	CS 11-1
Buffer Zone Fire	CS 12-1
Burned and Unburned Areas	CS 12-2
New Growth	CS 12-3

Appendices

Glossary/Acronyms	G 1-1
Legends	L 1-1
Bibliography	B 1-1



Quadrant: SE 1

Boundaries:

North - Rocky Flats Environmental Technology Site (Site) East Access Road.
South - Road from west boundary east southeast to Indiana Street (Jefferson County 17).
East - Indiana Street (Jefferson County 17).
West - Approximates the present dirt road that angles south from the Site East Access Road along drainage to the road that runs east of the Pond C-2 dam. The boundary follows this road, terminating at a dead-end in the southwest corner of the quadrant.

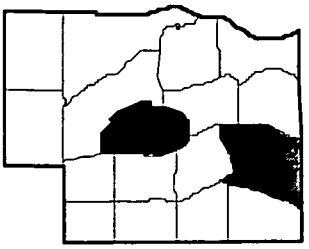
Vegetation:

Quadrant SE 1 is primarily classified as Mesic Mixed Grassland. Areas of Bottomland Shrub, intermixed with areas of Riparian Woodland and Tall Marsh, are present along Mower Ditch and Woman Creek. The Woman Creek drainage supports Cottonwood trees (*Populus deltoides*) and other shrubs - Willow (*Salix exigua*), Leadplant (*Amorpha fruticosa*), and Snowberry (*Symphoricarpos occidentalis*). The dominant species of vegetation are: Western Wheatgrass (*Agropyron smithii*), Blue Grama Grass (*Bouteloua gracilis*), Kentucky Bluegrass (*Poa pratensis*), Canada Bluegrass (*Poa compressa*), Cheatgrass (*Bromus japonicus*), Smooth Brome (*Bromus inermis*), and Musk Thistle (*Carduus nutans*).

Wildlife Habitat:

The predominant wildlife habitats in this Quadrant are Mesic Mixed Grassland, Xeric Mixed Grasslands, Rehabilitation Mixed Grasslands. Short Marsh, Tall Marsh, Deciduous Woodlands and Bottomland Shrub occur along Woman Creek and Mower Ditch.

The native grass and forb species in the grasslands in this Quadrant provide habitat for arthropods, reptiles, amphibians, mammals, and birds. Arthropod taxa throughout the Site are numerous and diverse. Reptiles are represented by the more common snake species such as the Bull Snake (*Pituophis melanoleucus*), Racer (*Coluber constrictor*), and Prairie Rattlesnake (*Crotalis viridis*). It is in the Xeric Mixed Grasslands of the ridgetops that Eastern Short Horned Lizard (*Phrynosoma douglasii brevirostra*), a federal candidate species is found. Common grassland songbirds include Western Meadowlarks (*Sturnella neglecta*), Vesper Sparrows (*Pooecetes gramineus*), House Finches (*Carpodacus mexicanus*), and Grasshopper Sparrows (*Ammodramus savannarum*). Birds-of-prey change with the season, with Rough-legged Hawks (*Buteo lagopus*) most numerous during the winter, and Golden Eagles

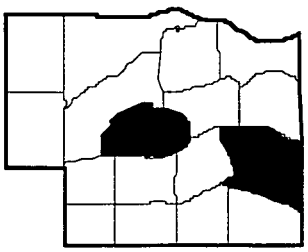


(*Aquila chrysaetos*), Red-tailed Hawks (*Buteo jamaicensis*), and Swainson's Hawks (*Buteo swainsoni*) common during the spring and summer. Mammals range in size from Deer Mice (*Peromyscus maniculatus*), Prairie Voles (*Microtus ochrogaster*), and Meadow Voles (*Microtus pennsylvanicus*), to Desert Cottontail (*Sylvilagus audubonii*) and Mule Deer (*Odocoileus hemionus*). The most common predator is the Coyote (*Canis latrans*).

Rehabilitation Mixed Grasslands have generally been established in areas formerly occupied by Mesic Mixed Grasslands. These areas were disturbed due to construction and borrow pits. Revegetation consisted of seeding with one or two grass species. These areas are now virtually grass monocultures with extremely low vegetation species diversity. The wildlife species populations reflect the lack of plant diversity within this habitat. Prairie Rattlesnakes and Bull Snakes represent the reptiles found in this habitat. Songbirds are represented by Vesper Sparrows, Western Meadowlarks, and Grasshopper Sparrows. Red-tailed, Ferruginous (*Buteo regalis*), Rough-legged, and Swainson's Hawks overfly the habitat and forage opportunistically. Small mammals include Deer Mice, Meadow Voles, and Harvest Mice (*Reithrodontomys sp.*). Coyotes are the most common predator in this habitat. Mule Deer forage infrequently in this habitat.

The Tall Marsh and Short Marsh habitats provide a productive habitat for arthropods and species from many other groups. Reptiles are represented by the Bull Snake and Prairie Rattlesnake. Songbirds include Red-winged Blackbirds (*Agelaius phoeniceus*), Common Yellowthroats (*Geothlypis trichas*), Cliff Swallows (*Hirundo pyrrhonota*), Barn Swallows (*Hirundo rustica*), and Song Sparrows (*Melospiza melodia*), as well as many of the grasslands birds depending on the season. The most common waterfowl is the Great Blue Heron (*Ardea herodias*). Red-tailed Hawks, Northern Harriers (*Circus cyaneus*), and Great Horned Owls (*Bubo virginianus*) frequent the area during hunting forays. Mammals are represented by Deer Mice, Meadow Voles, and Muskrats (*Ondatra zibethicus*). These habitats also provide food and shelter for Mule Deer, Raccoons (*Procyon lotor*), Long-tailed Weasels (*Mustela frenata*), and Coyotes.

The Deciduous Woodland and Bottomland Shrubland mosaic supports a variety of wildlife species. Reptiles include Bull Snakes, Wandering Garter Snakes (*Thamnophis elegans*), Red-sided Garter Snake (*Thamnophis sittalis*), and Racer. Songbirds include the grasslands species listed above and Red-winged



Blackbirds, Northern Orioles (Icterus glabula), American Goldfinches (*Carduelis tristis*), Song Sparrows, and other shrubland species. Red-tailed Hawks, Rough-legged Hawks, and Great Horned Owls use the large trees of the woodlands. The small mammal population made up largely of Deer Mice and Meadow Voles provides forage for Coyotes. Mule Deer use this habitat for shelter, concealment, and a food source. White-tailed Deer (*Odocoileus virginianus*) are occasionally observed in the heavy brush along the creek bottoms. Raccoons are also a common predator in this habitat.

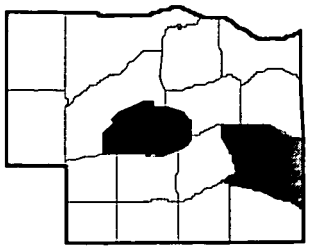
The entire Quadrant is potential foraging habitat for the Peregrine Falcons (*Falco peregrinus*) which nest in the nearby Flatirons, and for Bald Eagles (*Haliaeeatus leucocephalus*) which winter in the area. These endangered species are protected under the Endangered Species Act of 1973, and should be treated accordingly. Ecology Procedure 1-D06-EPR-END.03 "Identification and Protection of Threatened, Endangered, and Special-Concern Species" provides specific protection procedures.

Surface Waters: Woman Creek and Mower Ditch (which diverts Woman Creek approximately 700 feet downstream from the Pond C-2 Dam) flow east across the quadrant. During dry months, the creek and the ditch may dry up or sustain reduced flow. If the water level in the creek becomes low, the ditch may take all of the water from the creek, and the creek bed will be completely dry.

Jurisdictional Wetlands: Refer to the Wetlands map for specific wetland locations.

Floodplain: There is a small area of 100-year floodplain in the eastern half of the quadrant where Woman Creek intersects with Indiana Street (Jefferson County 17). Maps depicting the 100-year floodplain for the major surface water drainages at the Site have been produced by the USACOE, and are available from the Ecology and Watershed Management Division. Additional information, including water surface profiles for the 10-, 50-, 100-, and 500-year flood events is available in the USACOE report, "Floodplain Delineation - Hydrologic Analysis."

Soil: The majority of soils in this quadrant are fine-textured soils of the great group Argiustolls, which are mostly clay loams associated with hill and valley slopes. Argiustolls are generally characterized by high shrink-swell potential, slow permeability, and moderate erosion potential.



In the southern third of the quadrant, Torrifluvents are present along Woman Creek. They are mostly stratified clay loams and gravelly loams formed by fluvial processes along drainage bottoms, and are generally characterized by low shrink-swell potential, moderately slow permeability, and slight-to-moderate erosion potential.

Surface Geology: An outcrop of Cretaceous aged Arapahoe Formation comprises approximately 80 percent of the surface geology. Valley-fill Alluvium along the Woman Creek drainage constitutes the remaining 20 percent of the surface geology. Valley-fill Alluvium deposits are represented by well graded mixtures of reworked Rocky Flats Alluvium, colluvium, and weathered bedrock found in drainages. The Arapahoe formation is approximately 150 feet thick in the central portion of the Site and consists mainly of claystones and silty claystones with at least five sandstone intervals in the upper portion of the formation.

Utilities: Aboveground Public Service Company of Colorado (PSC) power lines run north-south across the western edge of the quadrant and north-south along Indiana Street. Another PSC power line runs east-west from Indiana Street to the eastern edge of the Pond C-2 dam. At the dam, the line turns north, heading east-west again at the north end of the Pond C-2 dam. An 8-inch natural gas line owned by the PSC runs east-west across the northern half of the quadrant.

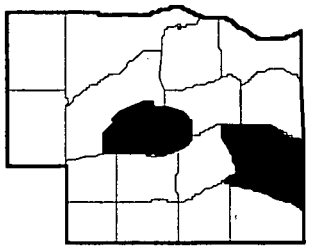
Archaeology: State Site 5JF484 - Stone House. This site consists of a stone structure measuring approximately 12 x15 feet. The structure served an unknown function and has suffered serious structural damage, including roof loss. The site was not included in the NRHP because it is in poor condition, exhibits no rare construction, and has no historic interest.

Archaeological maps were omitted from this document to protect the integrity of the cultural resources. If the location of specific sites must be known, contact the NEPA group.

Future Plans: None.

Mineral Rights: Tract 41-S1/2 of Section 12 - 317.84 acres. The mineral rights are reserved to grantor. Right of proprietor of a vein or lode to remove his ore therefrom, should the same be found to penetrate or intersect premises hereby said.

Tract 39 - Section 13 and a portion of Section 14 - 660.00 acres. The Union Pacific Railroad has coal rights. All coal, oil, and



gas reserved but without the right to enter upon or over surface of said land.

Adjoining Lands: The quadrant is adjoined by the Site Buffer Zone on the north, south, and west sides. The land east of Indiana Street (Jefferson County 17) is zoned as Jefferson County Parks and Open Space, and as vacant land. The land is currently used as livestock pasture.

Contamination Profile

Soil Sites: 2-108

Sediment Sites: Refer to the Sediment Sampling Locations map.

Surface Water: Refer to the Surface Water Sampling Locations map.

Groundwater Wells: Refer to the Groundwater Monitoring Well Location Map.

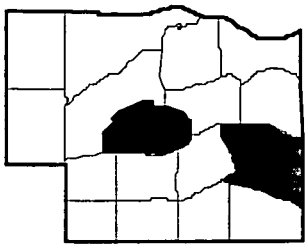
IHSS: Refer to the Individual Hazardous Substance Sites by Operable Unit map.

Comments: IHSS 216.3 is located in the far northwest corner of the quadrant. The IHSS is the South Area of the East Spray Fields. The South Area was in operation from the early 1980s to 1990. The spray fields were a land irrigation site for water from Pond B-3 which received treated sanitary wastewater flows. Following a spill on February 4, 1989, chromic acid was inadvertently released into Pond B-3 and then spray-irrigated onto the spray fields. It is unknown exactly what levels of contamination may be present in the spray fields.

The quadrant is downwind from the Site and potentially is susceptible to wind-borne contaminants. Environmental monitoring data indicate slightly elevated levels of radiation in the soil. Two possible sources of this contamination are fallout from the Building 776 fire in 1969 and wind-borne contaminated soil from the 903 Pad. The quadrant is downstream from the main processing facility.

Surface water site GS01, located on Woman Creek approximately 40 yards upstream from Indiana St., recorded the following flows during the 1994 water year:

Average Spring Flow: 0.081 cubic feet per second (cfs)
Average Summer Flow: 0.00 cfs
Average Winter/Fall Flow: 0.00 cfs



Surface water site GS02, located on Mower Ditch approximately 60 yards upstream from Indiana St., recorded the following flows during the 1994 water year:

Average Spring Flow: 0.22 cfs
Average Summer Flow: 0.00 cfs
Average Winter/Fall Flow: 0.042 cfs

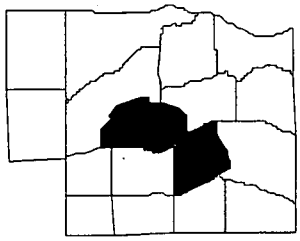
The flow data listed above should be used with the qualification that flows were computed using theoretical ratings for culverts which are suspected to provide data that are +/- 30% from actual flows, and for 90° V-notch weirs which are suspected to provide data that are +/- 10% from actual flows.

Current data for sediment sites and groundwater wells are accessible through the Rocky Flats Environmental Database System (RFEDS).

Other:

There are two permanent Colorado Department of Public Health and Environment (CDPHE) Air Sampling Stations located in this quadrant. One station exists along Indiana Street just northeast of State Site 5JF484. The second station is located on the south side of the Site East Access road across from the Ground Wave Emergency Network (GWEN) tower and just south of the power lines. In addition, there are two Radioactive Ambient Air Monitoring Program (RAAMP) samplers located within the quadrant. One is located at the intersection of the east access road and Indiana Street, and the other lies at the intersection of Mower Ditch and Indiana Street.

A meteorological tower and monitoring trailer are located along Woman Creek approximately 1,500 feet downstream from the Pond C-2 dam. The tower and trailer are inactive with no current plans for future use.



Quadrant: SE 2

Boundaries:

North - Site East Access Road and inner security fence.
South - Road east northeast along original Buffer Zone boundary fence.
East - Approximates the present dirt road that angles south from the East Site Access Road along the drainage to the road that runs east of the Pond C-2 dam. The boundary follows this road, terminating in a dead end in the southeast corner of the quadrant.
West - Line from the west side of the 903 Pad south to the road running due south to the original Buffer Zone boundary fence.

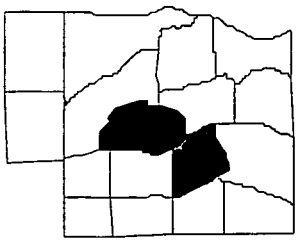
Vegetation:

Quadrant SE 2 is primarily classified as Mesic Mixed Grassland, with small areas of Reclaimed Grassland in the northern portion of the quadrant. Areas of Bottomland Shrub, intermixed with areas of Riparian Woodland and Tall Marsh, are present along Woman Creek as it flows through the central portion of the quadrant. Cottonwood trees and shrubs such as Willow and Snowberry are present along Woman Creek, Pond C-1, and Pond C-2. The dominant species of vegetation are: Western Wheatgrass, Blue Grama Grass, Cheatgrass, Kentucky Bluegrass, Canada Bluegrass, Musk Thistle, and Smooth Brome.

Wildlife Habitat:

The predominant wildlife habitats are Mesic Mixed Grassland, Xeric Mixed Grassland in the southern portion of the Quadrant, and Rehabilitation Mixed Grasslands in the northwest portion. Short Marsh, Tall Marsh, Deciduous Woodlands and Bottomland Shrub occur along Woman Creek, Pond C-1, and Pond C-2. Some old disturbed areas in the southeast part of the Quadrant provide Annual Grass/Forb habitat.

The native grass and forb species in the grasslands in this Quadrant provide habitat for arthropods, reptiles, amphibians, mammals, and birds. Arthropod taxa throughout the Site are numerous and diverse. Reptiles are represented by the more common snake species such as the Bull Snake, Racer, and Prairie Rattlesnake. It is in the Xeric Mixed Grasslands of the ridgetops that Eastern Short Horned Lizard, a federal candidate species is found. Common grassland songbirds include Western Meadowlarks, Vesper Sparrows, House Finches, and Grasshopper Sparrows. Birds-of-prey change with the season, with Rough-legged and Ferruginous Hawks most numerous during the winter, and Red-tailed Hawks and Swainson's Hawks common during the spring and summer. Mammals range in size from Deer Mice, Prairie Voles, and Meadow Voles,

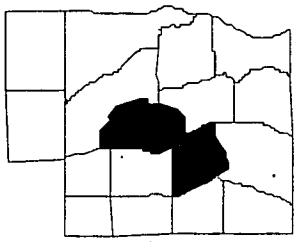


to Desert Cottontail and Mule Deer. The most common predator is the Coyote.

Rehabilitation Mixed Grasslands have generally been established in areas formerly occupied by Mesic Mixed Grasslands. These areas were disturbed due to construction and borrow pits. Revegetation consisted of seeding with one or two grass species. These areas are now virtually grass monocultures with extremely low vegetation species diversity. The wildlife species populations reflect the lack of plant diversity within this habitat. Prairie Rattlesnakes and Bull Snakes represent the reptiles found in this habitat. Songbirds are represented by Vesper Sparrows, Western Meadowlarks, and Grasshopper Sparrows. Red-tailed, Rough-legged, and Swainson's Hawks overfly the habitat and forage opportunistically. Small mammals include Deer Mice, Meadow Voles, and Harvest Mice. Coyotes are the most common predator in this habitat. Mule Deer forage infrequently in this habitat.

The Tall Marsh and Short Marsh habitats and the associated open water of the ponds provide a productive habitat for arthropods and species from many other groups. Reptiles are represented by the Bull Snake, Prairie Rattlesnake, and Western Painted Turtle (*Chrysemys picta*). Songbirds include Red-winged Blackbirds, Common Yellowthroats, Cliff Swallows, Barn Swallows, and Song Sparrows, as well as many of the grasslands birds depending on the season. Numerous waterfowl species use the ponds as foraging and breeding habitat. The most common waterfowl in the C-series Ponds are the Mallard (*Anas platyrhynchos*), Blue-winged Teal (*Anas discors*), and Great Blue Herons. American White Pelicans (Pelecanus erythrorhynchos) are often observed in the C-2 Pond. Red-tailed Hawks, Northern Harriers, and Great Horned Owls frequent the area during hunting forays. Mammals are represented by Deer Mice, Meadow Voles, and Muskrats. These habitats also provide food and shelter for Mule Deer, Raccoons, Long-tailed Weasels, and Coyotes.

The Deciduous Woodland and Bottomland Shrubland mosaic supports a variety of wildlife species. Reptiles include Bull Snakes, Wandering Garter Snakes, Red-sided Garter Snake, and Racer. Songbirds include the grasslands species listed above and Red-winged Blackbirds, Northern Orioles, American Goldfinches, and other shrubland species. Red-tailed Hawks, Rough-legged Hawks, and Great Horned Owls use the large trees of the woodlands. The small mammal population made up largely of Deer Mice and Meadow Voles provides forage for



Coyotes. Raccoons are also a common predator in this habitat. Mule Deer use this habitat for shelter, concealment, and a food source. White-tailed Deer are occasionally observed in the heavy brush along the creek bottoms. Preble's Meadow Jumping Mouse (*Zapus hudsonius preblei*) has been identified in the Deciduous Woodland/Bottomland Shrubland complex of Woman Creek throughout this Quadrant.

The Annual Grass/Forb habitat supports limited wildlife species. Grasslands birds visit the habitat, and species from adjacent habitats penetrate the margins of this habitat.

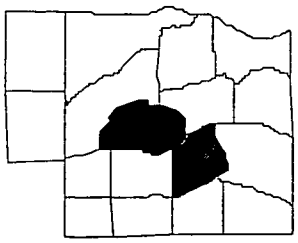
The entire Quadrant is potential foraging habitat for the Peregrine Falcons which nest in the nearby Flatirons, and for Bald Eagles which winter in the area. Peregrine Falcons have been observed hunting in the vicinity of the C-Ponds. These endangered species are protected under the Endangered Species Act of 1973, and should be treated accordingly. Ecology Procedure 1-D06-EPR-END.03 "Identification and Protection of Threatened, Endangered, and Special-Concern Species" provides specific protection procedures.

Surface Waters:

The South Interceptor Ditch is directly north of the Woman Creek Channel. The ditch was constructed to prevent any potential contamination from reaching Woman Creek, and possibly the Standley Lake Reservoir, by intercepting all surface drainage from the Site Industrial Area. The ditch drains into Pond C-2.

Automated flow monitoring equipment and radio telemetry hardware are used to remotely monitor flow rates and basic water quality at selected stations.

Pond C-2 historically discharged into Woman Creek.The discharge was stopped in the Fall of 1989 at the request of the City of Westminster. Currently no untreated or untested water is released from Pond C-2 on a regular basis. All water that is captured by the pond is diverted to Pond B-5 and then to Pond A-4 for treatment and discharge. Occasionally untreated water from Pond C-2 is discharged directly into the Broomfield Diversion Ditch, provided that the water is tested for contamination and the results comply with regulatory levels. Water flows through Woman Creek to Ponds C-1 and around Pond C-2 throughout the year. Flows from Pond C-1 to Woman Creek can reach 4,000 gallons per minute (gpm) during the spring and can drop to 0 gpm during dry months.



Jurisdictional Wetlands: Refer to the Wetlands map for specific wetland locations.

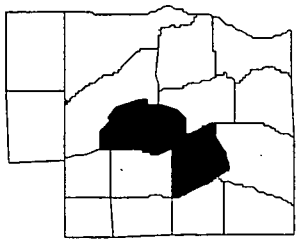
Floodplain: There is an area of 100-year floodplain surrounding Woman Creek as it flows through the central portion of the quadrant. Maps depicting the 100-year floodplain for the major surface water drainages at the Site have been produced by the USACOE, and are available from the Ecology and Watershed Management Division. Additional information, including water surface profiles for the 10-, 50-, 100-, and 500-year flood events is available in the USACOE report, "Floodplain Delineation - Hydrologic Analysis."

Soil: The majority of soils in this quadrant are fine-textured soils of the great group Argiustolls, which are mostly clay loams associated with hill and valley slopes. Argiustolls are generally characterized by high shrink-swell potential, slow permeability, and moderate erosion potential.

The northern border of the quadrant contains clayey-skeletal Paleustolls, which are very cobbly clay loams located on pediment surfaces. Paleustolls are generally characterized by moderate shrink-swell potential, slow permeability, and slight erosion potential.

There is a band of Torrifluvents in the central portion of the quadrant along Woman Creek. Torrifluvents are mostly stratified clay loams and gravelly loams formed by fluvial processes along drainage bottoms, and they are generally characterized by low shrink-swell potential, moderately slow permeability, and slight-to-moderate erosion potential.

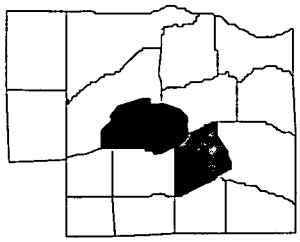
Surface Geology: An outcrop of the Arapahoe Formation composes approximately 90 percent of the surface geology. Valley-fill Alluvium along the Woman Creek drainage constitutes 5 percent of the surface geology. The remaining 5 percent of the surface geology is composed of an outcrop of the Rocky Flats Alluvium along the north edge of the quadrant. Valley-fill Alluvium deposits are represented by well graded mixtures of reworked Rocky Flats Alluvium, colluvium, and weathered bedrock found in drainages. The Arapahoe formation is approximately 150 feet thick in the central portion of the Site and consists mainly of claystones and silty claystones with at least five sandstone intervals in the upper portion of the formation. Rocky Flats Alluvium is composed of poorly sorted, angular to rounded, coarse gravel, sand, and gravelly clays.



Utilities:	Two natural gas lines cross the quadrant. An 8-inch line owned by the PSC runs east-west across the center of the quadrant. A second 12-inch line owned by the Coors Energy Company runs north-south just west of the Pond C-2 dam. A power line runs from the Site to Pond C-1. In addition, there are several aboveground power lines near the east security guard post at the Site.
Archaeology:	None.
Future Plans:	The Woman Creek drainage will be remediated in accordance with plans for OU 5.
Mineral Rights:	Unknown.
Adjoining Lands:	The quadrant is adjoined by the Site Buffer Zone on the north, south, east, and west sides. The Site is located immediately northwest of the quadrant.

Contamination Profile

Soil Sites:	1-090 and 1-108
Sediment Sites:	Refer to the Sediment Sampling Locations map.
Surface Water:	Refer to the Surface Water Sampling Locations map.
Groundwater Wells:	Refer to the Groundwater Monitoring Well Location Map.
IHSS:	Refer to the Individual Hazardous Substance Sites by Operable Unit map.
Comments:	IHSS 111.2 - 111.6 are trenches previously used for the disposal of sanitary sewage sludge, empty drums, uranium-contaminated scrap metal, plutonium-contaminated scrap metal, and asphalt planking. The trenches began operation in 1954. Detailed information is available from the "Rocky Flats History-Rocky Flats Toxicologic Review and Dose Reconstruction Task Report." IHSS 142.10 and 142.11 are the C-series detention ponds. These ponds may be contaminated with various wastes containing nitrates and low levels of radioactivity, and are scheduled for cleaning in accordance with plans to remediate OU-5. IHSS 209 is a surface disturbance located southeast of the main processing facility. The area was a borrow-pit for gravel used in



the construction of Site structures. It is believed that waste management and disposal did not occur here. During the Interagency Agreement (IAG) negotiations, EG&G Rocky Flats, Inc. agreed to investigate the site.

IHSS 216.3 is located in the far northeast corner of the quadrant. The IHSS is the South Area of the East Spray Fields. The South Area was in operation from the early 1980s to 1990. The spray fields were a land irrigation site for water from Pond B-3 which received treated sanitary wastewater flows. Following a spill on February 4, 1989, chromic acid was inadvertently released into Pond B-3 and then spray-irrigated onto the spray fields. It is unknown exactly what levels of contamination may be present in the sprayfields.

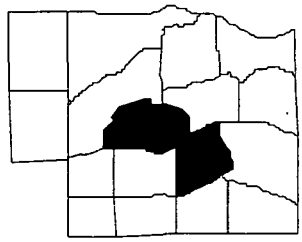
The spray fields were also used as an irrigation site for the water from Pond B-3 which received treated sanitary wastewater. Following a chromic acid spill on February 4, 1989, chromic acid was inadvertently released to Pond B-3 and then spray-irrigated onto the spray fields. The contamination levels in the East Spray Fields are unknown.

The quadrant encompasses part of the Operable Unit 2 (OU 2) remediation area. OU 2 is under remediation for high concentrations of Volatile Organic Compounds (VOCs) in the groundwater. Trichloroethylene, perchloroetheylene, and carbon tetrachloride constitute the majority of the contaminants. A work permit is required to access the northern end of the quadrant because of americium-contaminated soil.

The quadrant is downwind from the Site and is potentially susceptible to wind-borne contaminants. Environmental monitoring data indicate elevated levels of radiation in the soil. Two possible sources of this contamination are fallout from the Building 776 fire in 1969 and wind-borne contaminated soil from the 903 Pad. In addition, this area is downstream from the former main processing building.

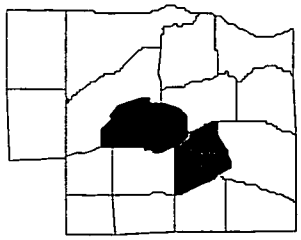
Surface water site SW029 (also known as GS07), located at the Pond C-1 outlet, recorded the following flows during the 1994 water year:

Average Spring Flow: 0.53 cubic feet per second (cfs)
Average Summer Flow: 0.004 cfs
Average Winter/Fall Flow: 0.16 cfs



The flow data listed above should be used as analytical data with an estimated +/- 10% error.

Current data for soil sites, sediment sites, and groundwater wells are accessible through RFEDS.



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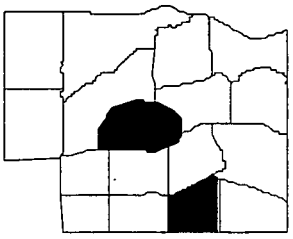


Quadrant: SE 3

Boundaries:

North - Road running Enortheast along original Buffer Zone boundary fence.
South - Site Buffer Zone south perimeter fence (barbed wire).
East - Line running south from the southern end of the Pond C-2 dam.
West - Line running south from the intersection of the road running north-south crossing the original Buffer Zone boundary fence.

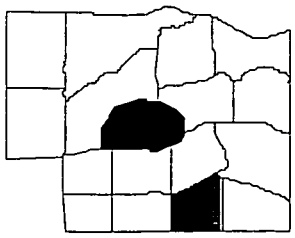
Vegetation:

Quadrant SE 3 is primarily classified as Mesic Mixed Grassland, with small areas of Xeric Mixed Grassland on the ridgetops. Areas of Short Upland Shrub, intermixed with areas of Bottomland Shrub, Riparian Woodland, and Short Marsh, are present along Smart Ditch as it flows through the northern portion of the quadrant. Reclaimed Grassland is also present in the northeast corner of the quadrant. The Smart Ditch drainage supports Cottonwood trees (*Populus deltoides*) and shrubs - Willow (*Salix exigua*) and Snowberry (*Symphoricarpos occidentalis*). The dominant species of vegetation are: Western Wheatgrass (*Agropyron smithii*), Blue Grama Grass (*Bouteloua gracilis*), Kentucky Bluegrass (*Poa pratensis*), Canada Bluegrass (*Poa compressa*), Cheatgrass (*Bromus japonicus*), and Smooth Brome (*Bromus inermis*) on the hillsides and low areas. Needle and Thread Grass (*Stipa comata*), Big Bluestem (*Andropogon gerardii*), and Yucca (*Yucca glauca*) are common on the ridgetops.

Wildlife Habitat:

Mesic Mixed Grassland habitat is predominant throughout most of the Quadrant with Xeric Mixed Grassland inclusions on the ridgetops. Short Marsh, Tall Marsh, Deciduous Woodlands and Bottomland Shrub occur along Smart Ditch.

The native grass and forb species in the grasslands in this Quadrant provide habitat for arthropods, reptiles, amphibians, mammals, and birds. Arthropod taxa throughout the Site are numerous and diverse. Reptiles are represented by the more common snake species such as the Bull Snake, Racer, and Prairie Rattlesnake. It is in the Xeric Mixed Grasslands of the ridgetops that Eastern Short Horned Lizard, a federal candidate species is found. Common grassland songbirds include Meadowlarks, Vesper Sparrows, House Finches, and Grasshopper Sparrows. Birds-of-prey change with the season, with Rough-legged Hawks most numerous during the winter, and Red-tailed Hawks and Swainson's Hawks common during the spring and summer. Mammals range in size from Deer



Mice, Prairie Voles, and Meadow Voles, to Desert Cottontail and Mule Deer. The most common predator is the Coyote.

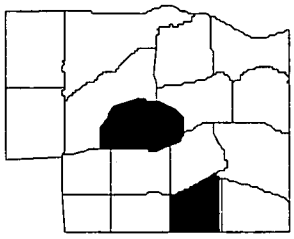
The Tall Marsh and Short Marsh habitats provide a productive habitat for arthropods and species from many other groups. Reptiles are represented by the Bull Snake, Prairie Rattlesnake, and Western Painted Turtle. Songbirds include Red-winged Blackbirds, Common Yellowthroats, Cliff Swallows, Barn Swallows, and Song Sparrows, as well as many of the grasslands birds depending on the season. Red-tailed Hawks, Northern Harriers, and Great Horned Owls frequent the area during hunting forays. Mammals are represented by Deer Mice, Meadow Voles, and Muskrats. These habitats also provide food and shelter for Mule Deer, Raccoons, Long-tailed Weasels, and Coyotes.

The Deciduous Woodland and Bottomland Shrubland mosaic supports a variety of wildlife species. Reptiles include Bull Snakes, Wandering Garter Snakes, Red-sided Garter Snake, and Racer. Songbirds include the grasslands species listed above and Red-winged Blackbirds, Northern Orioles, American Goldfinches, Song Sparrows, and other shrubland species. Red-tailed Hawks, Rough-legged Hawks, and Great Horned Owls use the large trees of the woodlands. The small mammal population made up largely of Deer Mice and Meadow Voles provides forage for Coyotes. Raccoons are also a common predator in this habitat. Mule Deer use this habitat for shelter, concealment, and a food source. White-tailed Deer are occasionally observed in the heavy brush along the creek bottoms.

The entire Quadrant is potential foraging habitat for the Peregrine Falcons which nest in the nearby Flatirons, and for Bald Eagles which winter in the area. These endangered species are protected under the Endangered Species Act of 1973, and should be treated accordingly. Ecology Procedure 1-D06-EPR-END.03 "Identification and Protection of Threatened, Endangered, and Special-Concern Species" provides specific protection procedures.

Surface Waters:

Smart Ditch flows Enortheast through the quadrant. Stream gage GS15 on the ditch above Pond D-1 has collected flow records since late 1992. The ditch carries water from Rocky Flats Lake to the Standley Lake reservoir and is neither controlled nor affected by the Site.



Gaging Station GS15 recorded the following flows during the 1994 water year:

Average Spring Flow: 0.06 cubic feet per second (cfs)
Average Summer Flow: 0.074 cfs
Average Winter/Fall Flow: 0.04 cfs

Jurisdictional Wetlands: Refer to the Wetlands map for specific wetland locations.

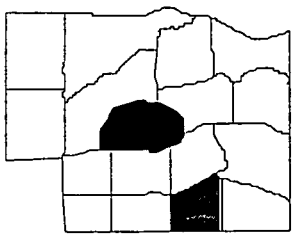
Floodplain: There is an area of 100-year floodplain surrounding Smart Ditch as it flows through the northern portion of the quadrant. Maps depicting the 100-year floodplain for the major surface water drainages at the Site have been produced by the USACOE, and are available from the Ecology and Watershed Management Division. Additional information, including water surface profiles for the 10-, 50-, 100-, and 500-year flood events is available in the USACOE report, "Floodplain Delineation - Hydrologic Analysis."

Soil: The majority of soils in this quadrant are fine-textured soils of the great group Argiustolls, which are mostly clay loams associated with hill and valley slopes. Argiustolls are generally characterized by high shrink-swell potential, slow permeability, and moderate erosion potential.

There is a band of Torrifluvents in the northern portion of the quadrant along Smart Ditch. Torrifluvents are mostly stratified clay loams and gravelly loams formed by fluvial processes along drainage bottoms, and they are generally characterized by low shrink-swell potential, moderately slow permeability, and slight-to-moderate erosion potential.

The southern section of the quadrant contains two patches of clayey-skeletal Paleustolls, which are very cobbly clay loams located on pediment surfaces. Paleustolls are generally characterized by moderate shrink-swell potential, slow permeability, and slight erosion potential.

Surface Geology: An outcrop of the Arapahoe formation comprises approximately 60 percent of the surface geology. A landslide deposit on the north side of the hill in the center of the quadrant accounts for 10 percent of the area. Verdos alluvium in the southern portion of the quadrant accounts for an additional 10 percent. The remaining 20 percent of the surface geology is covered by Rocky Flats Alluvium. This alluvium is found in the higher areas along the ridges running east-west across the quadrant.



The Arapahoe formation is approximately 150 feet thick in the central portion of the Site and consists mainly of claystones and silty claystones with at least five sandstone intervals in the upper portion of the formation. Rocky Flats Alluvium is composed of poorly sorted, angular to rounded, coarse gravel, sand, and gravelly clays.

Utilities: Aboveground PSC power lines run northeast-southwest through the middle of the quadrant. A 12-inch natural gas line owned by the Coors Energy Company runs north-south along the eastern border of the quadrant.

Archaeology: None.

Future Plans: None.

Mineral Rights: Tract 36 - S 1/2 of Section 15 and SW 1/4 of Section 14 - 480.00 acres. The Union Pacific Railroad owns coal rights. All coal, oil and gas reserved, without the right to enter upon or over the land. Right of proprietor of a vein or lode to extract and remove ore therefrom.

Tracts 37 and 38 - SE 1/4 of Section 14 - 160.00 acres. Grantor has all minerals.

Tract 39 - Section 13, and a portion of Section 14 - 660.00 acres. The Union Pacific Railroad owns coal rights. All coal, oil, and gas reserved but without the right to enter upon or over surface of said land.

Adjoining Lands: The quadrant is adjoined by the Site Buffer Zone on the north, east, and west. The adjoining land from the south is vacant and is currently being used for livestock grazing.

Contamination Profile

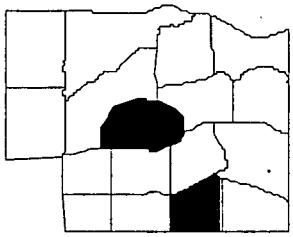
Soil Sites: 1-144, 1-126 and 2-144

Sediment Sites: Refer to the Sediment Sampling Locations map.

Surface Water: Refer to the Surface Water Sampling Locations map.

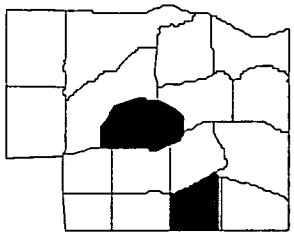
Groundwater Wells: Refer to the Groundwater Monitoring Well Location Map.

IHSS: Refer to the Individual Hazardous Substance Sites by Operable Unit map.



Comments: Current data for soil sites and groundwater wells are accessible through RFEDS.

Other: There are abandoned barbed wire fences continuing due east where the original perimeter fence veers northeast, running along the eastern border, and the western edge of quadrant, then heading north from the Site Buffer Zone southern boundary.



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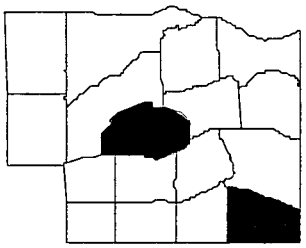


Quadrant: SE 4

Boundaries:

North - Road from northwest Corner of the quadrant ESE to Indiana Street (Jefferson County 17).
South - Site Buffer Zone south perimeter fence (barbed wire).
East - Indiana Street (Jefferson County 17).
West - Line running south from the southern end of the Pond C-2 dam.

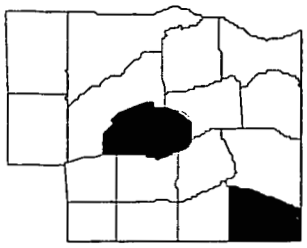
Vegetation:

Quadrant SE 4 is primarily classified as Reclaimed Grassland with a small area of Mesic Mixed Grassland in the southwest portion of the quadrant. Areas of Riparian Woodland, intermixed with areas of Bottomland Shrub and Short Upland Shrub, are present along Smart Ditch as it flows through the northern portion of the quadrant. Areas of Wet Meadow and Marsh surround Pond D-1 and Pond D-2. The pond levels are dependent upon releases from the Smart Ditch drainage and storm events. The drainages in the quadrant support Cottonwood trees and shrubs - Willow, Leadplant, and Snowberry. The dominant species of vegetation are: Smooth Brome, Intermediate Wheatgrass (*Agropyron intermedium*), Yellow Sweetclover (*Melilotus officinale*), Field Bindweed (*Convolvulus arvensis*), Western Wheatgrass, Canada Bluegrass, and, near the ponds, Cattail (*Typha latifolia*).

Wildlife Habitat:

The greatest area of this Quadrant is covered with Rehabilitation Mixed Grassland, with some Mesic Mixed Grassland along the north side and southwest corner. Short Marsh, Tall Marsh and a few large Cottonwood trees follow the Smart Ditch drainage and surround the D-Ponds. Lower Smart Ditch, upstream of its confluence with the main branch of Woman Creek, is lined with Deciduous Woodland and Bottomland Shrubland.

Rehabilitation Mixed Grasslands have generally been established in areas formerly occupied by Mesic Mixed Grasslands. These areas were disturbed due to crop cultivation prior to DOE ownership. Revegetation consisted of seeding with one or two grass species. These areas are now virtually grass monocultures with extremely low vegetation species diversity. The wildlife species populations reflect the lack of plant diversity within this habitat. Prairie Rattlesnakes and Bull Snakes represent the reptiles found in this habitat. Songbirds are represented by Vesper Sparrows, Western Meadowlarks, and Grasshopper Sparrows. Red-tailed, Rough-legged, and Swainson's Hawks overfly the habitat and forage opportunistically. Small mammals include Deer Mice, Meadow Voles, and Harvest Mice. Coyotes



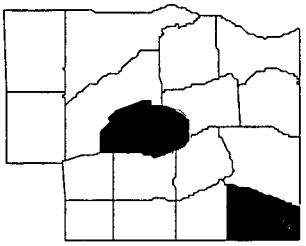
are the most common predator in this habitat. Mule Deer forage infrequently in this habitat.

The Tall Marsh and Short Marsh habitats along Smart Ditch and surrounding the D-Series Ponds provide a productive habitat for arthropods and species from many other groups. Reptiles are represented by the Bull Snake, Prairie Rattlesnake, and Western Painted Turtle. Songbirds include Red-winged Blackbirds, Common Yellowthroats, Cliff Swallows, Barn Swallows, and Song Sparrows, as well as many of the grasslands birds, depending on the season. Numerous waterfowl species use the ponds as foraging and breeding habitat. The most common waterfowl are the Mallard, Blue-winged Teal, American Coot (Fulcia americana), Pied-billed Grebes (Podilymbus podiceps), and Great Blue Herons. Golden Eagles, Red-tailed Hawks, Northern Harriers, and Great Horned Owls frequent the area during hunting forays. Mammals are represented by Deer Mice, Meadow Voles, and Muskrats. These habitats also provide food and shelter for Mule Deer, Raccoons, Long-tailed Weasels, and Coyotes.

The Deciduous Woodland and Bottomland Shrubland mosaic supports a variety of wildlife species. Reptiles include Bull Snakes, Wandering Garter Snakes, Red-sided Garter Snake, and Racer. Songbirds include the grasslands species listed above and Red-winged Blackbirds, Northern Orioles, American Goldfinches, and other shrubland species. Red-tailed Hawks, Rough-legged Hawks, and Great Horned Owls use the large trees of the woodlands. The small mammal population made up largely of Deer Mice and Meadow Voles provides forage for Coyotes. Raccoons are also a common predator in this habitat. Mule Deer use this habitat for shelter, concealment, and a food source. White-tailed Deer are occasionally observed in the heavy brush along the creek bottoms.

Burrowing Owls (*Athene cunicularia*), a federal candidate species, have been recorded in the Mesic Mixed Grasslands adjacent to Pond D-2 in this Quadrant.

The entire Quadrant is potential foraging habitat for the Peregrine Falcons which nest in the nearby Flatirons, and for Bald Eagles which winter in the area. Peregrine Falcons have been observed hunting in the vicinity of the D-ponds, and remains of suspected prey have been recovered in this Quadrant. These endangered species are protected under the Endangered Species Act of 1973, and should be treated accordingly. Ecology Procedure 1-D06-EPR-END.03 "Identification and Protection of Threatened,



Endangered, and Special-Concern Species" provides specific protection procedures.

Surface Waters: Smart Ditch flows southeast through the quadrant. There is no flow data available for flows in the ditch. The ditch carries water from Rocky Flats Lake to the Standley Lake reservoir and is neither controlled nor affected by the Site. The D-series ponds are in line with the ditch and serve as water storage and flood control for the ditch. The flow in Smart Ditch and water levels in the ponds are controlled by Charlie McKay who owns and exercises all of the water rights for the ditch and ponds. Pond D-1 is generally at or near capacity year-round. Pond D-2 is occasionally dry and is near capacity only during the wet spring season and after major precipitation events. Pond D-2 is connected to a french drain which sub-irrigates land east of the Site.

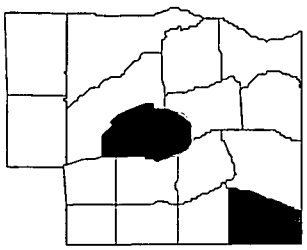
Jurisdictional Wetlands: Refer to the Wetlands map for specific wetland locations.

Floodplain: There is an area of 100-year floodplain surrounding Smart Ditch, Pond D-1, and Pond D-2, as they flow through the southern portion of the quadrant. Maps depicting the 100-year floodplain for the major surface water drainages at the Site have been produced by the USACOE and are available from the Ecology and Watershed Management Division. Additional information, including water surface profiles for the 10-, 50-, 100-, and 500-year flood events is available in the USACOE report, "Floodplain Delineation - Hydrologic Analysis."

Soil: The majority of soils in this quadrant are fine-textured soils of the great group Argiustolls, which are mostly clay loams associated with hill and valley slopes. Argiustolls are generally characterized by high shrink-swell potential, slow permeability, and moderate erosion potential.

There is a band of Torrifluvents in the northern portion of the quadrant along the drainage between Smart Ditch and Woman Creek. Torrifluvents are mostly stratified clay loams and gravelly loams formed by fluvial processes along drainage bottoms, and they are generally characterized by low shrink-swell potential, moderately slow permeability, and slight-to-moderate erosion potential.

In the southern section of the quadrant, surrounding Pond D-2, there is an area of Haplaquolls, which are mostly "wet" soils associated with drainage bottoms. Haplaquolls are generally



characterized by low shrink-swell potential, moderately slow permeability, and slight-to-moderate erosion potential.

Surface Geology: An outcrop of the Laramie Formation comprises approximately 50 percent of the surface geology of the quadrant. The majority of this outcrop is located in the southern half of the quadrant to the south of Smart Ditch. Valley-fill and Terrace Alluviums along Smart Ditch and the D-series ponds constitute the remaining 50 percent of the surface geology. The Laramie Formation is approximately 800 feet thick and is comprised of two distinct intervals. The lower portion is 300 feet thick and is composed of a sandstone and coal interval, while the upper portion is approximately 500 feet thick and composed of claystone. The claystones are predominantly light to medium gray and kaolinitic. Valley-fill Alluvium deposits are represented by well graded mixtures of reworked Rocky Flats Alluvium, colluvium, and weathered bedrock found in drainages. High resolution and deep seismic acquisition activities have shown the existence of small, low-angle thrust faulting present in bedrock claystones. These paleo-thrust faults are considered to be inactive and the probability for seismic activity related to these structures is low.

Utilities: Aboveground PSC power lines run northeast-southwest across the northwest Corner of the quadrant and north-south along Indiana Street.

Archaeology: None.

Future Plans: Maintenance of Smart Ditch and the D-series detention ponds will continue indefinitely.

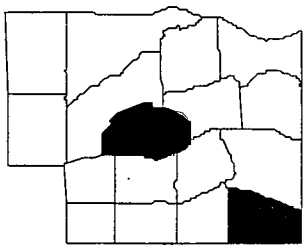
Mineral Rights: Tract 39 - Section 13 and a portion of Section 14 - 660.00 acres. The Union Pacific Railroad owns coal rights. All coal, oil and gas reserved but without the right to enter upon or over surface of said land.

Adjoining Lands: The quadrant is adjoined by the Site Buffer Zone on the north and west. The adjoining land east of Indiana Street is vacant. The land south of the quadrant is zoned for agricultural use and vacant land. The lands south and east of the quadrant are currently used for pasture and agriculture.

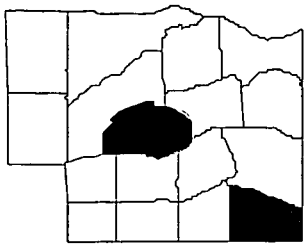
Contamination Profile

Soil Sites: 2-126

Sediment Sites: Refer to the Sediment Sampling Locations map.



Surface Water:	Refer to the Surface Water Sampling Locations map.
Groundwater Wells:	Refer to the Groundwater Monitoring Well Location Map.
IHSS:	Refer to the Individual Hazardous Substance Sites by Operable Unit map.
Comments:	The quadrant is downwind from the Site and potentially is susceptible to wind-borne contaminants. Environmental monitoring data indicate elevated levels of radiation in the soil. Two possible sources for this contamination are fallout from the Building 776 fire in 1969 and wind-borne contaminated soil from the 903 Pad. In addition, this area is downstream from the main processing facility. Current data for soil sites and groundwater wells are accessible through RFEDS.



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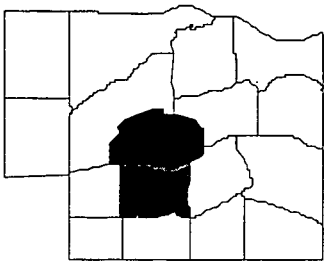


Quadrant: SW 1

Boundaries:

North - Inner security fence.
South - Road following original Buffer Zone boundary fence.
East - Line from west side of the 903 Pad south to road running due south to the original Buffer Zone boundary fence.
West - Line running north-south from Site water tower to original Buffer Zone boundary fence.

Vegetation:

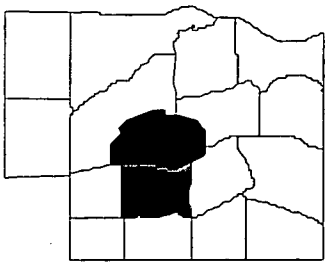
Quadrant SW 1 is primarily classified as Mesic Mixed Grassland, with small areas of Reclaimed Grassland and Xeric Mixed Grassland also present. Areas of Bottomland Shrub and Riparian Woodland, intermixed with areas of Short Upland Shrub and Marsh, are present along Woman Creek as it flows through the northern portion of the quadrant. Cottonwood trees and shrubs - Willow and Snowberry are common in the drainages. The dominant species of vegetation are: Western Wheatgrass, Blue Grama Grass, Cheatgrass, Kentucky Bluegrass, Canada Bluegrass, Cattail, Rushes (*Juncus baliticus*), and Smooth Brome.

Wildlife Habitat:

The greatest area of this Quadrant is occupied with Mesic Mixed Grassland habitat, followed by Xeric Mixed Grasslands, Short Marsh, Tall Marsh, Deciduous Woodland, and Bottomland Shrubland. The marshlands comprise large portions of the ecologically important Antelope and Apple Orchard Springs.

The native grass and forb species in the grasslands in this Quadrant provide habitat for arthropods, reptiles, amphibians, mammals, and birds. Arthropod taxa throughout the Site are numerous and diverse. Reptiles are represented by the more common snake species such as the Bull Snake, Racer, and Prairie Rattlesnake. It is in the Xeric Mixed Grasslands of the ridgetops that Eastern Short Horned Lizard, a federal candidate species is found. Common grassland songbirds include Western Meadowlarks, Vesper Sparrows, House Finches, and Grasshopper Sparrows. Birds-of-prey change with the season, with Rough-legged Hawks most numerous during the winter, and Red-tailed Hawks and Swainson's Hawks common during the spring and summer. Mammals range in size from Deer Mice, Prairie Voles, and Meadow Voles, to Desert Cottontail and Mule Deer. The most common predator is the Coyote.

The Tall Marsh and Short Marsh habitats provide a productive habitat for arthropods and species from many other groups. Reptiles are represented by the Bull Snake, Prairie Rattlesnake, and Western Painted Turtle. Songbirds include Red-winged



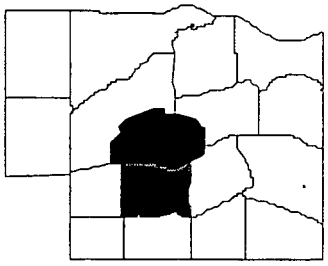
Blackbirds, Common Yellowthroats, Cliff Swallows, Barn Swallows, and Song Sparrows, as well as many of the grasslands birds depending on the season. Mallards are sometimes observed in pools along Woman Creek. Red-tailed Hawks, Northern Harriers, and Great Horned Owls frequent the area during hunting forays. Mammals are represented by Deer Mice, Meadow Voles, and Muskrats. These habitats also provide food and shelter for Mule Deer, Raccoon, and Coyotes.

The Deciduous Woodland and Bottomland Shrubland mosaic supports a variety of wildlife species. Reptiles include Bull Snakes, Wandering Garter Snakes, Red-sided Garter Snake, and Racer. Songbirds include the grasslands species listed above and Red-winged Blackbirds, Northern Orioles, American Goldfinches, and other shrubland species. Red-tailed Hawks, Rough-legged Hawks, and Great Horned Owls use the large trees of the woodlands. The small mammal population made up largely of Deer Mice and Meadow Voles provides forage for Coyotes. Raccoons are also a common predator in this habitat. Mule Deer use this habitat for shelter, concealment, and a food source. White-tailed Deer are occasionally observed in the heavy brush along the creek bottoms. Preble's Meadow Jumping Mouse, a federal candidate species, has been identified in the Deciduous Woodland/Bottomland Shrubland complex of Woman Creek throughout this Quadrant.

The entire Quadrant is potential foraging habitat for the Peregrine Falcons which nest in the nearby Flatirons, and for Bald Eagles which winter in the area. These endangered species are protected under the Endangered Species Act of 1973, and should be treated accordingly. Ecology Procedure 1-D06-EPR-END.03 "Identification and Protection of Threatened, Endangered, and Special-Concern Species" provides specific protection procedures.

Surface Waters: Two branches of Woman Creek flow through the quadrant. The branches join near the center or the quadrant forming Woman Creek. Antelope Springs are located on the hillsides in the Woman Creek drainage. These seeps are perennial and typically have a low flow dependent upon groundwater elevation. The larger seeps flow year-round while the smaller ones are dependant upon seasonal precipitation. The largest seep in the area forms the headwaters of the southern branch of Woman Creek.

Jurisdictional Wetlands: Refer to the Wetlands map for specific wetland locations.



Floodplain: There is an area of 100-year floodplain surrounding Woman Creek and Woman Creek Tributary D as they flow through the northern portion of the quadrant. Maps depicting the 100-year floodplain for the major surface water drainages at the Site have been produced by the USACOE, and are available from the Ecology and Watershed Management Division. Additional information, including water surface profiles for the 10-, 50-, 100-, and 500-year flood events is available in the USACOE report, "Floodplain Delineation - Hydrologic Analysis."

Soil: The majority of soils in this quadrant are fine-textured soils of the great group Argiustolls, which are mostly clay loams associated with hill and valley slopes. Argiustolls are generally characterized by high shrink-swell potential, slow permeability, and moderate erosion potential.

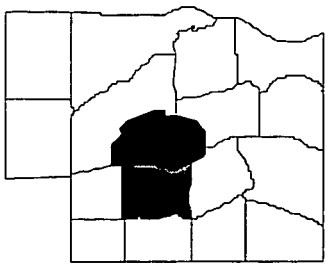
There is a band of Torrifluvents in the northern portion of the quadrant along Woman Creek. Torrifluvents are mostly stratified clay loams and gravelly loams formed by fluvial processes along drainage bottoms, and they are generally characterized by low shrink-swell potential, moderately slow permeability, and slight-to-moderate erosion potential.

The southern section of the quadrant contains some clayey-skeletal Paleustolls, which are very cobbly clay loams located on pediment surfaces. Paleustolls are generally characterized by moderate shrink-swell potential, slow permeability, and slight erosion potential.

Surface Geology: Approximately 30 percent of the surface geology of the quadrant is comprised of Rocky Flats Alluvium. This alluvium covers the flats found throughout the Site, particularly on the western side. In this quadrant the alluvium is found south and west of the Woman Creek drainage on the flats above the creek. The remaining 70 percent of the surface geology is covered by an outcrop of the Arapahoe Formation. The outcrop is found throughout the Woman Creek drainage and the tributary to the south. Rocky Flats Alluvium is composed of poorly sorted, angular to rounded, coarse gravel, sand, and gravelly clays.

The Arapahoe formation is approximately 150 feet thick in the central portion of the Site and consists mainly of claystones and silty claystones with at least five sandstone intervals in the upper portion of the formation.

Utilities: An aboveground PSC power line runs east-west across the northern end of the quadrant turning due north near the middle



of the quadrant and running into the main facility. An abandoned 8-inch natural gas line lies directly beneath the power line. This line was permanently replaced by another PSC 6-inch line located along the railroad spur outside the main facility security fence.

Archaeology: State Site 5JF474 - Firebreak Site. This site is a former stagecoach stop located along the firebreak due south of the Site water tower and old apple orchard. The structure is no longer standing, although a portion of a root cellar is still visible and accessible along the south side of the firebreak. Several artifacts dating from the late 19th and early 20th centuries have been found at the site. The area was once referred to as the "Antelope Ranch."

State Site 5JF483 - Orchard. Located north of the Firebreak Site, the orchard consists of 14 apple trees. The orchard is thought to have been used when the Antelope Ranch operated. The trees are now abandoned and are the subject of a Colorado State University (CSU) vegetation study.

The aforementioned sites are not included in the NRHP because they are in poor condition, exhibit no rare construction, and have no historic interest.

Archaeological maps for the Site were omitted from this document to protect the integrity of the cultural resources. If the location of archaeological sites must be known, contact the NEPA group.

Future Plans: The Woman Creek drainage will be remediated in accordance with plans for OU 5.

Mineral Rights: Unknown.

Adjoining Lands: The quadrant is adjoined by the Site Buffer Zone on the south, east and west sides. The main plant facility lies north of the quadrant.

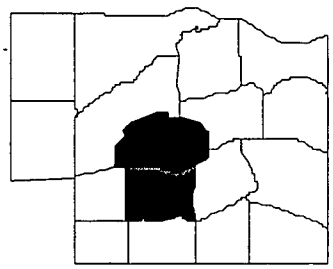
Contamination Profile:

Soil Sites: None.

Sediment Sites: Refer to the Sediment Sampling Locations map.

Surface Water: Refer to the Surface Water Sampling Locations map.

Groundwater Wells: Refer to the Groundwater Monitoring Well Location Map.



IHSS: Refer to the Individual Hazardous Substance Sites by Operable Unit map.

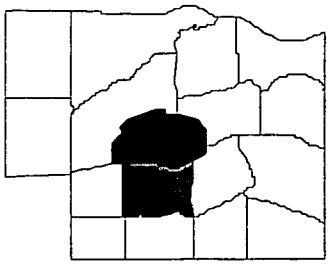
Comments: IHSS 102 was used as a burial pit for oil sludge in 1958. Approximately 30 to 50 barrels of oil sludge from No. 6 fuel oil tanks were disposed of here in 1958. The oil sludge is the primary pollutant in this area.

IHSS 106 is an outfall for a clean out pipe for an overflow line from the Building 881 cooling tower. The line is a 6-inch vitrified clay pipe. The last known discharge from the pipe was in December of 1977.

IHSS 107 is the site of a leak of No. 6 fuel oil. No. 6 fuel oil was discovered leaking from the hillside in May of 1973. It is believed that the oil was leaking from the storage tanks on the south side of Building 881. Contaminated soil saturated with oil was removed and placed in the present landfill.

IHSS 115 is the site of the original Site landfill which operated from 1952 to 1968. This site, in the hillside immediately south of the Site, was a disposal site for general plant waste. Twenty kilograms of depleted uranium ash were inadvertently dumped in the landfill and are now the major pollutants in the IHSS. Both IHSS 107 and IHSS 115 are included in the "OU 5 Remediation Plan."

Current data for soil sites, sediment sites, and groundwater wells are accessible through RFEDS.



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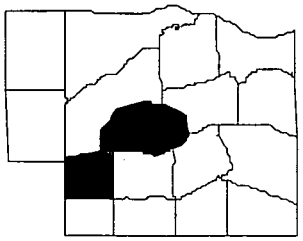


Quadrant: SW 2

Boundaries:

North - Site West Access Road and inner security fence.
South - Road running east-west along original Buffer Zone boundary fence.
East - Line running north-south from Site water tower to original Buffer Zone boundary fence.
West - Site Buffer Zone west perimeter boundary fence (barbed wire).

Vegetation:

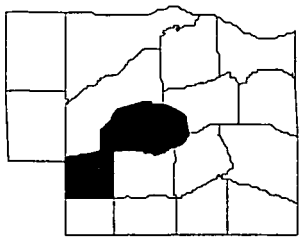
Quadrant SW 2 is primarily classified as Mesic Mixed Grassland and Xeric Mixed Grassland. Areas of Bottomland Shrub and Riparian Woodland, intermixed with areas of Wet Meadow and Marsh, are present along Woman Creek as it flows through the quadrant. Cottonwood trees and shrubs -Willow and Snowberry - are common in the drainages. The dominant species of vegetation are: Needle and Thread Grass, Big Bluestem, Canada Bluegrass, Little Bluestem (*Andropogon scoparius*), and Sedge (*Carex heliophila*) on the pediment and ridgetops. Western Wheatgrass, Blue Grama Grass, Cheatgrass, and Kentucky Bluegrass are dominant on the hillsides, with Cat-tails and Rushes common in the Tall and Short Marsh areas.

Wildlife Habitat:

The greatest area of this Quadrant is occupied with Mesic Mixed Grassland habitat, followed by Short Marsh, Tall Marsh, Deciduous Woodland, Bottomland Shrubland, and Xeric Mixed Grasslands. The marshlands comprise large portions of the ecologically important Antelope and Apple Orchard Springs.

The native grass and forb species in the grasslands in this Quadrant provide habitat for arthropods, reptiles, amphibians, mammals, and birds. Arthropod taxa throughout the Site are numerous and diverse. Reptiles are represented by the more common snake species such as the Bull Snake, Racer, and Prairie Rattlesnake. It is in the Xeric Mixed Grasslands of the ridgetops that Eastern Short Horned Lizard, a federal candidate species is found. Common grassland songbirds include Western Meadowlarks, Vesper Sparrows, House Finches, and Grasshopper Sparrows. Birds-of-prey change with the season, with Rough-legged Hawks most numerous during the winter, and Red-tailed Hawks and Swainson's Hawks common during the spring and summer. Mammals range in size from Deer Mice, Prairie Voles, and Meadow Voles, to Desert Cottontail and Mule Deer. The most common predator is the Coyote.

The Tall Marsh and Short Marsh habitats provide a productive habitat for arthropods and species from many other groups.



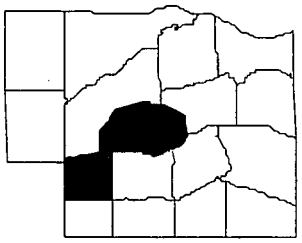
Reptiles are represented by the Bull Snake, Prairie Rattlesnake, and Western Painted Turtle. Songbirds include Red-winged Blackbirds, Common Yellowthroats, Cliff Swallows, Barn Swallows, Song Sparrows as well as many of the grasslands birds depending on the season. Red-tailed Hawks, Northern Harriers, and Great Horned Owls frequent the area during hunting forays. Mammals are represented by Deer Mice, Meadow Voles, and Muskrats. These habitats also provide food and shelter for Mule Deer, Raccoon, and Coyotes.

The Deciduous Woodland and Bottomland Shrubland mosaic supports a variety of wildlife species. Reptiles include Bull Snakes, Wandering Garter Snakes, Red-sided Garter Snake, and Racer. Songbirds include the grasslands species listed above and Red-winged Blackbirds, Northern Orioles, American Goldfinches, and other shrubland species. Red-tailed Hawks, Rough-legged Hawks, and Great Horned Owls use the large trees of the woodlands. The small mammal population made up largely of Deer Mice and Meadow Voles provides forage for Coyotes. Raccoons are also a common predator in this habitat. Mule Deer use this habitat for shelter, concealment, and a food source. White-tailed Deer are occasionally observed in the heavy brush along the creek bottoms. Preble's Meadow Jumping Mouse, a federal candidate species, has been identified in the Deciduous Woodland/Bottomland Shrubland complex of Woman Creek immediately adjacent to this Quadrant.

The entire Quadrant is potential foraging habitat for the Peregrine Falcons which nest in the nearby Flatirons, and for Bald Eagles which winter in the area. These endangered species are protected under the Endangered Species Act of 1973, and should be treated accordingly. Ecology Procedure 1-D06-EPR-END.03 "Identification and Protection of Threatened, Endangered, and Special-Concern Species" provides specific protection procedures.

Surface Waters:

Two branches of Woman Creek flow through the quadrant. The branches meet near the center of the quadrant forming Woman Creek. There are flow data available for water flows in this portion of the creek. Antelope Springs are located in the hillsides in the Woman Creek drainage. These seeps typically have a low flow and are dependent upon groundwater. The larger seeps flow year-round while the smaller ones are dependant upon seasonal precipitation. The largest seep in the area forms the headwaters of the southern branch of Woman Creek.



Jurisdictional Wetlands: Refer to the Wetlands map for specific wetland locations.

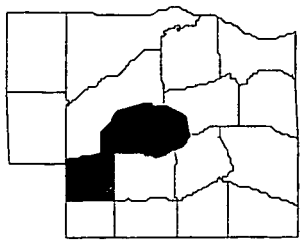
Floodplain: There is an area of 100-year floodplain surrounding Woman Creek and Woman Creek Tributary E as they flow through the northern portion of the quadrant. Maps depicting the 100-year floodplain for the major surface water drainages at the Site have been produced by the USACOE, and are available from the Ecology and Watershed Management Division. Additional information, including water surface profiles for the 10-, 50-, 100-, and 500-year flood events is available in the USACOE report, "Floodplain Delineation - Hydrologic Analysis."

Soil: There is a nearly equal distribution of soils from the great groups Argiustolls and Paleustolls in this quadrant. Argiustolls, which are mostly fine-textured clay loams associated with hill and valley slopes, are located in the north-central portion of the quadrant. Argiustolls are generally characterized by high shrink-swell potential, slow permeability, and moderate erosion potential.

Clayey-skeletal Paleustolls, which are very cobbly clay loams located on pediment surfaces, are present in the southern and extreme northern sections of the quadrant. Paleustolls are generally characterized by moderate shrink-swell potential, slow permeability, and slight erosion potential.

In addition, there is a band of Torrifluvents in the northern portion of the quadrant along Woman Creek. Torrifluvents are mostly stratified clay loams and gravelly loams formed by fluvial processes along drainage bottoms, and they are generally characterized by low shrink-swell potential, moderately slow permeability, and slight-to-moderate erosion potential.

Surface Geology: Approximately 80 percent of the surface geology is comprised of Rocky Flats Alluvium. This alluvium covers the "flats" found throughout the Site, particularly on the western side. In this quadrant the alluvium is found southwest of the Woman Creek drainage area. The remaining 20 percent of the surface geology is equally divided between the upper unit of the Laramie Formation and the Arapahoe Formation. Both formations are found along the Woman Creek and its southern tributary. Rocky Flats Alluvium is composed of poorly sorted, angular to rounded, coarse gravel, sand, and gravelly clays. The Arapahoe formation is approximately 150 feet thick in the central portion of the Site and consists mainly of claystones and silty claystones with at least five sandstone intervals in the upper portion of the formation. The upper unit of the Laramie formation is



approximately 500 feet thick and composed of claystone. The claystone is predominately light to medium gray and kaolinitic.

Utilities: A power line runs east-west across the northern end of the quadrant and branches north crossing the west Site access road. An abandoned 8-inch natural gas line lies directly beneath the power line. The new natural gas line, owned by the PSC, lies along the west Site access road.

Archaeology: State Site 5JF79 - Stone Features. A group of eight stone cairns and rings is located on a hilltop just south of the southern branch of Woman Creek. It is not known if the features are of American Indian or Euro-American origin.

State Site 5JF477 - Isolated Find Record. A possible projectile midsection fragment or tool fragment, but most likely a cutting implement, is located at the northern end of the quadrant beneath the power lines.

The aforementioned sites are not included in the NRHP because they are in poor condition, exhibit no rare construction, and have no historical value. SW 2-4

Archaeological maps for the Site were omitted from this document to protect the integrity of the cultural resources. If the location of archaeological sites must be known, contact the NEPA group.

Future Plans: The Woman Creek drainage will be remediated in accordance with plans for OU 5.

Mineral Rights: Unknown.

Adjoining Lands: The quadrant is adjoined by the Site Buffer Zone on the north, south and east sides. The land adjoining it to the west is currently zoned institutional and is used for grazing cattle.

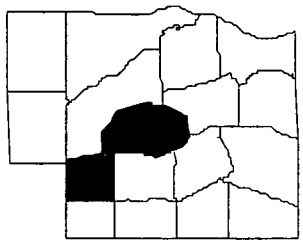
Contamination Profile

Soil Sites: 1-234 and 1-216

Sediment Sites: Refer to the Sediment Sampling Locations map.

Surface Water: Refer to the Surface Water Sampling Locations map.

Groundwater Wells: Refer to the Groundwater Monitoring Well Location Map.



IHSS: Refer to the Individual Hazardous Substance Sites by Operable Unit map.

Comments: IHSS 133.1 - 133.6 are former sites of an incinerator and four ash pits that operated from 1952 to 1968, and a concrete wash pad area. An estimated 100 grams of depleted uranium are present in the ash pits.

IHSS 115 is the site of the original Site landfill, operational from 1952 to 1968. The original landfill, located in the hillside immediately south of the Site was the disposal site for general Site waste. Twenty kilograms of depleted uranium ash were inadvertently dumped into the landfill and are the major pollutants in the IHSS.

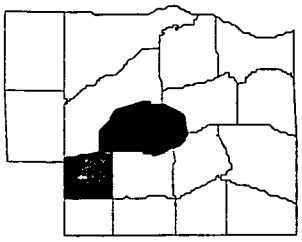
Both sites are covered by the plans to remediate OU 5.

Surface water site GS05, found in the northwest corner of the quadrant on Woman Creek at the west Site boundary, recorded the following flows during the 1994 water year:

Average Spring Flow: 0.31 cubic feet per second (cfs)
Average Summer Flow: 0.01 cfs
Average Winter/Fall Flow: 0.01 cfs

The flow data listed above should be used as analytical data with the qualification that the flows were computed using theoretical ratings for Parshall flumes. The data are suspected to have +/- 10% accuracy.

Current data for soil sites, sediment sites, and groundwater wells are accessible through RFEDS.



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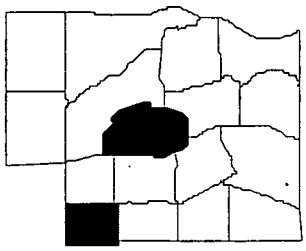


Quadrant: SW 3

Boundaries:

North - Road following original Buffer Zone boundary fence.
South - Site Buffer Zone south perimeter fence (barbed wire).
East - Line running north-south along the drainages that run east approximating the 6,050 foot contour line.
West - Site Buffer Zone west perimeter boundary fence (barbed wire).

Vegetation:

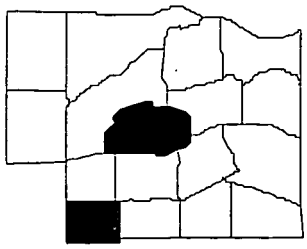
Quadrant SW 3 is classified as Xeric Mixed Grassland and Mesic Mixed Grassland. An area of Short Marsh is present along Smart Ditch as it flows through the central portion of the quadrant. The drainages in the quadrant support some Snowberry (*Symphoricarpos occidentalis*) patches. The dominant species of vegetation are: Needle and Thread Grass (*Stipa comata*), Big Bluestem (*Andropogon gerardii*), Blue Grama Grass (*Bouteloua gracilis*), Little Bluestem (*Andropogon scoparius*), Sedge (*Carex heliophila*), Canada Bluegrass (*Poa compressa*), and Western Wheatgrass (*Agropyron smithii*).

Wildlife Habitat:

Wildlife habitats within this Quadrant are predominantly Mesic Mixed Grassland, Xeric Mixed Grassland. Tall Marsh, Short Marsh, and Wet Meadow occur as a narrow band along Smart Ditch.

The native grass and forb species in the grasslands in this Quadrant provide habitat for arthropods, reptiles, amphibians, mammals, and birds. Arthropod taxa throughout the Site are numerous and diverse. Reptiles are represented by the more common snake species such as the Bull Snake, Racer, and Prairie Rattlesnake. It is in the Xeric Mixed Grasslands of the ridgetops that Eastern Short Horned Lizard, a federal candidate species is found. Common grassland songbirds include Meadowlarks, Vesper Sparrows, House Finches, and Grasshopper Sparrows. Birds-of-prey change with the season, with Rough-legged Hawks most numerous during the winter, and Golden Eagles, Red-tailed Hawks and Swainson's Hawks common during the spring and summer. Mammals range in size from Deer Mice, Prairie Voles, and Meadow Voles, to Desert Cottontail and Mule Deer. The most common predator is the Coyote.

The Tall Marsh and Short Marsh habitats provide a productive habitat for arthropods and species from many other groups. Reptiles are represented by the Bull Snake, Prairie Rattlesnake, and Western Painted Turtle. Songbirds include Red-winged



Blackbirds, Common Yellowthroats, Cliff Swallows, Barn Swallows, Song Sparrows as well as many of the grasslands birds depending on the season. Red-tailed Hawks, Northern Harriers, and Great Horned Owls frequent the area during hunting forays. Mammals are represented by Deer Mice, Meadow Voles, and Muskrats. These habitats also provide food and shelter for Mule Deer, Raccoon, and Coyotes.

Wet Meadow habitats are immediately adjacent to the marshes and other wetland classifications. This habitat shares wetlands species with the other habitats.

The entire Quadrant is potential foraging habitat for the Peregrine Falcons which nest in the nearby Flatirons, and for Bald Eagles which winter in the area. These endangered species are protected under the Endangered Species Act of 1973, and should be treated accordingly. Ecology Procedure 1-D06-EPR-END.03 "Identification and Protection of Threatened, Endangered, and Special-Concern Species" provides specific protection procedures.

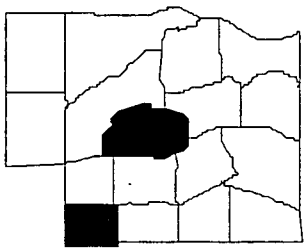
Surface Waters: Smart Ditch flows east through the quadrant. Flow data for the ditch is provided in Quadrant SE 3. The ditch carries water from Rocky Flats Lake to the Standley Lake Reservoir and is neither controlled nor affected by the Site.

Jurisdictional Wetlands: Refer to the Wetlands map for specific wetland locations.

Floodplain: There is an area of 100-year floodplain that surrounds Smart Ditch as it flows through the southern portion of the quadrant. Maps depicting the 100-year floodplain for the major surface water drainages at the Site have been produced by the USACOE, and are available from the Ecology and Watershed Management Division. Additional information, including water surface profiles for the 10-, 50-, 100-, and 500-year flood events is available in the USACOE report, "Floodplain Delineation - Hydrologic Analysis."

Soil: The majority of soils in this quadrant are clayey-skeletal soils of the great group Paleustolls, which are very cobbly clay loams located on pediment surfaces. Paleustolls are generally characterized by moderate shrink-swell potential, slow permeability, and slight erosion potential.

There are two small areas that contain Argiustolls located on the eastern border of the quadrant. Argiustolls are mostly fine-textured clay loams associated with hill and valley slopes,



and they are generally characterized by high shrink-swell potential, slow permeability, and moderate erosion potential.

Surface Geology: The entire surface geology of the quadrant is comprised of Rocky Flats Alluvium. This alluvium covers the "flats" found throughout the Site, particularly in the western quadrants. Rocky Flats Alluvium is comprised of poorly sorted, angular to rounded, coarse gravel, sand, and gravelly clays.

Utilities: None.

Archaeology: None.

Future Plans: None.

Mineral Rights: Tract 36 S 1/2 of Section 15 and SW 1/4 of Section 14 - 480.00 acres. The Union Pacific Railroad owns coal rights. All coal, oil and gas reserved, without the right to enter upon or over the land. Right of proprietor of a vein or lode to extract and remove ore therefrom.

Adjoining Lands: The quadrant is adjoined by the Site Buffer Zone on the north and east sides. The adjoining land to the south is vacant, the land to the west is zoned Institutional, and both are currently used for grazing cattle.

Contamination Profile

Soil Sites: 1-198

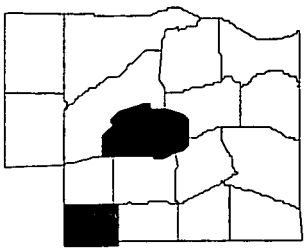
Sediment Sites: Refer to the Sediment Sampling Locations map.

Surface Water: Refer to the Surface Water Sampling Locations map.

Groundwater Wells: Refer to the Groundwater Monitoring Well Location Map.

IHSS: Refer to the Individual Hazardous Substance Sites by Operable Unit map.

Comments: Current data for soil sites and groundwater wells are accessible through RFEDS.



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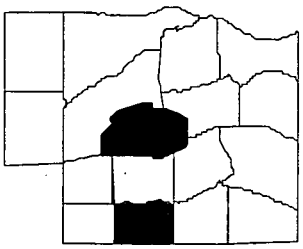


Quadrant: SW 4

Boundaries:

North - Road following original Buffer Zone boundary fence.
South - Site Buffer Zone south perimeter fence (barbed wire).
East - Line running due south from the end of the road running north-south to original Buffer Zone boundary fence.
West - Line running north-south along the edges of the drainages running east approximating the 6,050 foot contour line.

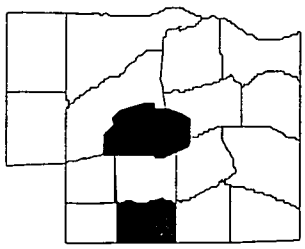
Vegetation:

Quadrant SW 4 is primarily classified as Mesic Mixed Grassland, with small areas of Xeric Mixed Grassland present in the western portion of the quadrant. Areas of Riparian Woodland and Short Upland Shrub, intermixed with an area of Marsh, are present along Smart Ditch as it flows through the quadrant. Cottonwood trees (*Populus deltoides*) and some shrubs - Willow (*Salix exigua*) and Snowberry (Symphoricarpos occidentalis) - are found in the drainages. The dominant species of vegetation are: Needle and Thread Grass (*Stipa comata*), Big Bluestem (*Andropogon gerardii*), Little Bluestem (*Andropogon scoparius*), Sedge (*Carex heliophila*), and Canada Bluegrass (*Poa compressa*) on the pediment and ridgetops. Western Wheatgrass (*Agropyron smithii*), Blue Grama Grass (*Bouteloua gracilis*), Kentucky Bluegrass (*Poa pratensis*), and Cheatgrass (*Bromus japonicus*) are dominant on the hillsides.

Wildlife Habitat:

The greatest area of this Quadrant is occupied with Mesic Mixed Grassland habitat, followed by Short Marsh, Tall Marsh, Deciduous Woodland, Bottomland Shrubland, and Xeric Mixed Grasslands. The marshlands, woodlands, and shrublands are restricted to narrow bands along Smart Ditch and surrounding a small dugout stock tank.

The native grass and forb species in the grasslands in this Quadrant provide habitat for arthropods, reptiles, amphibians, mammals, and birds. Arthropod taxa throughout the Site are numerous and diverse. Reptiles are represented by the more common snake species such as the Bull Snake, Racer, and Prairie Rattlesnake. It is in the Xeric Mixed Grasslands of the ridgetops that Eastern Short Horned Lizard, a federal candidate species is found. Common grassland songbirds include Meadowlarks, Vesper Sparrows, House Finches, and Grasshopper Sparrows. Birds-of-prey change with the season, with Rough-legged Hawks most numerous during the winter, and Red-tailed Hawks and Swainson's Hawks common during the spring and summer. Mammals range in size from Deer



Mice, Prairie Voles, and Meadow Voles, to Desert Cottontail and Mule Deer. The most common predator is the Coyote.

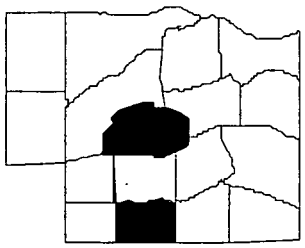
The Tall Marsh and Short Marsh habitats provide a productive habitat for arthropods and species from many other groups. Reptiles are represented by the Bull Snake, Prairie Rattlesnake, and Western Painted Turtle. Songbirds include Red-winged Blackbirds, Common Yellowthroats, Cliff Swallows, Barn Swallows, Song Sparrows as well as many of the grasslands birds depending on the season. Numerous waterfowl species use the ponds as foraging and breeding habitat. The most common waterfowl are the Mallard, Blue-winged Teal, and Great Blue Herons. Red-tailed Hawks, Northern Harriers, and Great Horned Owls frequent the area during hunting forays. Small mammals are represented by Deer Mice and Meadow Voles. These habitats also provide food and shelter for Mule Deer, Raccoon, and Coyotes.

The Deciduous Woodland and Bottomland Shrubland mosaic supports a variety of wildlife species. Reptiles include Bull Snakes, Wandering Garter Snakes, Red-sided Garter Snake, and Racer. Songbirds include the grasslands species listed above and Red-winged Blackbirds, Northern Orioles, American Goldfinches, and other shrubland species. Red-tailed Hawks, Rough-legged Hawks, and Great Horned Owls use the large trees of the woodlands. The small mammal population made up largely of Deer Mice and Meadow Voles provides forage for Coyotes. Raccoons are also a common predator in this habitat. Mule Deer use this habitat for shelter, concealment, and a food source. White-tailed Deer are occasionally observed in the heavy brush along the creek bottoms. Preble's Meadow Jumping Mouse, a federal candidate species, has been identified in the Deciduous Woodland/Bottomland Shrubland complex of a short stretch of Smart Ditch in this Quadrant.

The entire Quadrant is potential foraging habitat for the Peregrine Falcons which nest in the nearby Flatirons, and for Bald Eagles which winter in the area. These endangered species are protected under the Endangered Species Act of 1973, and should be treated accordingly. Ecology Procedure 1-D06-EPR-END.03 "Identification and Protection of Threatened, Endangered, and Special-Concern Species" provides specific protection procedures.

Surface Waters:

Smart Ditch flows west to east through the quadrant. Flow data for the ditch is provided in Quadrant SE 3. The ditch carries



water from Rocky Flats Lake to the Standley Lake Reservoir and is neither controlled nor affected by the Site.

Jurisdictional Wetlands: Refer to the Wetlands map for specific wetland locations.

Floodplain: There is an area of 100-year floodplain surrounding Smart Ditch, Smart Ditch A, and Smart Ditch B as they flow through the central portion of the quadrant. Maps depicting the 100-year floodplain for the major surface water drainages at the Site have been produced by the USACOE, and are available from the Ecology and Watershed Management Division. Additional information, including water surface profiles for the 10-, 50-, 100-, and 500-year flood events is available in the USACOE report, "Floodplain Delineation - Hydrologic Analysis."

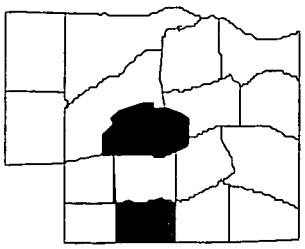
Soil: The majority of soils in this quadrant are fine-textured soils of the great group Argiustolls, which are mostly clay loams associated with hill and valley slopes. Argiustolls are generally characterized by high shrink-swell potential, slow permeability, and moderate erosion potential.

Clayey-skeletal Paleustolls, which are very cobbly clay loams located on pediment surfaces, are located in the south-western corner of the quadrant. Paleustolls are generally characterized by moderate shrink-swell potential, slow permeability, and slight erosion potential.

In addition, there is a small area of Torrifluvents in the extreme north-eastern corner of the quadrant. Torrifluvents are mostly stratified clay loams and gravelly loams formed by fluvial processes along drainage bottoms, and are generally characterized by low shrink-swell potential, moderately slow permeability, and slight-to-moderate erosion potential.

Surface Geology: An outcrop of the Arapahoe formation comprises approximately one-half of the surface geology. The remaining portion is covered by Rocky Flats Alluvium. This alluvium is found in the higher areas along the ridges that run east-west through the quadrant. The Arapahoe formation is approximately 150 feet thick in the central portion of the Site and consists mainly of claystones and silty claystones with at least five sandstone intervals in the upper portion of the formation. Rocky Flats Alluvium is composed of poorly sorted, angular to rounded, coarse gravel, sand, and gravelly clays.

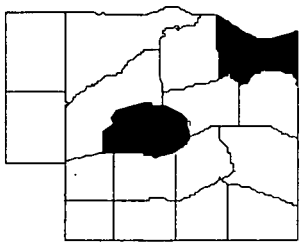
Utilities: Aboveground PSC power lines run northeast-southwest across the southern part of the quadrant.



Archaeology:	None.
Future Plans:	None.
Mineral Rights:	Tract 36 - S 1/2 of Section 15 and SW 1/4 of Section 14 - 480.00 acres. The Union Pacific Railroad owns coal rights. All coal, oil and gas reserved, without the right to enter upon or over the land. Right of proprietor of a vein or lode to extract and remove ore therefrom.
Adjoining Lands:	The quadrant is adjoined by the Site Buffer Zone on the north, east, and west. The land adjoining the quadrant to the south is vacant and is currently used for grazing cattle.

Contamination Profile

Soil Sites:	1-180 and 1-162
Sediment Sites:	Refer to the Sediment Sampling Locations map.
Surface Water:	Refer to the Surface Water Sampling Locations map.
Groundwater Wells:	Refer to the Groundwater Monitoring Well Location Map.
IHSS:	Refer to the Individual Hazardous Substance Sites by Operable Unit map.
Comments:	Current data for soil sites are accessible through RFEDS.



Quadrant: NE 1

Boundaries:

North - Colorado 128.
South -Road running east northeast from the south end of Pond A-4 dam along Walnut Creek to Indiana Street (Jefferson County 17).
East - Indiana Street (Jefferson County 17).
West - Road running north-south along the east old Buffer Zone boundary. Where the road turns to the west the boundary continues north to Colorado 128.

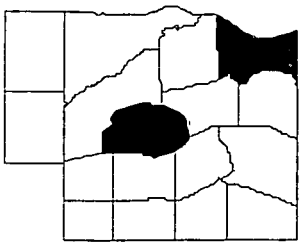
Vegetation:

Quadrant northeast 1 is primarily classified as Mesic Mixed Grassland, with small areas of Xeric Mixed Grassland and Reclaimed Grassland (artificially produced grassland communities) also present. Areas of Short Upland Shrub, intermixed with areas of Riparian Woodland, Bottomland Shrub and Marsh, are present along the Church and McKay Ditches as they flow through the northern portion of the quadrant, and along Walnut Creek as it flows through the southern portion. Cottonwood trees and shrubs - Willow, Snowberry, and Leadplant are common along the creek. The dominant species of vegetation in the quadrant are: Western Wheatgrass, Kentucky Bluegrass, Cheatgrass, and Blue Grama Grass on the hillsides; Needle and Thread Grass, Canada Bluegrass, and Big Bluestem on the ridgetops.

Wildlife Habitat:

The predominant habitat is the native Mesic Mixed Grasslands, a mixture of tall grass, short grass, and native forb species, on the hill slopes and hilltops with small inclusions of native Short Grasslands, predominantly short grasses such as Buffalo Grass (*Buchloe dactyliodes*) on some of the upland areas. The south boundary of this Quadrant follows the narrow, but important riparian woodland complex. This complex is an interwoven patchwork of Bottomland Shrubland, largely willow species and Deciduous Woodland, largely Cottonwoods along the lower Walnut Creek channel.

The native grass and forb species in the grasslands provide habitat for arthropods, reptiles, amphibians, mammals, and birds. Arthropod taxa throughout the Site are numerous and diverse. Reptiles are represented by the more common snake species such as the Bull Snake and Prairie Rattlesnake. Grassland songbirds include Western Meadowlarks, Vesper Sparrows, House Finches, and Grasshopper Sparrows. Birds-of-prey change with the season, with Rough-legged Hawks most numerous during the winter, and Golden Eagle, Red-tailed Hawks common during the spring and summer. Mammals range in size from Deer Mice and Meadow Voles, to Desert Cottontails, and Mule Deer. Common predators include Coyotes and Raccoons.



The Deciduous Woodland and Bottomland Shrubland mosaic supports numerous species of arthropods. Reptiles include Bull Snakes, Wandering Garter Snakes, Red-sided Garter Snake, and Racer. Songbirds include the grasslands species listed above and Red-winged Blackbirds, Northern Orioles, Yellow Warbler (*Dendroica petechia*), American Goldfinches, Song Sparrow, and other woodland species. Mallards frequent the Walnut Creek stream, and Red-tailed Hawks, and Great Horned Owls use the large trees of the woodland. Great Horned Owl nests are frequently recorded in the Cottonwood trees of lower Walnut Creek. The small mammal population made up largely of Deer Mice and Meadow Voles provides forage for Coyotes. The Preble's Meadow Jumping Mouse, a federal candidate species, also inhabits this area. Mule Deer shelter in the shrublands and woodlands.

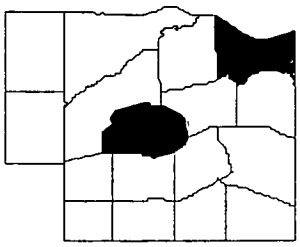
A Black-tailed Prairie Dog (*Cynomys ludovicianus*) colony located in the north central portion of the Quadrant is an extension of the large network of colonies to the north, east, and southeast of the Site. The Black-tailed Prairie Dog population in the extended area experienced a sharp decline during 1994, but the populations are rebounding. Although this extended colony area is of sufficient size, it is not known to support Black-footed Ferrets (*Mustela nigripes*), an endangered species.

The entire Quadrant is potential foraging habitat for the Peregrine Falcons which nest in the nearby Flatirons, and for Bald Eagles which winter in the area. These endangered species are protected under the Endangered Species Act of 1973, and should be treated accordingly. Ecology Procedure 1-D06-EPR-END.03 "Identification and Protection of Threatened, Endangered, and Special-Concern Species" provides specific protection procedures.

Surface Waters: McKay Ditch and an unnamed tributary flow through the western half of the quadrant. The tributary and the ditch flow into Walnut Creek in the west central area of the quadrant. These tributaries join Walnut Creek approximately 1,875 feet east northeast of the Pond A-4 dam. From this point Walnut Creek follows the southern border of the quadrant until its intersection with Indiana Street (Jefferson County 17). Dry Creek flows across the southwest corner of the quadrant and joins Walnut Creek approximately 600 feet northeast of Pond A-4 dam. Church Ditch flows across the northern edge of the quadrant.

Jurisdictional Wetlands: Refer to the Wetlands map for specific wetland locations.

Floodplain: There is an area of 100-year floodplain surrounding Walnut Creek, Walnut Creek Tributary C, and Walnut Creek Tributary D as they flow through the central portion of the quadrant. Maps depicting the 100-year floodplain for the major surface water drainages at the Site have



been produced by the USACOE, and are available from the Ecology and Watershed Management Division. Additional information, including water surface profiles for the 10-, 50-, 100-, and 500-year flood events is available in the USACOE report, "Floodplain Delineation - Hydrologic Analysis."

Soil:

The majority of soils in the southern portion of the quadrant are fine-textured soils of the great group Argiustolls, which are mostly clay loams associated with hill and valley slopes. Argiustolls are generally characterized by high shrink-swell potential, slow permeability, and moderate erosion potential.

Loamy-skeletal Argiustolls, containing greater than or equal to 35% gravels or cobbles in the soil volume, are located on pediment surfaces in the northern portion of the quadrant. Loamy-skeletal Argiustolls contain less clay in the soil matrix than clayey-skeletal Paleustolls, which are located on most of the pediment surfaces.

There is a band of Torrifluvents in the south-eastern portion of the quadrant along Walnut Creek. Torrifluvents are mostly stratified clay loams and gravelly loams formed by fluvial processes along drainage bottoms, and they are generally characterized by low shrink-swell potential, moderately slow permeability, and slight-to-moderate erosion potential.

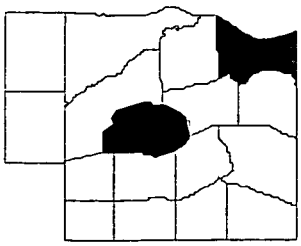
In addition, there is a area of Torriorthents along the east-central border of the quadrant. Torriorthents are poorly developed soils with the claystone bedrock exposed or very near the surface, and they are generally characterized by high shrink-swell potential, slow permeability, and severe erosion potential.

Surface Geology:

An outcrop of the Arapahoe formation covers approximately 90 percent of the surface. Valley-fill Alluvium along the Walnut Creek Drainage constitutes 5 percent of the area. The remaining 5 percent of the quadrant is covered by an outcrop of Rocky Flats Alluvium. The outcrop is found at the north end of the quadrant on the "flats" along Colorado 128. The Arapahoe formation is approximately 150 feet thick in the central portion of the Site and consists mainly of claystones and silty claystones with at least five sandstone intervals in the upper portion of the formation. Valley-fill Alluvium deposits are represented by well graded mixtures of reworked Rocky Flats Alluvium, colluvium, and weathered bedrock found in drainages. Rocky Flats Alluvium is composed of poorly sorted, angular to rounded, coarse gravel, sand, and gravelly clays.

Utilities:

Several aboveground PSC power lines cross the quadrant. Two lines, running northeast-southwest and northwest-southeast meet in the north



central part of the quadrant and continue east along Colorado 128. A third line runs north-south along the western edge of the quadrant. Power lines also run along the eastern side of the quadrant at Indiana Street (Jefferson County 17). A fiber optic line is buried along the eastern edge of the quadrant along Indiana Street (Jefferson County 17). A buried 12-inch natural-gas line owned by the Coors Energy Company runs north-south along the north-south power lines that cross the western edge of the quadrant.

Archaeology: State Site 5JF482 - Isolated Find Record located in the north central portion of the quadrant; an American Indian stone tool, most probably an abrader. The site was not included in the NRHP because it is in poor condition, exhibits no rare construction, and has no historic interest.

Future Plans: None.

Mineral Rights: Tract 29 - The majority of Section 1 - 446.36 acres. The Union Pacific Railroad owns coal rights.

Tract 30 - The western edge of Section 29 - 27.61 acres. The Union Pacific Railroad owns coal rights. Reservation of coal, iron, and mineral rights and 1/2 of oil and gas with right of ingress and egress for gas and oil production, including coal, iron and other minerals to Andrew M. Patten.

Adjoining Lands: The quadrant is adjoined by the Site Buffer Zone on the south and west sides. The land east of Indiana Street (Jefferson County 17) is zoned as Jefferson County Parks and Open Space and is vacant. Adjacent land north of Colorado 128 is pasture land.

Contamination Profile

Soil Sites: 2-154 and 2-036

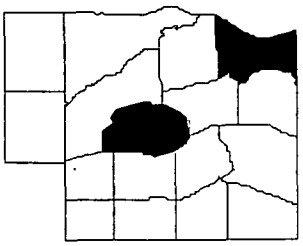
Sediment Sites: Refer to the Sediment Sampling Locations map.

Surface Water: Refer to the Surface Water Sampling Locations map.

Groundwater Wells: Refer to the Groundwater Monitoring Well Location Map.

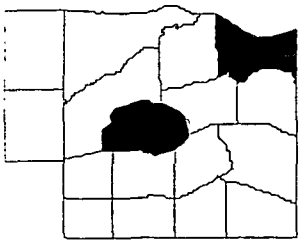
IHSS: Refer to the Individual Hazardous Substance Sites by Operable Unit map.

Comments: IHSS 142.12 is located in the far southeastern corner of the quadrant. The IHSS is the flume pond which has been in operation from the fall of 1978 to the present. The primary purpose of the pond is flow measurements from the Walnut Creek drainage. Two Parshall flumes



are used to make the measurements. The pond was identified as an IHSS during IAG negotiations.

The quadrant is relatively unaffected by operation of the Site. Very little contamination in this area can be directly attributed to Site operations. Well data is currently accessible through RFEDS.



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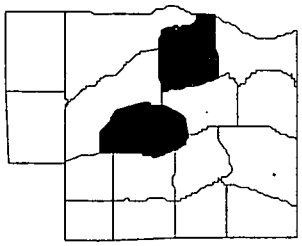


Quadrant: NE 2

Boundaries:

North - Colorado 128.
South - Road running east northeast along the top of the ridge to the south of the Dry Creek.
East - Road running north-south along the east old Buffer Zone boundary. Where the road turns to the west the boundary continues north to Colorado 128.
West - Line running north-south just to the east of the landfill pond. This line runs from the south boundary north to the ridge south of the Rock Creek drainage. Boundary line contours east along the top of this ridge until the ridge is intersected by Colorado 128.

Vegetation:

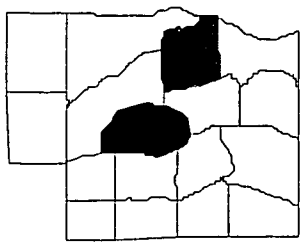
Quadrant northeast 2 is primarily classified as Xeric Mixed Grassland and Mesic Mixed Grassland. Areas of Bottomland Shrub, intermixed with areas of Marsh, are present along the Church and McKay Ditches as they flow through the central portion of the quadrant. The dominant species of vegetation are: Needle and Thread Grass (*Stipa comata*), Big Bluestem (*Andropogon gerardii*), Western Wheatgrass (*Agropyron smithii*), Blue Grama Grass (*Bouteloua gracilis*), Kentucky Bluegrass (*Poa pratensis*), Canada Bluegrass (*Poa compressa*), Cheatgrass (*Bromus japonicus*), Little Bluestem (*Andropogon scoparius*), and Sedge (*Carex heliophila*).

Wildlife Habitat:

The major wildlife habitat in the Quadrant is the Mesic Mixed Grasslands of the hill slopes and uplands.

The native grass and forb species in the grasslands provide habitat for arthropods, reptiles, amphibians, mammals, and birds. Arthropod taxa throughout the Site are numerous and diverse. Reptiles are represented by the more common snake species such as the Bull Snake and Prairie Rattlesnake. Grassland songbirds include Meadowlarks, Vesper Sparrows, House Finches, and Grasshopper Sparrows. Birds-of-prey change with the season, with Rough-legged Hawks and Ferruginous Hawks (*Buteo regalis*) most numerous during the winter, and Golden Eagles and Red-tailed Hawks common during the spring and summer. Mammals range in size from Deer Mice and Meadow Voles, to Desert Cottontails, and Mule Deer. The most common predator is the Coyote.

The entire Quadrant is potential foraging habitat for the Peregrine Falcons which nest in the nearby Flatirons, and for Bald Eagles which winter in the area. These endangered species are protected under the Endangered Species Act of 1973, and should



be treated accordingly. Ecology Procedure 1-D06-EPR-END.03 "Identification and Protection of Threatened, Endangered, and Special-Concern Species" provides specific protection procedures.

Surface Waters: The Church Ditch flows east northeast across the northern portion of the quadrant. McKay Ditch and the McKay Bypass Canal flow east northeast through the middle of the quadrant. Dry Creek flows east from the landfill pond in the south end of the quadrant. Three small unnamed tributaries join Dry Creek as it flows east. Two unnamed tributaries flow off the flats in the northeast corner and down the hillside and joins with McKay Ditch in quadrant NE 1.

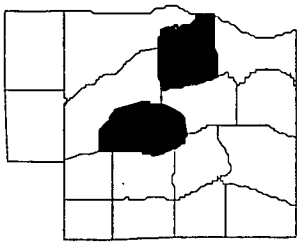
Jurisdictional Wetlands: Refer to the Wetlands map for specific wetland locations.

Floodplain: There is an area of 100-year floodplain surrounding the McKay ditch as it flows through the central portion of the quadrant, and Rock Creek as it flows through the northern portion of the quadrant. Maps depicting the 100-year floodplain for the major surface water drainages at the Site have been produced by the USACOE, and are available from the Ecology and Watershed Management Division. Additional information, including water surface profiles for the 10-, 50-, 100-, and 500-year flood events is available in the USACOE, report "Floodplain Delineation - Hydrologic Analysis."

Soil: The majority of soils in this quadrant are fine-textured soils of the great group Argiustolls, which are mostly clay loams associated with hill and valley slopes. Argiustolls are generally characterized by high shrink-swell potential, slow permeability, and moderate erosion potential.

Clayey-skeletal Paleustolls, which are very cobbly clay loams located on pediment surfaces, are present along the southern border and in the north-western corner of the quadrant. Paleustolls are generally characterized by moderate shrink-swell potential, slow permeability, and slight erosion potential.

Surface Geology: An outcrop of Rocky Flats Alluvium comprises approximately 75 percent of the surface geology. The "flats" along the western edge of the quadrant constitute the area covered by the Alluvium. The hillsides on the eastern half of the quadrant are a mix of the Arapahoe and Laramie Formation with Arapahoe near the tops of the hillsides and the Laramie near the bottom. The combination



of these two formations account for the remaining 25 percent of the surface geology in the quadrant.

Rocky Flats Alluvium is composed of poorly sorted, angular to rounded, coarse gravel, sand, and gravelly clays. The Arapahoe formation is approximately 150 feet thick in the central portion of the Site and consists mainly of claystones and silty claystones with at least five sandstone intervals in the upper portion of the formation. The upper unit of the Laramie Formation is approximately 500 feet thick and composed of claystone. The claystone is light to medium gray and kaolinitic.

Utilities: Two aboveground PSC power lines cross the quadrant, one running northeast-southwest across the southeast corner of the quadrant and the other running northwest-southeast across the northeast corner.

Archaeology: None.

Future Plans: None.

Mineral Rights: Tract 31 - N 1/2, NE 1/4, SE 1/4, and the NW 1/4, SW 1/4 Section 2 - 352.46 acres. The Union Pacific Railroad owns coal rights. Proprietor of vein or lode to extract and remove ore, should it penetrate or intersect. Coal, gas, oil and other minerals reserved by A. M. Patten and granted by A. M. Patten to A. Reamer Patten, Margaret Musgrove, and Ivan M. Patten.

Adjoining Lands: The quadrant is adjoined by the Site Buffer Zone on the south, east, and west sides. The land north of Colorado 128 is currently pasture land.

Contamination Profile

Soil Sites: 1-036, 1-018, and 2-018

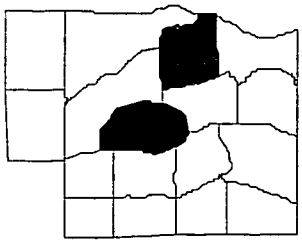
Sediment Sites: Refer to the Sediment Sampling Locations map.

Surface Water: Refer to the Surface Water Sampling Locations map.

Groundwater Wells: Refer to the Groundwater Monitoring Well Location Map.

IHSS: Refer to the Individual Hazardous Substance Sites by Operable Unit map.

Comments: Soil sampling, sediment sites, surface water and groundwater well data is currently accessible through RFEDS.



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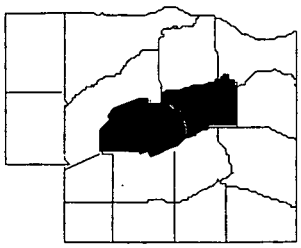


Quadrant: NE 3

Boundaries:

North - Road running east northeast along the top of the ridge north of the Walnut Creek drainage. The road curves south at Pond A-4 forming the northeast corner of the quadrant.
South - Inner security fence and Site East Access Road.
East - Line running north-south from the east side of Pond A-4 dam to the east Site Access Road.
West - Inner security fence and a line running north-south just east of the landfill pond.

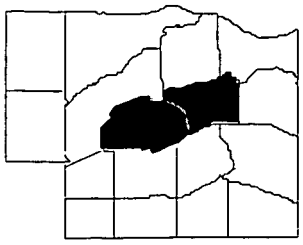
Vegetation:

Quadrant northeast 3 is primarily classified as Mesic Mixed Grassland, with small areas of Xeric Mixed Grassland and Reclaimed Grassland also present. Areas of Marsh are present along Walnut Creek as it flows through the northern portion of the quadrant. The dominant species of vegetation in the quadrant are: Western Wheatgrass, Blue Grama Grass, Kentucky Bluegrass, Canada Bluegrass, and Cheatgrass on the hillsides. On the ridgetops, Needle and Thread Grass, Big Bluestem, and Yucca dominate. The areas of reclaimed grassland are mostly Smooth Brome. A few Cottonwood trees and Willows are found in the creek bottoms.

Wildlife Habitat:

The major wildlife habitats consist of areas of Mesic Mixed Grassland on the hill slopes, native Xeric Mixed Grassland on the ridgetops, the riparian woodland complex made up of Deciduous Woodlands and Bottomland Shrublands in the creek bottom of upper Walnut Creek, Tall Marsh between the A- and B-Series detention ponds and along pond margins, and the open water of the ponds.

The native grass and forb species in the grasslands in this Quadrant provide habitat for arthropods, reptiles, amphibians, mammals, and birds. Arthropod taxa throughout the Site are numerous and diverse. Reptiles are represented by the more common snake species such as the Bull Snake, Racer, and Prairie Rattlesnake. It is in the dry Xeric Mixed Grasslands of the ridgetops, a habitat dominated by mid-grasses, bunchgrasses, and numerous forb species, that Eastern Short Horned Lizard, a federal candidate species is found. Common grassland songbirds include Western Meadowlarks, Vesper Sparrows, House Finches, and Grasshopper Sparrows. Birds-of-prey change with the season, with Rough-legged and Ferruginous Hawks most numerous during the winter, and Golden Eagles, Red-tailed Hawks, and Swainson's Hawks common during the spring and summer. Mammals range in size from Deer Mice, Prairie Voles, and Meadow Voles to Desert



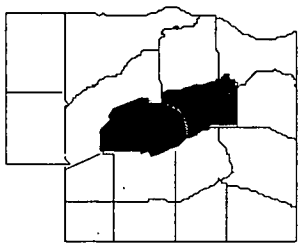
Cottontail and Mule Deer. The most common predator is the Coyote.

The Deciduous Woodland and Bottomland Shrubland mosaic supports numerous species of arthropods. Reptiles include Bull Snakes, Wandering Garter Snakes, Red-sided Garter Snake, Prairie Rattlesnake, and Racer. Songbirds include the grasslands species listed above and Red-winged Blackbirds, Northern Orioles, Song Sparrows, Yellow Warblers, American Goldfinches, and other woodland species. Red-tailed Hawks, and Great Horned Owls use the large trees of the woodland. Swainson's Hawks have nested in the large Cottonwood trees of upper Walnut Creek in recent years. The small mammal population made up largely of Deer Mice and Meadow Voles. The Preble's Meadow Jumping Mouse, a federal candidate species, also inhabits this area. This habitat provides abundant foraging habitat for Raccoons and Coyotes. Mule Deer shelter and feed in the shrublands and woodlands.

The Tall Marsh, predominantly cattails and associated open water areas of the ponds provide a productive habitat for arthropods and species from many other groups. Reptiles are represented by the Bull Snake, Prairie Rattlesnake, and Western Painted Turtle. Songbirds include Red-winged Blackbirds, Common Yellowthroats, Cliff Swallows, Barn Swallows, and Song Sparrows, as well as many of the grasslands birds depending on the season. Numerous waterfowl species use the ponds as foraging and breeding habitat. The most common waterfowl are the Mallard, Blue-winged teal, Double-crested Cormorant (*Phalacrocorax auritus*), and Canada Goose (*Branta canadensis*). Great Blue Herons commonly hunt the pond margins. Red-tailed Hawks and Great Horned Owls frequent the area during hunting forays. Mammals are represented by Deer Mice, Meadow Voles, and Muskrats. The Preble's Meadow Jumping Mouse is found along the pond margins of some ponds. The woodlands and shrublands along the creek and around the ponds also provides habitat for Mule Deer, Raccoons, Long-tailed Weasels and Coyotes. The detention ponds support a variety of aquatic wildlife.

A large variety of aquatic insects, crawfish, snails, minnow species, and aquatic plants supports waterfowl, turtles, and larger fish.

The entire Quadrant is potential foraging habitat for the Peregrine Falcons which nest in the nearby Flatirons, and for Bald Eagles which winter in the area. Peregrine Falcons have been



observed attempting to capture prey around the detention ponds in this Quadrant. These endangered species are protected under the Endangered Species Act of 1973, and should be treated accordingly. Ecology Procedure 1-D06-EPR-END.03 "Identification and Protection of Threatened, Endangered, and Special-Concern Species" provides specific protection procedures.

Surface Waters: Two main drainages exist across the quadrant to the northeast. North Walnut Creek flows around Ponds A-1 and A-2 into Pond A-3. Pond A-4 dam is in the eastern edge of the quadrant. The second drainage is formed by South Walnut Creek. The northern most branch flows from the Protected Area around Ponds B-1, B-2 and B-3 into B-4 and then into B-5. Two other tributary drainages enter the northern branch of South Walnut Creek between Ponds B-4 and B-5.

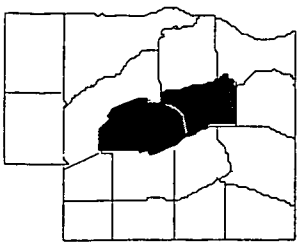
Stream flow through both the A-series and B-series ponds is controlled by the Site. The main purpose of the ponds is to serve as catching basins for accidental releases of material from the Site. The watershed of North and South Walnut Creek drainages encompasses the majority of the developed Site.

Jurisdictional Wetlands: Refer to the Wetlands map for specific wetland locations.

Floodplain: There is an area of 100-year floodplain surrounding Walnut Creek, Walnut Creek Tributary B, and the A and B-series ponds as they flow through the center portion of the quadrant. Maps depicting the 100-year floodplain for the major surface water drainages at the Site have been produced by the USACOE, and are available from the Ecology and Watershed Management Division. Additional information, including water surface profiles for the 10-, 50-, 100-, and 500-year flood events is available in the USACOE report, "Floodplain Delineation - Hydrologic Analysis."

Soil: The majority of soils in this quadrant are fine-textured soils of the great group Argiustolls, which are mostly clay loams associated with hill and valley slopes. Argiustolls are generally characterized by high shrink-swell potential, slow permeability, and moderate erosion potential.

Clayey-skeletal Paleustolls, which are very cobbly clay loams located on pediment surfaces, are mostly located along the northern and southern borders of the quadrant. Paleustolls are generally characterized by moderate shrink-swell potential, slow permeability, and slight erosion potential.



In addition, there is a band of Torrifluvents in the northern portion of the quadrant along the A series Ponds and associated drainages. Torrifluvents are mostly stratified clay loams and gravelly loams formed by fluvial processes along drainage bottoms, and they are generally characterized by low shrink-swell potential, moderately slow permeability, and slight-to-moderate erosion potential.

Surface Geology: An outcrop of Rocky Flats Alluvium comprises approximately 30 percent of the surface geology. The "flats" along the southern and northern edges of the quadrant constitute the areas covered by the quadrant. The hillsides along North and South Walnut Creek are a mix of the Arapahoe and Laramie Formations with Arapahoe near the tops of the hillsides and the Laramie near the bottom and under the ponds. The combination of these two formations account for the remaining 70 percent of the surface in the quadrant.

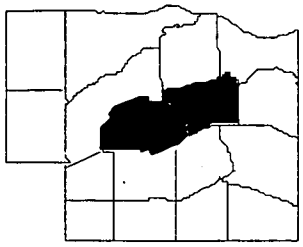
Rocky Flats Alluvium is composed of poorly sorted, angular to rounded, coarse gravel, sand, and gravelly clays. The Arapahoe formation is approximately 150 feet thick in the central portion of the Site and consists mainly of claystones and silty claystones with at least five sandstone intervals in the upper portion of the formation. The upper unit of the Laramie Formation is approximately 500 feet thick and composed of claystone. The claystone is light to medium gray and kaolinitic.

Utilities: An aboveground PSC power line runs north-south along the eastern edge of the quadrant. A 12-inch natural gas line owned by Coors Energy Company runs north-south across the eastern edge of the quadrant. A buried conduit runs east-west just north of the East Access Road. This conduit contains a 2-inch water line, an alarm line, telephone lines, and a 13.8 KV electrical line. All of these utilities serve the east security guard post. A buried fiber optic line follows this conduit east to Indiana Street (Jefferson County 17).

Archaeology: None.

Future Plans: Remediation of the Walnut Creek drainage in accordance with plans to remediate OU 6.

Mineral Rights: Tract 30 - SW corner of Section 1 - 27.61 acres. The Union Pacific Railroad owns coal rights. Reservation of coal, iron, and mineral rights and 1/2 of oil and gas with right of ingress and



egress for gas and oil production, including coal, iron and other minerals to Andrew M. Patten.

Contamination Profile:

Soil Sites: 1-054 and 1-072

Sediment Sites: Refer to the Sediment Sampling Locations map.

Surface Water: Refer to the Surface Water Sampling Locations map.

Groundwater Wells: Refer to the Groundwater Monitoring Well Location Map.

IHSS: Refer to the Individual Hazardous Substance Sites by Operable Unit map.

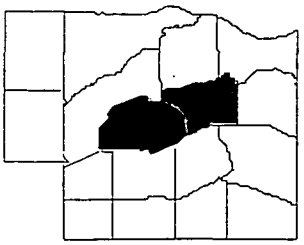
Comments: IHSS Nos. 110 , 111.1, 111.7, and 111.8 are trenches that were in service from 1954 to 1968 for the disposal of sanitary sewer sludge and flattened drums contaminated with uranium and plutonium. The concentrations of radioactivity in the sludge range from 8.4×10^5 dpm/kg to 7.9×10^6 dpm/kg. The plutonium concentrations in IHSS 111.8 range from 4.5 to 50 pCi/g, and the concentration of uranium-238 is present at 0.9 to 158 pCi/g.

IHSS 141 is a sludge dispersal area. The area is contaminated with radioactive sanitary sewer sludge from the Site sanitary treatment plant. IHSS Nos. 142.1 - 142.9 are the A and B series detention ponds. The ponds may be contaminated with nitrates, plutonium, and uranium from the Site.

IHSS 156.2 is a soil dump that may have been used for disposing of plutonium-contaminated soil collected near Building 774.

IHSS 216.1 was opened in 1989 because the spray irrigation areas were smaller than necessary to prevent all offsite discharge of water. Water from Pond B-3, which receives treated sanitary wastewater flows, was applied to this spray field. Use of this field stopped shortly after it opened due to excessive runoff problems.

IHSS 216.2 is the Center Area of the East Spray Fields. The Center Area operated from 1979 to the early 1980s. The area was closed due to erosion and soil slipping problems on the hillside to the south of the field.



Surface water site GS09, located at the Pond B-4 outfall on South Walnut Creek, recorded the following flows during the 1994 water year:

Average Spring Flow: 0.50 cubic feet per second (cfs)
Average Summer Flow: 0.30 cfs
Average Winter/Fall Flow: 0.30 cfs

Surface water site GS10, located upstream of the Pond B-1 bypass on South Walnut Creek, recorded the following flows during the 1994 water year:

Average Spring Flow: 0.18 cfs
Average Summer Flow: 0.07 cfs
Average Winter/Fall Flow: 0.05 cfs

Surface water site GS11, located at the Pond A-4 outfall on Walnut Creek, recorded the following flows during the 1994 water year:

Average Spring Flow: 0.51 cfs
Average Summer Flow: 0.38 cfs
Average Winter/Fall Flow: 0.38 cfs

Surface water site GS12, located at the Pond A-3 oufall on North Walnut Creek, recorded the following flows during the 1994 water year:

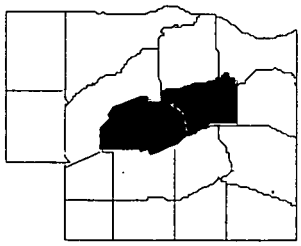
Average Spring Flow: 0.28 cfs
Average Summer Flow: 0.11 cfs
Average Winter/Fall Flow: 0.08 cfs

Surface water sites GS13 and SW093, located upstream from the Pond A-1 bypass on North Walnut Creek, recorded the following flows during the 1994 water year:

Average Spring Flow: 0.28 cfs
Average Summer Flow: 0.05 cfs
Average Winter/Fall Flow: 0.13 cfs

The flow data listed above for, GS09, GS10, and GS13 should be used with the qualification that the flows were computed using theoretical ratings for weirs and culverts which are suspected of providing data that are +/- 20% in error.

Soil sampling, sediment sites and groundwater well data are currently accessible through RFEDS.

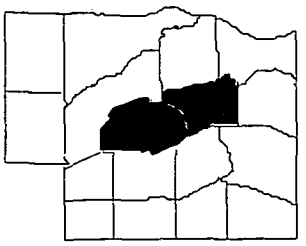


Other:

A CDPHE Air Sampling Station is located in the quadrant. The sampling platform is located just northeast of the unused security guard post (900), in the southwest corner of the quadrant.

The GWEN tower is located in the southeast corner of the quadrant. This tower is part of the national emergency communications system maintained and operated by the United States Air Force and is not related to the Site or its operations. The land immediately surrounding the tower is an easement maintained by the U. S. Air Force.

Several granulated activated carbon (GAC) units and support buildings are located along the western edge of the quadrant north of the east access road. These GAC units are the Operable Unit 2 treatability units. Other buildings support personnel and equipment associated with operation of the units.



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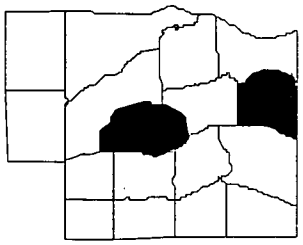


Quadrant: NE 4

Boundaries:

North - Road running east northeast from the south end of Pond A-4 dam along Walnut Creek to Indiana Street (Jefferson County 17).
South - East Site Access Road.
East - Indiana Street (Jefferson County 17).
West - Line running north-south from the east side of Pond A-4 dam to the Site East Access Road.

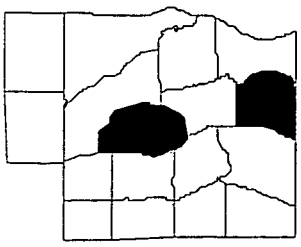
Vegetation:

Quadrant northeast 4 is primarily classified as Mesic Mixed Grassland, with an area of Xeric Mixed Grassland on the ridgetop in the southern portion of the quadrant. Areas of Short Upland Shrub, Bottomland Shrub, and Riparian Woodland, intermixed with areas of Marsh, are present along Walnut Creek as it flows through the northern portion of the quadrant. An area of Reclaimed Grassland exists in the southeastern corner of the quadrant north of the east security guard post. The dominant species of vegetation in the quadrant are: Western Wheatgrass, Blue Grama Grass, Kentucky Bluegrass, and Cheatgrass on the hillsides. Needle and Thread Grass, New Mexico Feather Grass (*Stipa neomexicana*), Canada Bluegrass, and Yucca are common on the ridgetops. Along the creek, Cottonwood trees, Willow, Snowberry, and Rushes, are present.

Wildlife Habitat:

The largest extent of wildlife habitat in this Quadrant consists of Mesic Mixed Grassland on the hill slopes, and Xeric Mixed Grassland on the ridgetops. Smaller areas are occupied by Tall Upland Shrubland just below the south escarpment of Walnut Creek, and the riparian woodland complex consisting of Deciduous Woodland and Bottomland Shrubland along lower Walnut Creek.

The native grass and forb species in the grasslands in this Quadrant provide habitat for arthropods, reptiles, amphibians, mammals, and birds. Arthropod taxa throughout the Site are numerous and diverse. Reptiles are represented by the more common snake species such as the Bull Snake, Racer, and Prairie Rattlesnake. It is in the Xeric Mixed Grasslands of the ridgetops that Eastern Short Horned Lizard, a federal candidate species is found. Common grassland songbirds include Western Meadowlarks, Vesper Sparrows, House Finches, and Grasshopper Sparrows. Birds-of-prey change with the season, with Rough-legged and Ferruginous Hawks most numerous during the winter, and Golden Eagles, Red-tailed Hawks, and Swainson's Hawks common during the spring and summer. A Burrowing Owl, a federal candidate species, has been recorded

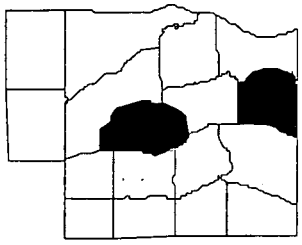


at the Black-tailed Prairie Dog colony around the U. S. Air Force radio tower within this Quadrant. Mammals range in size from Deer Mice, Prairie Voles (more common in the Xeric Mixed Grasslands), and Meadow Voles to Desert Cottontail and Mule Deer. The most common predators are Coyotes; however, Badgers (*Taxidea taxus*) are also known to occur.

Tall Upland Shrubland is dominated by Chokecherry (*Prunus virginiana*) and Hawthorn (*Crataegus erythropoda*) with an understory of numerous forbs and grasses representative of the montane areas to the west of the Site. The wildlife occupying the niches provided by this habitat reflect the montane conditions as well as the prairie-grassland habitat surrounding the shrublands. Arthropod species are too numerous to discuss in detail. Reptiles include Bull Snakes, Wandering Garter Snakes, Red-sided Garter Snakes, Prairie Rattlesnake, and Racer. Green-tailed Towhees (*Pipilo chlorurus*), Rufous-sided Towhees (*Pipilo erythrophthalmus*), Black-capped Chickadees (*Parus atricapillus*), Song Sparrows, and American Robins (*Turdus migratorius*) are typical Tall Upland Shrubland songbirds. The majority of grasslands birds already discussed also use the edge habitats provided by the shrublands, and Red-winged Blackbirds use the shrubs adjacent to marshlands for foraging, nesting, and perching habitat. Great Horned Owls frequently roost in this habitat as well.

The Deciduous Woodland and Bottomland Shrubland mosaic supports numerous species of arthropods. Reptiles include Bull Snakes, Wandering Garter Snakes, Red-sided Garter Snake, and Racer. Songbirds include the grasslands species listed above and Red-winged Blackbirds, Northern Orioles, Yellow Warblers, Song Sparrows, American Goldfinches, and other woodland species. Mallards frequent the Walnut Creek stream pools, and Red-tailed Hawks, and Great Horned Owls use the large trees of the woodland. Great Horned Owl nests are frequently recorded in the Cottonwood trees of lower Walnut Creek. The small mammal population made up largely of Deer Mice and Meadow Voles provides forage for Coyotes. The Preble's Meadow Jumping Mouse, a federal candidate species, also inhabits this area. Mule Deer shelter in the shrublands and woodlands.

The entire Quadrant is potential foraging habitat for the Peregrine Falcons which nest in the nearby Flatirons, and for Bald Eagles which winter in the area. These endangered species are protected under the Endangered Species Act of 1973, and should be treated accordingly. Ecology Procedure 1-D06-EPR-END.03



"Identification and Protection of Threatened, Endangered, and Special-Concern Species" provides specific protection procedures.

Surface Waters: Two unnamed drainages flow out of seeps on the east facing hillsides in the middle of the quadrant. The seep forms a gulch that flows east under Indiana Street (Jefferson County 17) and into the Broomfield Diversion Ditch. South Walnut Creek flows northeast across the northwest corner of the quadrant.

Jurisdictional Wetlands: Refer to the Wetlands map for specific wetland locations.

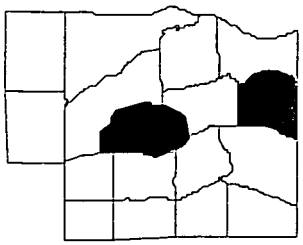
Floodplain: There is a small area of 100-year floodplain that surrounds Walnut Creek Tributary B as it flows through the northwest corner of the quadrant. Maps depicting the 100-year floodplain for the major surface water drainages at the Site have been produced by the USACOE, and are available from the Ecology and Watershed Management Division. Additional information, including water surface profiles for the 10-, 50-, 100-, and 500-year flood events is available in the USACOE report, "Floodplain Delineation - Hydrologic Analysis."

Soil: Most of the soils in this quadrant are fine-textured soils of the great group Argiustolls, which are mostly clay loams associated with hill and valley slopes. Argiustolls are generally characterized by high shrink-swell potential, slow permeability, and moderate erosion potential.

Clayey-skeletal Paleustolls, which are very cobbly clay loams located on pediment surfaces, are mostly located south-western corner of the quadrant. Paleustolls are generally characterized by moderate shrink-swell potential, slow permeability, and slight erosion potential.

There is a small area of Torrifluvents in the northern portion of the quadrant along Walnut Creek. Torrifluvents are mostly stratified clay loams and gravelly loams formed by fluvial processes along drainage bottoms, and they are generally characterized by low shrink-swell potential, moderately slow permeability, and slight-to-moderate erosion potential.

In addition, there is a area of Torriorthents in the central portion of the quadrant. Torriorthents are poorly developed soils with the claystone bedrock exposed, or very near the surface, and they are generally characterized by high shrink-swell potential, slow permeability, and severe erosion potential.



Surface Geology: An outcrop of the Arapahoe Formation comprises approximately 75 percent of the surface geology. The area covered by the Arapahoe Formation is located on the hillside and "flats" located in the eastern half of the quadrant. The hillside in the northern end of the quadrant is an outcrop of the Laramie Formation. This formation covers approximately 10 percent of the quadrant. The remaining 15 percent of the quadrant is covered by an outcrop of Rocky Flats Alluvium. The outcrop is found at the southwestern end of the quadrant on the "flats" that head west to the main facility.

The Arapahoe formation is approximately 150 feet thick in the central portion of the Site and consists mainly of claystones and silty claystones with at least five sandstone intervals in the upper portion of the formation. The upper unit of the Laramie Formation is approximately 500 feet thick and composed of claystone. The claystone is light to medium gray and kaolinitic. Rocky Flats Alluvium is composed of poorly sorted, angular to rounded, coarse gravel, sand, and gravelly clays.

Utilities: A buried conduit runs east-west just north of the east access road. This conduit contains a 2-inch water line, an alarm line, telephone lines, and a 13.8 KV electrical line. These utilities serve the east security guard post. A buried fiber optic line follows this conduit east to Indiana Street (Jefferson County 17) were it turns north and runs along Indiana Street and the eastern border of the quadrant. Aboveground PSC power lines run NS the full length of the quadrant along Indiana Street (Jefferson County 17).

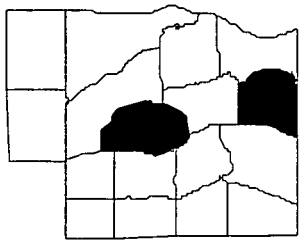
Archaeology: None.

Future Plans: Remediation of the Walnut Creek drainage in accordance with plans to remediate OU 6.

Mineral Rights: Tract 29 - the majority of Section 1 - 446.36 acres. The Union Pacific Railroad owns coal rights.

Tract 30 - the western edge of Section 29 and 12 - 27.61 acres. The Union Pacific Railroad owns coal rights. Reservation of coal, iron, and mineral rights and 1/2 of oil and gas with right of ingress and egress for gas and oil production, including coal, iron and other minerals to Andrew M. Patten.

Tract 43 - E 1/2 northwest 1/4 Section 12 - 150.76 acres. Grantor has oil and gas. Union Pacific Railroad owns coal rights.



Tract 42 - northeast 1/4 Section 12 - 160 acres. Mineral interests reserved to grantor. Right of proprietor of a vein or lode to remove his ore therefrom, should the same be found to penetrate or intersect premises hereby said.

Adjoining Lands: The quadrant is surrounded by the Site Buffer Zone on the north, south, and west sides. The land across Indiana Street (Jefferson County 17) east is zoned as Jefferson County Parks and Open Space. It is currently vacant and unused.

Contamination Profile:

Soil Sites: 2-072 and 2-090

Sediment Sites: Refer to the Sediment Sampling Locations map.

Surface Water: Refer to the Surface Water Sampling Locations map.

Groundwater Wells: Refer to the Groundwater Monitoring Well Location Map.

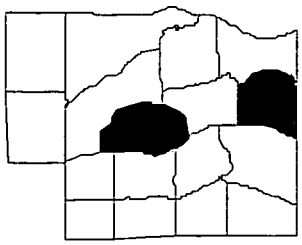
IHSS: Refer to the Individual Hazardous Substance Sites by Operable Unit map.

Comments: Surface water site GS03, located on Walnut Creek where it flows under Indiana Street, registered the following flows during the 1994 water year:

Average Spring Flow: 0.82 cubic feet per second (cfs)
Average Summer Flow: 0.32 cfs
Average Winter/Fall Flow: 0.37 cfs

The flow data listed above should be used as analytical data with a +/- 10 % error.

Soil sampling, sediment sites, and groundwater well data is currently accessible through RFEDS.



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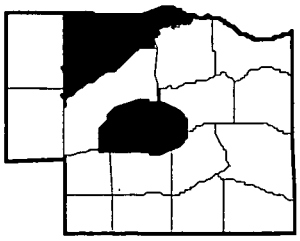


Quadrant: NW 1

Boundaries:

North - Site Buffer Zone north perimeter fence and Colorado Route 128.
South - Road running northeast along the top of the ridge to the south of the Rock Creek drainage. Boundary continues east along the road following the old north Buffer Zone boundary fence. Boundary follows this road for approximately 1,125 feet before turning north to form the eastern boundary.
East - Line continuing due north from the end of the southern border to the edge of the ridge located south of the Rock Creek drainage. Boundary line contours to the east along the top of this ridge until the ridge is intersected by Colorado 128.
West - Road running north along the old Buffer Zone boundary fence. Where the road turns to the east, the boundary line continues north to Colorado 128.

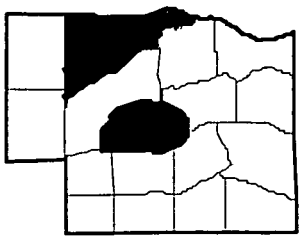
Vegetation:

Quadrant northwest 1 is classified as Xeric Mixed Grassland and Mesic Mixed Grassland, with areas of Riparian Woodland, Ponderosa Pine Woodland, Tall and Short Upland Shrub, and Marsh present along Rock Creek as it flows through the northern portion of the quadrant. The vegetation is considered to be unimpacted by Site operations and is used for baseline studies of native vegetation and habitat. The dominant species of vegetation in the quadrant are: Little Bluestem, Big Bluestem, Mountain Muhly (*Muhelbergia montana*), Needle and Thread Grass, and Sedge on the pediment and ridgetops; and Western Wheatgrass, Blue Grama Grass, Kentucky Bluegrass, Canada Bluegrass, and Cheatgrass on the hillsides. Willow, Chokecherry, Hawthorne, Aromatic Sumac (*Rhus aromatica* var. *trilobata*), and Cottonwood trees are common in the valley bottoms and north facing slopes.

Wildlife Habitat:

The wildlife habitats in this Quadrant are quite diverse, consisting of areas of Mesic Mixed Grassland, Xeric Mixed Grassland, Tall Upland Shrubland, Deciduous Woodland, Bottomland Shrubland, Ponderosa Woodland, Short Upland Shrubland, Tall Marsh, Short Marsh, and Wet Meadow.

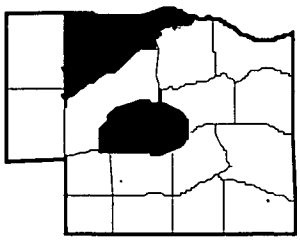
The grasslands, as previously discussed are on the ridgetops and hill slopes. Tall Upland Shrublands occur just below the escarpments, where the numerous seep-springs emerge. Short Upland Shrublands, dominated by Snowberry occur just above the creek channels, and on hill slopes where the soil moisture is high. Ponderosa Woodland takes the form of individual Ponderosa Pine (*Pinus ponderosa*) trees or small groups of trees on the xeric ridgetops. Tall Marsh (cattails) and Short Marsh,



dominated by rushes and sedges occupy the edges and drainage areas of seep-springs, stream channels, and ponds. Deciduous Woodland and Bottomland Shrubland typically forms the riparian woodland complex along the creekbottoms. Wet Meadow, typically moisture-tolerant grasses and sedges, surrounds the edges of the wetter habitats.

The native grass and forb species in the grasslands in this Quadrant provide habitat for arthropods, reptiles, amphibians, mammals, and birds. Arthropod taxa throughout the Site are numerous and diverse. Reptiles are represented by the more common snake species such as the Bull Snake, Racer, and Prairie Rattlesnake. It is in the Xeric Mixed Grasslands of the ridgetops that Eastern Short Horned Lizard, a federal candidate species is found. Common grassland songbirds include Western Meadowlarks, Vesper Sparrows, House Finches, and Grasshopper Sparrows. Birds-of-prey change with the season, with Rough-legged Hawks most numerous during the winter, and Red-tailed Hawks and Swainson's Hawks common during the spring and summer. Mammals range in size from Deer Mice, Prairie Voles, and Meadow Voles to Desert Cottontail and Mule Deer. The most common predator is the Coyote.

Tall Upland Shrubland is dominated by Chokecherry and Hawthorn with an understory of numerous forbs and grasses representative of the montane areas to the west of the Site. The wildlife occupying the niches provided by this habitat reflect the montane conditions as well as the prairie-grassland habitat surrounding the shrublands. Arthropod species are too numerous to discuss in detail. Reptiles include Bull Snakes, Wandering Garter Snakes, Red-sided Garter Snakes, Prairie Rattlesnake, and Racer. Green-tailed Towhees, Rufous-sided Towhees, Black-capped Chickadees, Song Sparrows, and American Robins are typical Tall Upland Shrubland songbirds. Bird species rare to the vicinity, such as the Blue-gray Gnatcatcher (*Poplioptila caerulera*) and Chestnut-sided Warbler (*Dendrioca pensylvanica*) are typically recorded in the Tall Upland Shrublands of this Quadrant as well. Black-billed Magpies (*Pica pica*) are common in the Rock Creek shrublands. The majority of grasslands birds already discussed also use the edge habitats provided by the shrublands, and Red-winged Blackbirds use the shrubs adjacent to marshlands for foraging, nesting, and perching habitat. Great Horned Owls frequently roost in this habitat. Other owl species such as the Short-eared Owl (*Asio flammeus*) frequent the area seasonally as well. Mammals include the Deer Mouse, Meadow Vole, Mexican Wood Rat (*Neotoma mexicana*), Northern Pocket Gopher

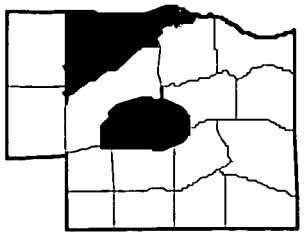


(*Thomomys talpoides*), and Porcupine (*Erethizon dorsatum*). A large population of the federal candidate species, Preble's Meadow Jumping Mouse is known to occur in this habitat and adjacent bottomland areas within this Quadrant. Predators typically include the Coyote, Long-tailed Weasel, Bobcat (*Lynx rufus*), and Raccoon. The dense cover of this habitat provides critical winter shelter as well as fawning cover for Mule Deer. Elk (*Cervus elaphas*) and White-tailed Deer have also been recorded here.

Short Upland Shrublands are generally found as small inclusions within Mesic Mixed Grasslands, Tall Upland Shrublands, and the riparian woodland complex. Species found in this habitat are largely the species found within the adjacent larger habitat areas.

The Deciduous Woodland and Bottomland Shrubland mosaic supports a variety of wildlife species. Reptiles include Bull Snakes, Wandering Garter Snakes, Red-sided Garter Snake, and Racer. Songbirds include the grasslands species listed above and Red-winged Blackbirds, Northern Orioles, Yellow Warblers, Song Sparrows, American Goldfinches, Rufous-sided Towhees, and other woodland/shrubland species. Red-tailed Hawks, Rough-legged Hawks, and Great Horned Owls use the large trees of the woodlands. Great Horned Owl and Red-tailed Hawk nests have been recorded along Rock Creek. The small mammal population made up largely of Deer Mice and Meadow Voles provides forage for Coyotes. The Preble's Meadow Jumping Mouse, a federal candidate species, also inhabits this habitat in lower Rock Creek. Mule Deer shelter and feed in the shrublands and woodlands.

The Tall Marsh and Short Marsh habitats and associated open water areas of ponds and pools provide a productive habitat for arthropods and species from many other groups. Reptiles are represented by the Bull Snake, Prairie Rattlesnake, and Western Painted Turtle. Songbirds include Red-winged Blackbirds, Common Yellowthroats, Cliff Swallows, Barn Swallows, and Song Sparrows, as well as many of the grasslands birds depending on the season. Numerous waterfowl species use the ponds as foraging and breeding habitat. The most common waterfowl are the Mallard, Blue-winged Teal, and Great Blue Herons. Red-tailed Hawks, Northern Harriers, and Great Horned Owls frequent the area during hunting forays. Mammals are represented by Deer Mice, Meadow Voles, and Muskrats. These habitats also provide food and shelter for Mule Deer, Raccoons, Long-tailed Weasels, and Coyotes.



Wet Meadow habitats are immediately adjacent to the marshes and other wetland classifications. This habitat shares wetlands species with the other habitats.

The Rock Creek drainage within this Quadrant contains the most diverse collection of habitats at the Site. This nearly pristine and virtually undisturbed area in the Buffer Zone offers unique ecological niches, and important escape areas for wildlife. The species wildlife diversity found in this area is a direct reflection of the quality habitat available here.

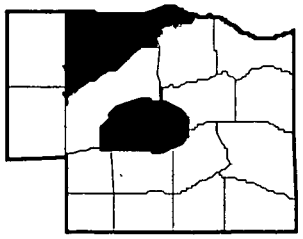
The open water habitats of Rock Creek include small stock ponds, flowing water channels, small pools within the creek channels, and riffle areas with permanent water. These open water habitats support a variety of aquatic wildlife from invertebrates to fish to several species of waterfowl.

The entire Quadrant is potential foraging habitat for the Peregrine Falcons which nest in the nearby Flatirons, and for Bald Eagles which winter in the area. These endangered species are protected under the Endangered Species Act of 1973, and should be treated accordingly. Ecology Procedure 1-D06-EPR-END.03 "Identification and Protection of Threatened, Endangered, and Special-Concern Species" provides specific protection procedures.

Surface Waters: The quadrant encompasses most of the Rock Creek drainage. The creek and five tributaries (A, B, C, D, F) flow from hillsides northeast through the quadrant. Several small ponds exist along the tributaries. Two small seeps are found in the far northeast corner of the quadrant on the hillside facing Colorado 128. The Rock Creek drainage is considered to be unaffected by the Site operation and is therefore used for background testing of aquatic environments.

Jurisdictional Wetlands: Refer to the Wetlands map for specific wetland locations.

Floodplain: There is an area of 100-year floodplain that surrounds Rock Creek and Rock Creek Tributaries A, B, C, D, and F as they flow through the quadrant. Maps depicting the 100-year floodplain for the major surface water drainages at the Site have been produced by the USACOE, and are available from the Ecology and Watershed Management Division. Additional information, including water surface profiles for the 10-, 50-, 100-, and 500-year flood events is available in the USACOE report, "Floodplain Delineation - Hydrologic Analysis."



Soil:

The majority of soils in this quadrant are fine-textured soils of the great group Argiustolls, which are mostly clay loams associated with hill and valley slopes. Argiustolls are generally characterized by high shrink-swell potential, slow permeability, and moderate erosion potential.

There are two bands of Torrifluvents in the quadrant along Rock Creek. They are mostly stratified clay loams and gravelly loams formed by fluvial processes along drainage bottoms, and are generally characterized by low shrink-swell potential, moderately slow permeability, and slight-to-moderate erosion potential.

In addition, there are several areas of clayey-skeletal Paleustolls, which are very cobbly clay loams located on pediment surfaces, along the western boundary of the quadrant. Paleustolls are generally characterized by moderate shrink-swell potential, slow permeability, and slight erosion potential.

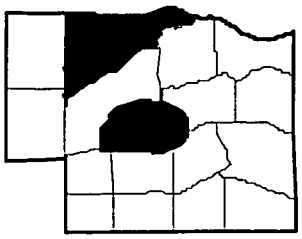
Surface Geology:

An outcrop of Rocky Flats Alluvium covers approximately 30 percent of the surface geology. The "flats" along the western edge of the quadrant constitute the area covered by the Alluvium. The hillsides along the rock Creek drainage are a mix of the Arapahoe and Laramie formations with Arapahoe near the tops of the hillsides, and the Laramie near the bottom. The bottom land in the Rock Creek drainage is covered by the Laramie Formation exclusively. This outcrop of the Laramie Formation accounts for approximately 60 percent of the surface geology in the quadrant. The remaining 10 percent is the mix of the Arapahoe and Laramie Formations found on the hillsides in the quadrant.

Rocky Flats Alluvium is composed of poorly sorted, angular to rounded, coarse gravel, sand, and gravelly clays. The Arapahoe formation is approximately 150 feet thick in the central portion of the Site and consists mainly of claystones and silty claystones with at least five sandstone intervals in the upper portion of the formation. The upper unit of the Laramie Formation is approximately 500 feet thick and composed of claystone. The claystone is light to medium gray and kaolinitic.

Utilities:

An aboveground telephone line runs north northwest across the western half of the quadrant. This line runs from the main facility towards the NREL Wind Energy Test Center where it turns due west toward Colorado 93.



Archaeology:

Twelve archeological sites are found in this quadrant: 5JF217 - Stone Alignments, 5JF480 - Horseshoe Fragment (Isolated Find), 5JF478 and 5JF479 - Stone Cairns (Isolated Finds), 5JF485 -Ranch Complex, 5JF761 and 5JF762 - Stock Ponds, 5JF728 - Spring House, 5JF729 - Probable Coral, 5JF757 - Glass Fragments, 5JF760 - Rock Piles, and 5JF730 - Stock Tanks/Feeders.

Only 5JF485 and 5JF729 are in satisfactory condition to be considered noteworthy. State Site 5JF485 - Ranch Complex is the Lindsay Ranch. Historic features at the site include the main ranch house, barn, stock chute, corrals, fences, and a stock pond. The ranch first operated in 1907 as a cattle and horse ranch. After WW II the ranch operated as a horse-boarding facility. The site was completely rebuilt post-1940s, thus losing its pre-1920s construction and eligibility for inclusion in the NRHP.

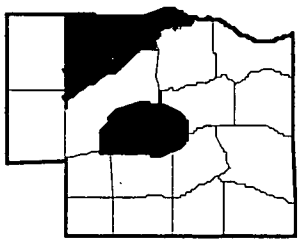
State Site 5JF729 - Probable Coral is a site consisting of numerous hand-sawn logs, barbed wire strands, and nails and bolts. All of the artifacts indicate that the site was probably a corral that was in use in the early 1900s. The site is ineligible for inclusion in the NRHP because of its decrepit state and the lack of association with historic events or people.

The aforementioned sites were not included in the NRHP because they are in poor condition, exhibit no rare construction, and have no historic interest.

Archaeological maps were omitted from this document to protect the integrity of the cultural resources. If the location of specific sites must be known, contact the Environmental Policy Implementation Division.

Future Plans:

Western Aggregate, Inc. has leased the mineral rights in the E 1/2, E 1/2 Section 4 south of the road to the NREL Wind Energy Test Center, and the W 1/2, northwest 1/4 Section 3. These rights are in conjunction with current mining activities immediately west of the Site boundary. Western Aggregates, Inc. submitted a proposal to the DOE requesting access to mine the above rights. The proposed mining would take place in Tract 32. Among the propositions included in the mining plan are that: (1) The major surface water runoff drainages to Rock Creek will not be mined, (2) the side slopes of the mine pit will be irregular to simulate a natural terrain, (3) the bottom of the pits will be undulated to create wetlands and marsh areas, (4) where feasible, certain sections of the pit will be diked to collect



and hold water in the pit to allow for seepage into the ground, (5) certain sections of the pit may be designed to provide a direct flow into one of the Rock Creek drainages, and (6) the slopes of the pits will be seeded to native grass species and planted with shrub/tree species to simulate a condition similar to existing conditions within Rock Creek. The Rock Creek drainage will continue to be used extensively for aquatic and terrestrial background studies.

Western Aggregates, Inc. has filed an amendment application with the State of Colorado (AM-001) to add 425 acres to the Conda/McKay sand and gravel pit, Permit No. M-91-035. The proposed addition includes most of the northern half of the quadrant.

Mineral Rights: Tract 31 - N 1/2, northeast 1/4, SE 1/4, and the northwest 1/4, SW 1/4 Section 2 - 352.46 acres. The Union Pacific Railroad owns coal rights. Proprietor of vein or lode to extract and remove ore, should it penetrate or intersect. Coal, gas, oil and other minerals reserved by A. M. Patten and granted by a. M. Patten to A. Reamer Patten, Margaret Musgrove, and Ivan M. Patten.

Tract 32 - N 1/2 Section 3, E 1/2, northeast 1/4, SE 1/4, E 1/2 and SW 1/4 Section 4 - 619.09 acres. The Union Pacific Railroad owns coal rights. Grantors received all coal, oil, gas, clay and gravel. Proprietor of vein or lode to extract should the same penetrate or intersect the premises. Many 19/120th interest for coal, oil and other mineral rights.

Adjoining Lands: The quadrant is adjoined by the Site Buffer Zone on the south, east, and west sides. The land north of Colorado 128 is part of Boulder County and is zoned for parks and open space. The land is currently being used for livestock pasture.

Contamination Profile

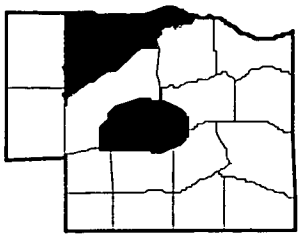
Soil Sites: 1-324, 1-342, 1-360, 1-306, and 2-018

Sediment Sites: Refer to the Sediment Sampling Locations map.

Surface Water: Refer to the Surface Water Sampling Locations map.

Groundwater Wells: Refer to the Groundwater Monitoring Well Location Map.

IHSS: Refer to the Individual Hazardous Substance Sites by Operable Unit map.



Comments:

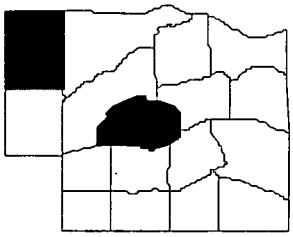
Soil samples taken from the above locations show less than 0.24 ± 0.03 pCi/g of plutonium radioactivity.

Surface water site GS04, located on Rock Creek where it flows under Highway 128, recorded the following flows during the 1994 water year:

Average Spring Flow: No data
Average Summer Flow: No data
Average Winter/Fall Flow: 0.026 cubic feet per second (cfs)

The flow data listed above should only be regarded as qualitative and should not be used as analytical data.

Groundwater well data and surface water data are currently accessible through RFEDS.



Quadrant: NW 2

Boundaries:

North - Site Buffer Zone north perimeter fence.
South - Line running due east from the point on the west perimeter road where the road first bends to the north northeast towards the National Renewable Energy Laboratory (NREL) Wind Energy Test Center.
East - Road running north along the old west Buffer Zone boundary fence. Where the road turns east, the boundary line continues north Colorado 128.
West - Site Buffer Zone west perimeter fence.

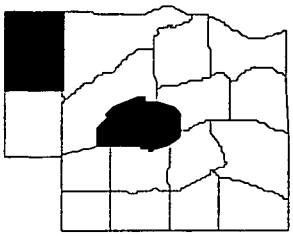
Vegetation:

Quadrant northwest 2 is primarily classified as Xeric Mixed Grassland, with small areas of Short Grassland and Mesic Mixed Grassland also present. Areas of Bottomland and Short Upland Shrub, intermixed with small areas of Marsh and Ponderosa Pine Woodland, are present along Rock Creek as it flows through the southern portion of the quadrant. The majority of the vegetation is considered to be undisturbed by Site activities. However, large portions of the quadrant have been disturbed by activities at the NREL Wind Energy Test Center and mining operations and are classified as Disturbed/Barren. The dominant species of vegetation in the quadrant are: Little Bluestem, Big Bluestem, Mountain Muhly, Sedge, Western Wheatgrass, Buffalo Grass, Kentucky Bluegrass, Canada Bluegrass, and Needle and Thread Grass.

Wildlife Habitat:

The major wildlife habitats within this Quadrant consist of extensive areas of Xeric Mixed Grasslands and smaller expanses of Mesic Mixed Grasslands, Tall Marsh, Short Marsh, and Wet Meadow. Much of the Xeric Mixed Grassland has been destroyed by surface disturbance, and now is classified as Disturbed/Barren Lands and Annual Grass/Forb.

The native grass and forb species in the grasslands in this Quadrant provide habitat for arthropods, reptiles, amphibians, mammals, and birds. Arthropod taxa throughout the Site are numerous and diverse. Reptiles are represented by the more common snake species such as the Bull Snake, Racer, and Prairie Rattlesnake. It is in the Xeric Mixed Grasslands of the ridgetops that Eastern Short Horned Lizard, a federal candidate species is found. Common grassland songbirds include Western Meadowlarks, Vesper Sparrows, House Finches, and Grasshopper Sparrows. Birds-of-prey change with the season, with Rough-legged Hawks most numerous during the winter, and Red-tailed Hawks and Swainson's Hawks common during the spring and summer. Mammals range in size from Deer



Mice, Prairie Voles, and Meadow Voles to Desert Cottontail and Mule Deer. The most common predator is the Coyote.

The Tall Marsh and Short Marsh habitats and associated open water pools provide a productive habitat for arthropods and species from many other groups. Reptiles are represented by the Bull Snake, Prairie Rattlesnake, and Western Painted Turtle. Songbirds include Red-winged Blackbirds, Common Yellowthroats, Cliff Swallows, Barn Swallows, and Song Sparrows, as well as many of the grasslands birds depending on the season. Red-tailed Hawks, Northern Harriers, and Great Horned Owls frequent the area during hunting forays. Small mammals are represented by Deer Mice and Meadow Voles. These habitats also provide food and shelter for Mule Deer, Raccoons, Long-tailed Weasels, and Coyotes.

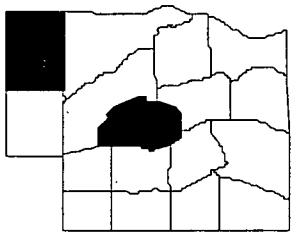
Wet Meadow habitats are immediately adjacent to the marshes and other wetland classifications. This habitat shares wetlands species with the other habitats.

A large portion of this Quadrant has been disturbed by the Western Aggregates, Inc. gravel mining operations. The habitat now provided by this large disturbed area classified as Disturbed/Barren Lands and Annual Grass/Forb. This is home to Desert Cottontails, Jackrabbits (*Lepus sp.*), and some snakes. A few of the grasslands birds are recorded in the margins of this habitat. Rock Wrens (*Salpinctes obsoletus*) are most often observed in the disturbed habitats.

The entire Quadrant is potential foraging habitat for the Peregrine Falcons which nest in the nearby Flatirons, and for Bald Eagles which winter in the area. These endangered species are protected under the Endangered Species Act of 1973, and should be treated accordingly. Ecology Procedure 1-D06-EPR-END.03 "Identification and Protection of Threatened, Endangered, and Special-Concern Species" provides specific protection procedures.

Surface Waters: Surface water in the quadrant mainly consists of the four tributaries to Rock Creek. Three of the tributaries are located in the southeastern corner of the quadrant. The fourth originates near the eastern boundary of the NREL Wind Energy Test Center. All of the tributaries flow northeast. Additional surface water bodies are located in the gravel pits due south of the NREL Wind Energy Test Center.

Jurisdictional Wetlands: Refer to the Wetlands map for specific wetland locations.



Floodplains: There is an area of 100-year floodplain that surrounds Rock Creek and Rock Creek Tributaries C and D as they flow through the southern portion of the quadrant. Maps depicting the 100-year floodplain for the major surface water drainages at the Site have been produced by the USACOE, and are available from the Ecology and Watershed Management Division. Additional information, including water surface profiles for the 10-, 50-, 100-, and 500-year flood events is available in the USACOE report, "Floodplain Delineation - Hydrologic Analysis."

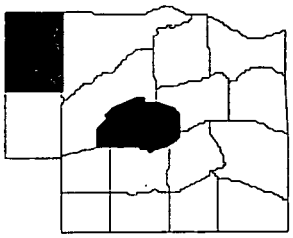
Soil: The majority of soils in this quadrant are clayey-skeletal soils of the great group Paleustolls, which are very cobbly clay loams located on pediment surfaces. Paleustolls are generally characterized by moderate shrink-swell potential, slow permeability, and slight erosion potential.

There are three bands of Argiustolls located in the south-eastern corner of the quadrant. Argiustolls are mostly fine-textured clay loams associated with hill and valley slopes, and they are generally characterized by high shrink-swell potential, slow permeability, and moderate erosion potential.

In addition, there are two areas characterized as Rock Outcrops in the north-western corner of the quadrant, and a Gravel and Clay Pit located in the west-central area.

Surface Geology: Approximately 80 percent of the surface geology is composed of Rocky Flats Alluvium. This alluvium covers the "flats" found throughout the Site, particularly on the western side. The remaining 20 percent of the surface geology is comprised of the upper unit of the Laramie Formation, Fox Hills Sandstone, and Pierre Shale. The formations are located in the drainages leading to Rock Creek in the southeastern corner of the quadrant. In addition to this outcrop, two small outcrops are found in the western half of the quadrant. One is in the far northwestern corner of the quadrant and the other is to the south of the NREL Wind Energy Test Center. The outcrop south of the Test Center has been extensively mined out for gravel. The Pierre Shale is found in a small outcrops in the far northwestern corner of the quadrant.

Rocky Flats Alluvium is composed of poorly sorted, angular to rounded, coarse gravel, sand, and gravelly clays. The upper unit of the Laramie Formation is approximately 500 feet thick and composed of claystone. The claystone is light to medium



gray and kaolinitic. The Fox Hills Sandstone is approximately 75 to 125 feet thick and grayish-orange to light gray in color. It is composed of calcareous, fine-grained feldspathic sandstone with thin beds of siltstone and claystone present. Pierre Shale is over 800 feet thick and is predominantly a medium to dark gray, non-calcareous shale. The presence of numerous fossils indicates that the formation was deposited in a marine environment.

Utilities:

Two telephone lines cross the quadrant. One line runs north-south along the eastern border of the quadrant while the other runs east-west along the southern edge of the NREL Wind Energy Test Center. Additional utilities are also present in this area of the quadrant; underground power and telephone lines to the trailers were installed in 1977. Additional aboveground wiring exists at each individual test site.

Archaeology:

State Site 5JF486 - possible survey cairn. There are seven small cobbles with three fragments of milled wood.

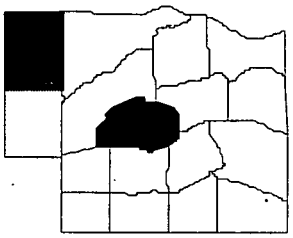
State Site 5JF735 - concrete foundation. A 11 x 9-foot poured concrete foundation with walls approximately 1-foot thick. There is no evidence of the super structure that the foundation may have supported in the past.

State Site 5JF738 - three sections of barbed wire fence. Three segments of barbed wire fence associated with the operation of Lindsey Ranch in the early 1900s. These fences have deteriorated extensively and some sections have been replaced with modern metal posts and barbed wire.

State Site 5JF742 - abandoned Denver, Utah & Pacific Railroad grade circa 1881 and 1882. In 1883, financial problems caused construction to cease. The track was never laid and the grade was abandoned. The total length of the grade is approximately 8,200 feet across the Site.

State Sites, 5JF754 and 5JF755. No information was available. None of the sites are eligible for the NRHP because of their decrepit states, and the lack of association with historic events or people.

Archaeological maps were omitted from this document to protect the integrity of the cultural resources. If the location of specific sites must be known, contact the Environmental Policy Implementation Division.



Future Plans:

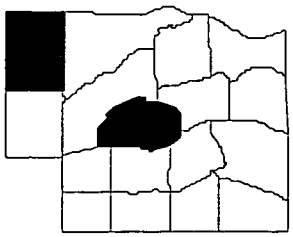
Western Aggregate, Inc. has leased the mineral rights in the E 1/2, E 1/2 Section 4 south of the road to the NREL Wind Energy Test Center, and the W 1/2, northwest 1/4 Section 3. These rights are in conjunction to current mining activities immediately west of the RFP boundary. Western aggregate, Inc. has submitted a proposal to the DOE requesting access to mine the above rights. The proposed mining would take place in Tract 32. Among the propositions included in the mining plan are that: (1) The major surface water runoff drainages to Rock Creek will not be mined, (2) the side slopes of the mine pit will be irregular to simulate a natural terrain, (3) the bottom of the pits will be undulated to create wetlands and marsh areas, (4) where feasible, certain sections of the pit will be diked to collect and hold water in the pit to allow for seepage into the ground, (5) certain sections of the pit may be designed to provide a direct flow into one of the Rock Creek drainages, and (6) the slopes of the pits will be seeded to native grass species and planted with shrub/tree species to simulate a condition similar to existing conditions within Rock Creek. This mining would be twenty to thirty years in duration and would render the land unusable for other purposes during that time.

The NREL Wind Energy Test Center is located in the northern end of the quadrant. Its test sites are located throughout the quadrant. On July 1, 1993, the Center was turned over to the NREL which is planning to refurbish the facilities in the upcoming years and to commence large scale research at that facility. The Department of Energy envisions the Center as a showcase of alternative energy research. NREL has 15 more years of wind testing to conduct and has asked Western Aggregates Inc. to slow the process of mining on the northern end. In response, Western Aggregate has acquired a mining lease on the State School Section which will place construction and increased traffic south of the plant's west access road.

Western Aggregates, Inc. has filed an amendment application with the State of Colorado (AM-001) to add 425 acres to the Conda/McKay sand and gravel pit, Permit No. M-91-035. The proposed addition includes most of the eastern third of the quadrant.

Mineral Rights:

Tract 32 - N 1/2 Section 3, E 1/2, northeast 1/4, SE 1/4, E 1/2, SW 1/4 Section 4 - 619.09 acres. The Union Pacific Railroad owns coal rights. Grantors received all coal, oil gas clay and gravel. Proprietor of vein or lode to extract should the same



penetrate or intersect the premises. Many 19/120th interest for coal, oil and other mineral rights.

Tract 33 - E 1/2 northwest 1/4 and W 1/2 northeast 1/4 Section 4 - 160.00 acres. Grantor reserved oil, gas and other minerals. T. N. Jordan, Jr. from the Rocky Mountain Fuel Company.

Adjoining Lands: The quadrant is adjoined by the Site Buffer Zone on the south and east sides. The land north of the quadrant is zoned as Boulder County parks and open space and is currently vacant. The land west of the quadrant is zoned as industrial and is currently occupied by Western Aggregate, Inc. Western Aggregate operates a quarry and aggregate operation on the land. A small commercial sawmill also operates in this area.

In addition, a spur of the Denver and Rio Grande West (D&RGW) railroad parallels the plant boundary and serves the Western Aggregate plant.

Contamination Profile

Soil Sites: 2-324 and 2-306

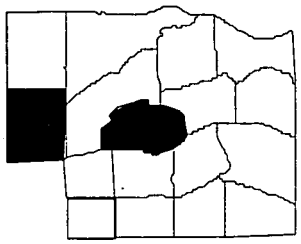
Sediment Sites: Refer to the Sediment Sampling Locations map.

Surface Water: Refer to the Surface Water Sampling Locations map.

Groundwater Wells: Refer to the Groundwater Monitoring Well Location Map.

IHSS: Refer to the Individual Hazardous Substance Sites by Operable Unit map.

Comments: The quadrant is relatively unaffected by operation of the Site. Soil sampling data is currently accessible through RFEDS.



Quadrant: NW 3

Boundaries:

North - Line running due east from the point in the west perimeter road where the road first bends to the north northeast towards the National Renewable Energy Laboratory (NREL) Wind Energy Test Center.
South - Site West Access Road.
East - Road running north along the old west Buffer Zone boundary fence.
West - Site Buffer Zone west perimeter fence.

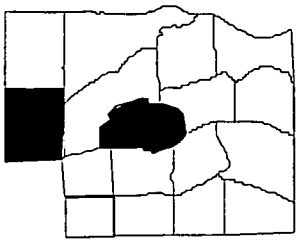
Vegetation:

Quadrant northwest 3 is primarily classified as Xeric Mixed Grassland with Mesic Mixed Grassland intermixed in places. Areas of Bottomland Shrub and Riparian Woodland are present along Rock Creek as it flows through the quadrant. A large area of vegetation in the southern part of the quadrant has been disturbed by mining activities. The dominant species of vegetation in the quadrant are: Big Bluestem, Mountain Muhly, Little Bluestem, Sedge, Western Wheatgrass, Needle and Thread Grass, Blue Grama Grass and Canada Bluegrass. Cottonwood trees and Snowberry are found in the drainages and a number of Ponderosa Pine trees are scattered on ridgetops near the drainages as well.

Wildlife Habitat:

The largest expanses of undisturbed wildlife habitat consists of Mesic Mixed Grassland and Xeric Mixed Grassland. There is a small inclusion of Ponderosa Woodland within the Xeric Grassland of this Quadrant. A narrow band of Deciduous Woodland and Bottomland Shrubland follow the upper Rock Creek and Walnut Creek channels. Much of the Xeric Mixed Grassland has been destroyed by surface disturbance, and now is classified as Disturbed/Barren Lands and Annual Grass/Forb.

The native grass and forb species in the grasslands in this Quadrant provide habitat for arthropods, reptiles, amphibians, mammals, and birds. Arthropod taxa throughout the Site are numerous and diverse. Reptiles are represented by the more common snake species such as the Bull Snake, Racer, and Prairie Rattlesnake. It is in the Xeric Mixed Grasslands of the ridgetops that Eastern Short Horned Lizard, a federal candidate species is found. Common grassland songbirds include Western Meadowlarks, Vesper Sparrows, House Finches, and Grasshopper Sparrows. Birds-of-prey change with the season, with Rough-legged Hawks most numerous during the winter, and Red-tailed Hawks and Swainson's Hawks common during the spring and summer. Mammals range in size from Deer



Mice, Prairie Voles, and Meadow Voles, to Desert Cottontail and Mule Deer. The most common predator is the Coyote.

The Ponderosa Woodland consists of a small grove of Ponderosa Pines adjacent to the upper Rock Creek drainage. Mule deer commonly use the shade of this grove as bedding shelter during the hot weather. Black-billed Magpies nest in this grove, and other woodland birds such as Northern Flickers (*Colaptes auratus*), House Finches, and other species are observed here. Mexican Woodrats are also associated with this habitat.

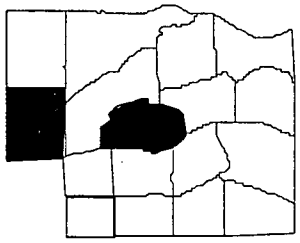
The Deciduous Woodland and Bottomland Shrubland mosaic supports a variety of wildlife species. Reptiles include Bull Snakes, Wandering Garter Snakes, Red-sided Garter Snake, and Racer. Songbirds include the grasslands species listed above and Red-winged Blackbirds, Northern Orioles, American Goldfinches, Song Sparrows, and other shrubland species. Red-tailed Hawks, Rough-legged Hawks, and Great Horned Owls use the large trees of the woodlands. The small mammal population made up largely of Deer Mice and Meadow Voles provides forage for Coyotes. Mule Deer shelter and feed in this habitat.

A large portion of this Quadrant has been disturbed by the Jefferson County gravel mining operations. The habitat now provided by this large disturbed area classified as Disturbed/Barren Lands and Annual Grass/Forb. This is home to Desert Cottontails, Jackrabbits, and some snakes. A few of the grasslands birds are recorded in the margins of this habitat. Rock Wrens are most often observed in the disturbed habitats. Mule Deer sometimes shelter in the low-traffic rimrock-like areas of the open pits that afford shade and privacy.

The entire Quadrant is potential foraging habitat for the Peregrine Falcons which nest in the nearby Flatirons, and for Bald Eagles which winter in the area. These endangered species are protected under the Endangered Species Act of 1973, and should be treated accordingly. Ecology Procedure 1-D06-EPR-END.03 "Identification and Protection of Threatened, Endangered, and Special-Concern Species" provides specific protection procedures.

Surface Waters:

The quadrant is part of the Rock Creek drainage. The creek and three tributaries (B, D, E) flow northeast through the quadrant. These tributaries are located in the northeastern corner of the quadrant. Several small ponds exist along the tributaries and the



creek. Three small seeps are present in the central portion of the quadrant at the headwaters of one of the tributaries. The Church and McKay Ditches cross the southern end of the quadrant. These ditches are associated with local farming and are not related to or controlled by operations at the Site.

Additional surface waters are located in the southern end of the quadrant in the Jefferson County gravel pits that have partially filled with water. The Rock Creek drainage is considered to be unaffected by the Site operations and is therefore used for background testing of aquatic environments.

Jurisdictional Wetlands: Refer to the Wetlands map for specific wetland locations.

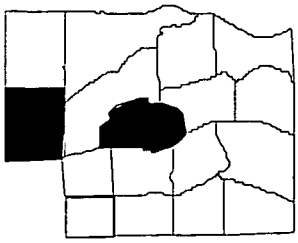
Floodplain: There is an area of 100-year floodplain that surrounds Rock Creek and Rock Creek Tributaries B, D, and E as they flow through the northern portion of the quadrant. Maps depicting the 100-year floodplain for the major surface water drainages at the Site have been produced by the USACOE, and are available from the Ecology and Watershed Management Division. Additional information, including water surface profiles for the 10-, 50-, 100-, and 500-year flood events is available in the USACOE report, "Floodplain Delineation -Hydrologic Analysis."

Soil: The majority of soils in this quadrant are clayey-skeletal soils of the great group Paleustolls, which are very cobbly clay loams located on pediment surfaces. Paleustolls are generally characterized by moderate shrink-swell potential, slow permeability, and slight erosion potential.

There are four bands of Argiustolls located in the central and northern portions of the quadrant. Argiustolls are mostly fine-textured clay loams associated with hill and valley slopes, and they are generally characterized by high shrink-swell potential, slow permeability, and moderate erosion potential.

In addition, there is a Gravel and Clay Pit located in the southern portion of the quadrant.

Surface Geology: Approximately 95 percent of the quadrant is composed of Rocky Flats Alluvium. This alluvium covers the "flats" found throughout the Site, particularly on the western side. The remaining 5 percent of the surface geology is comprised of the Upper unit of the Laramie Formation and Fox Hills Sandstone. The formation is located in the Rock Creek drainage in the far northeastern corner of the quadrant. In addition to this outcrop,



two small outcrops are found in the southwestern quarter of the quadrant. Both outcrops have been extensively mined for gravel and clay. Rocky Flats Alluvium is composed of poorly sorted, angular to rounded, coarse gravel, sand, and gravelly clays. The upper unit of the Laramie Formation is approximately 500 feet thick and composed of claystone. The claystone is light to medium gray and kaolinitic. The Fox Hills Sandstone is approximately 75 to 125 feet thick and grayish-orange to light gray in color. It is composed of calcareous, fine-grained feldspathic sandstone with thin beds of siltstone and claystone present.

Utilities:

A buried telephone line runs north-south along the road that forms the eastern boundary of the quadrant. A buried conduit runs east-west just to the north of the West Access Road. This conduit contains a 6-inch domestic cold water line, an alarm line, telephone lines, and a 13.8 KV electrical line. All of these utilities serve the west security gate. An 8-inch natural gas line owned by PSC runs along the West Access Road. The line exits the Site near the west security gate. A 10-inch raw water line runs along the conduit that transports the utilities to the west security gate.

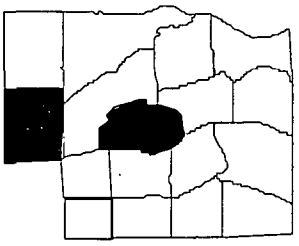
Archaeology:

State Site 5JF738 - three sections of barbed wire fence. Three segments of barbed wire fence were associated with the operation of Lindsey Ranch in the early 1900s. These fences have deteriorated extensively and some sections were replaced with metal posts and barbed wire.

State Site 5JF742 - abandoned Denver, Utah & Pacific Railroad grade. This railroad grade was constructed in 1881 and 1882. In 1883 financial problems caused construction to cease. The track was never laid and the grade was abandoned. The total length of the grade is approximately 8,200 feet across the Site.

State Sites 5JF512 and 5JF513 - Upper Church and McKay Ditches. Both bermed ditches were constructed in 1882 for local ranching. The ditches are approximately 6 feet wide and 3 to 6 feet deep. Many sections have been rebuilt since the original construction.

State Site 5JF475 - small rock cairn (Isolated Find). There is a small rock cairn approximately 3 feet in diameter consisting of 9-10 cobbles.



State Site 5JF476 - small rock cairn (Isolated Find). There is a small rock cairn consisting of 40+ cobbles, approximately 3 feet in diameter.

State Sites 5JF736 and 5JF737 - Stock Ponds. Four bermed stock ponds approximately 100 x 75 feet, 75 x 70 feet, 100 x 35 feet, and 35 x 35 feet. Berms around the ponds range up to almost 20 feet in height and currently retain water. These ponds were constructed in the late 1940s for the Lindsey ranch.

State Site 5JF739 - 10 x 16 foot depression. The depression appears to be a former gravel mine covered with wooden planks to protect cattle. Planks currently cover and surround the depression.

The aforementioned sites were not included in the NRHP because they are in poor condition, exhibit no rare construction, and have no historic interest.

Archaeological maps were omitted from this document to protect the integrity of the cultural resources. If the location of specific sites must be known, contact the Environmental Policy Implementation Division.

Future Plans: Remediation of the West Spray Field is anticipated in accordance with plans to remediate OU 11. Mining will continue in the Jefferson County clay and gravel pits.

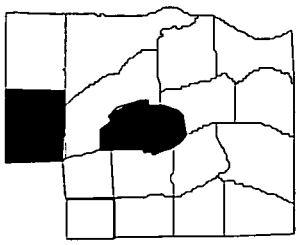
Mineral Rights: Tract 34 - northeast 1/4 Section 9 - 160.00 acres. The Union Pacific Railroad owns coal rights. Oil and gas reserved to Martha Eberharter.

Tract 35 - W 1/2 and portion of SE 1/4 Section 9 - 310.65 acres. The Union Pacific Railroad owns coal rights. Coal, oil, gas, clay, gravel and rock reserved to grantor.

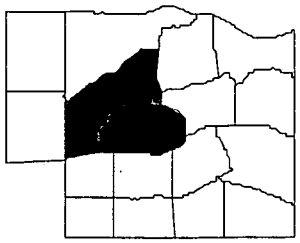
Adjoining Lands: The quadrant is adjoined by the Site Buffer Zone on the north, south, and east sides. The land to the west is currently zoned as rangeland and is used for grazing cattle. This land also includes a spur of the D&RGW railroad that serves the Site and Western Aggregates Inc. Building 060, an administrative building, and a small warehouse, Building 061, are located just west of the northwest 3 quadrant. Building 060 is leased to the Kaiser-Hill Team.

Contamination Profile

Soil Sites: None.



Sediment Sites:	Refer to the Sediment Sampling Locations map.
Surface Water:	Refer to the Surface Water Sampling Locations map.
Groundwater Wells:	Refer to the Groundwater Monitoring Well Location Map.
IHSS:	Refer to the Individual Hazardous Substance Sites by Operable Unit map.
Comments:	IHSS No. 168 is also known as the West Spray Field. The area was a land treatment facility that was used to dispose of water containing high concentrations of nitrates. The water was sprayed on the area in the form of a mist. The area of the spray field is now contaminated and has high levels of nitrates in the soil. This IHSS will be remediated in accordance with plans to remediate OU 11. Surface Water Monitoring Station SW134, located on Rock Creek just below the Jefferson County gravel pits, registered the following flows during the 1994 water year: Average Spring Flow: 0.002 cubic feet per second (cfs) Average Summer Flow: 0.002 cfs Average Winter/Fall Flow: No data The flow data listed above should be used as analytical data with an estimated +/- 10% error. Current data for sediment sites, surface water, and groundwater wells are accessible through RFEDS.



Quadrant: NW 4

Boundaries

North - Road running northeast along the top of the ridge south of the Rock Creek drainage. Boundary continues due east along the road following the old north Buffer Zone boundary fence for approximately 1,125 feet before turning south to form the eastern boundary.
South - Site West Access Road and inner security fence.
East - Inner security fence and a line running north-south just east of the landfill pond.
West - Road running north-south along the old west Buffer Zone boundary fence.

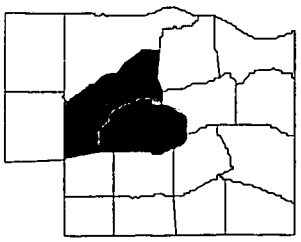
Vegetation:

Quadrant northwest 4 is primarily classified as Xeric Mixed Grassland and Mesic Mixed Grassland, with small areas of Ponderosa Pine Woodland. Areas of Riparian Woodland and Short Upland Shrub, intermixed with areas of Marsh, are present along the Church and McKay Ditches as they flow through the southern portion of the quadrant. A large portion of the vegetation in the quadrant is considered to be disturbed by Site activities. Vegetation near the North Live-Fire Rifle Range and the Property Utilization and Disposal yard has been greatly disturbed and destroyed. Areas of Disturbed/Barren land and Reclaimed Grassland exist where the Site Buffer Zone meets the northern edge of the Industrial Area. The dominant species of vegetation in the quadrant are: Big Bluestem, Mountain Muhly, Sedge, Little Bluestem, Threeawn Grass (*Aritida purpurea*), Western Wheatgrass, Blue Grama Grass, Needle and Thread Grass, and Canada Bluegrass. Much of the Disturbed/Barren land and Reclaimed Grassland are covered with Smooth Brome, Crested Wheatgrass (*Agropyron cristatum*), Cheatgrass, and Knapweed (*Centaurea diffusa*).

Wildlife Habitat:

The majority of the wildlife habitat in this Quadrant consists of Mesic Mixed Grassland, with smaller areas of Xeric Mixed Grassland and Ponderosa Woodland. Tall Marsh surrounds the open water of the Landfill Pond. A narrow band of Deciduous Woodland and Bottomland Shrubland follow the upper Rock Creek and Walnut Creek channels. Much of the Mesic Mixed Grassland has been destroyed by surface disturbance, and now is classified as Disturbed/Barren Lands and Annual Grass/Forb.

The native grass and forb species in the grasslands in this Quadrant provide habitat for arthropods, reptiles, amphibians, mammals, and birds. Arthropod taxa throughout the Site are numerous and diverse. Reptiles are represented by the more common snake species such as the Bull Snake, Racer, and



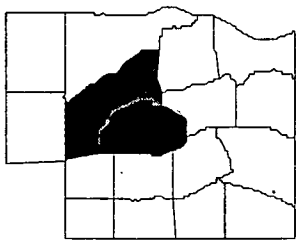
Prairie Rattlesnake. It is in the Xeric Mixed Grasslands of the ridgetops that Eastern Short Horned Lizard, a federal candidate species is found. Common grassland songbirds include Western Meadowlarks, Vesper Sparrows, House Finches, and Grasshopper Sparrows. Birds-of-prey change with the season, with Rough-legged Hawks most numerous during the winter, and Red-tailed Hawks and Swainson's Hawks common during the spring and summer. Mammals range in size from Deer Mice, Prairie Voles, and Meadow Voles, to Desert Cottontail and Mule Deer. The most common predator is the Coyote.

The Tall Marsh and the associated open water of the Landfill Pond provide a productive habitat for arthropods and species from many other groups. Reptiles are represented by the Bull Snake, Prairie Rattlesnake, and Western Painted Turtle. Songbirds include Red-winged Blackbirds, Common Yellowthroats, Cliff Swallows, Barn Swallows, and Song Sparrows, as well as many of the grasslands birds depending on the season. Red-tailed Hawks, Northern Harriers, and Great Horned Owls frequent the area during hunting forays. Mammals are represented by Deer Mice, Meadow Voles, and Muskrats. This habitat also provide food and shelter for Mule Deer, Raccoons, Long-tailed Weasels, and Coyotes.

The Ponderosa Woodland consists of scattered Ponderosa Pines within the Xeric Mixed Grasslands. Mule deer commonly use the shade of this grove as bedding shelter during the hot weather. Black-billed Magpies forage here, and Red-tailed Hawks perch in these trees, woodland birds such as Northern Flickers, House Finches, and other species are observed here.

The Deciduous Woodland and Bottomland Shrubland mosaic supports a variety of wildlife species. Reptiles include Bull Snakes, Wandering Garter Snakes, Red-sided Garter Snake, and Racer. Songbirds include the grasslands species listed above and Red-winged Blackbirds, Northern Orioles, American Goldfinches, and other shrubland species. Red-tailed Hawks, Rough-legged Hawks, and Great Horned Owls use the large trees of the woodlands. The small mammal population made up largely of Deer Mice and Meadow Voles provides forage for Coyotes. Raccoons are also a common predator in this habitat. Mule Deer feed and shelter in this habitat.

A large portion of this Quadrant has been disturbed by construction of the New Landfill, the Present Landfill, and various storage yards. The habitat now provided by this large disturbed area classified as Disturbed/Barren Lands and Annual



Grass/Forb. This is home to Desert Cottontail and a few reptiles. A few of the grasslands birds are recorded in the margins of this habitat. These areas are so frequently disturbed, and/or so recently denuded of vegetation, that very few wildlife species are found within them.

The entire Quadrant is potential foraging habitat for the Peregrine Falcons which nest in the nearby Flatirons, and for Bald Eagles which winter in the area. These endangered species are protected under the Endangered Species Act of 1973, and should be treated accordingly. Ecology Procedure 1-D06-EPR-END.03 "Identification and Protection of Threatened, Endangered, and Special-Concern Species" provides specific protection procedures.

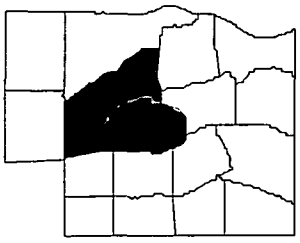
Surface Waters: The Church and McKay Ditches pass through the middle of the quadrant crossing the Site to the northeast. The McKay Bypass Canal runs parallel to the ditches as they drain to the northeast, and routes flow around North Walnut Creek. These ditches are associated with local farming and are not related to or controlled by operations at the Site.

Several small streams are located near the sanitary landfill. These stream are diversion ditches that direct surface water away (northeast) from the landfill. The landfill pond, the largest surface water body in the quadrant, is located due east of the sanitary landfill.

Jurisdictional Wetlands: Refer to the Wetlands map for specific wetland locations.

Floodplain: There is an area of 100-year floodplain that surrounds the McKay ditch and Walnut Creek as they flow through the central portion of the quadrant. Maps depicting the 100-year floodplain for the major surface water drainages at the Site have been produced by the USACOE, and are available from the Ecology and Watershed Management Division. Additional information, including water surface profiles for the 10-, 50-, 100-, and 500-year flood events is available in the USACOE report, "Floodplain Delineation - Hydrologic Analysis."

Soil: The majority of soils in this quadrant are clayey-skeletal soils of the great group Paleustolls, which are very cobbly clay loams located on pediment surfaces. Paleustolls are generally characterized by moderate shrink-swell potential, slow permeability, and slight erosion potential.



There are two areas in the quadrant that contain Argiustolls, which are mostly fine-textured clay loams associated with hill and valley slopes. Argiustolls are generally characterized by high shrink-swell potential, slow permeability, and moderate erosion potential.

In addition, there is a Gravel and Clay Pit located in the north-eastern section of the quadrant.

Surface Geology:

Approximately 95 percent of the surface geology of the quadrant is composed of Rocky Flats Alluvium. This alluvium covers the "flats" found throughout the Site, particularly on the western side. The remaining 5 percent of the quadrant is comprised of the upper unit of the Laramie Formation and the Arapahoe Formation. Rocky Flats Alluvium is composed of poorly sorted, angular to rounded, coarse gravel, sand, and gravelly clays.

The Arapahoe formation is approximately 150 feet thick in the central portion of the Site and consists mainly of claystones and silty claystones with at least five sandstone intervals in the upper portion of the formation. Stratigraphically, the Laramie Formation lies directly below the Arapahoe Formation. The upper unit of the Laramie Formation is approximately 500 feet thick and is composed of claystone. The claystone is light to medium gray and kaolinitic.

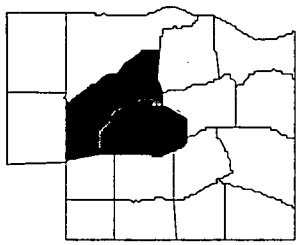
Utilities:

A buried telephone line runs north-south along the road that forms the western boundary of the quadrant. A buried conduit runs east-west just to the north of the West Access Road. This conduit contains a 6-inch domestic cold water line, an alarm line, telephone lines, and a 13.8 KV electrical line. These utilities serve the east security gate. A 10-inch raw water line also runs along the conduit.

An additional 8-inch water line runs from the raw water storage pond in the southwestern corner of the quadrant to the main Site facility. This line parallels the path of the 10-inch raw water line. Telephone lines run from the northwestern corner of the main facility to the NREL Wind Energy Test Center. These lines run northwest-southeast near the middle of the quadrant. Aboveground PSC power lines run northeast-southwest across the southeast corner of the quadrant.

Archaeology:

State Site 5JF731 - Masonry Structure. The 50 x 50-foot ruins of a masonry structure. Portions of the walls are still standing.



Square nails found at the site indicate occupation during the year 1900 or earlier. Several pieces of glass were found at the site.

State Site 5JF742 - abandoned Denver, Utah & Pacific Railroad grade circa 1881 and 1882. In 1883 financial problems caused construction to cease. The track was never laid and the grade was abandoned. The total length of the grade is approximately 8,200 feet across the Site.

State Sites 5JF512 and 5JF513 - Upper Church and McKay Ditches. Both ditches are of bermed ditches constructed in 1882 to serve local ranchers. The ditches are approximately 6 feet wide and 3 to 6 feet deep. Many sections of the ditches have been rebuilt since the original construction. A large portion of the quadrant was not surveyed because the area has been extensively developed and any potential artifacts have probably been destroyed.

The aforementioned sites were not included in the NRHP because they are in poor condition, exhibit no rare construction, and have no historic interest.

Archaeological maps were omitted from this document to protect the integrity of the cultural resources. If the location of specific sites must be known, contact the Environmental Policy Implementation Division.

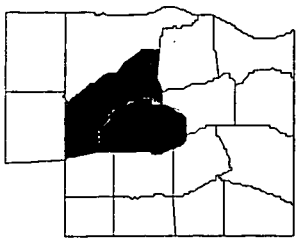
Future Plans: Remediation of the West Spray Field will be conducted in accordance with plans for OU 11.

The proposed site for the new Site Sanitary Landfill is located in the north-west corner, between Upper Church Ditch and the northern quadrant boundary.

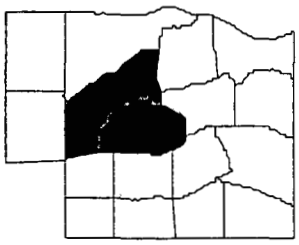
Mineral Rights: Tract 31 - N1/2, northeast1/4 , SE1/4, and the northwest1/4, SW1/4 Section 2 - 352.46 acres. The Union Pacific Railroad owns coal rights. Proprietor of vein or lode to extract and remove ore, should it penetrate or intersect. Coal gas, oil and other minerals reserved by A. M. Patten and grated by A. M. Patted to A. Reamer Pattern, Margaret Musgrove, and Ivan M. Patten.

Adjoining Lands: The quadrant is surrounded by the Site Buffer Zone on the north, south, and west sides. The Site main facility lies east and southeast.

Contamination Profile

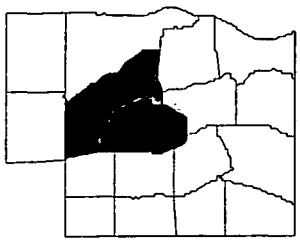


Soil Sites:	1-252, 1-270, and 1-288
Sediment Sites:	Refer to the Sediment Sampling Locations map.
Surface Water:	Refer to the Surface Water Sampling Locations map.
Groundwater Wells:	Refer to the Groundwater Monitoring Well Location Map.
IHSS:	Refer to the Individual Hazardous Substance Sites by Operable Unit map.
Comments:	IHSS 168 is also known as the West Spray Field. The area was a land treatment facility that was used to dispose of water tainted with high concentrations of nitrates. The water was sprayed on the area in the form of a mist. The area of the spray field is now contaminated, and has high levels of nitrates in the soil. This IHSS is part of OU 11 and will be remediated as part of the OU 11 remediation. IHSS 174 is the Property Utilization & Disposal Storage Yard. The yard began operation in 1974 and has been used to store containers such as barrels, drums, cargo boxes, spent batteries, empty dumpsters, dumpsters filled with metal shavings coated with lathe coolant, and drums of spent solvents and oils. Releases have occurred from spent batteries, and leaks have occurred from barrels and dumpsters. IHSS 114 is the present sanitary landfill. Contamination associated with the operation of the landfill will be remediated under OU 7 clean-up activities. IHSS 166.1 - 166.3 are trenches that were used to dispose of sanitary sewage sludge. The use of the first two trenches has been confirmed. It has still not been verified if the third trench was ever used for sludge disposal. The sludge was contaminated with uranium and possibly plutonium. Other unknown chemicals may also be in the sludge. IHSS 167.1 - 167.3 are areas where water from the landfill pond was sprayed as a form of land treatment. The site was moved twice and thus three different areas may have been contaminated. It is unknown what, if any, contamination is in the area of the spray fields. Soil Samples taken from the above locations show less than 0.21 ± 0.03 pCi/g of plutonium radioactivity. Soil site,



sediment site, surface water and groundwater well data is currently accessible through RFEDS.

Other: Three Temporary Modular Storage Tanks (TMST) are located in the southeastern corner of the quadrant. These 500,000-gallon tanks store liquids pumped from the Interceptor Trench System. The tank water is then pumped to the Bldg. 910 and 374 evaporators.



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SE1 Surface Water Sampling Locations

August 20, 1995
(See Surface Water Basemap for Data Source)

EXPLANATION

- Surface water stations
- Routine operational sites
- NPDES/FFCA permit monitoring sites
- Gaging stations
- NPDES storm water permit sampling sites
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: SE1

August 17, 1995

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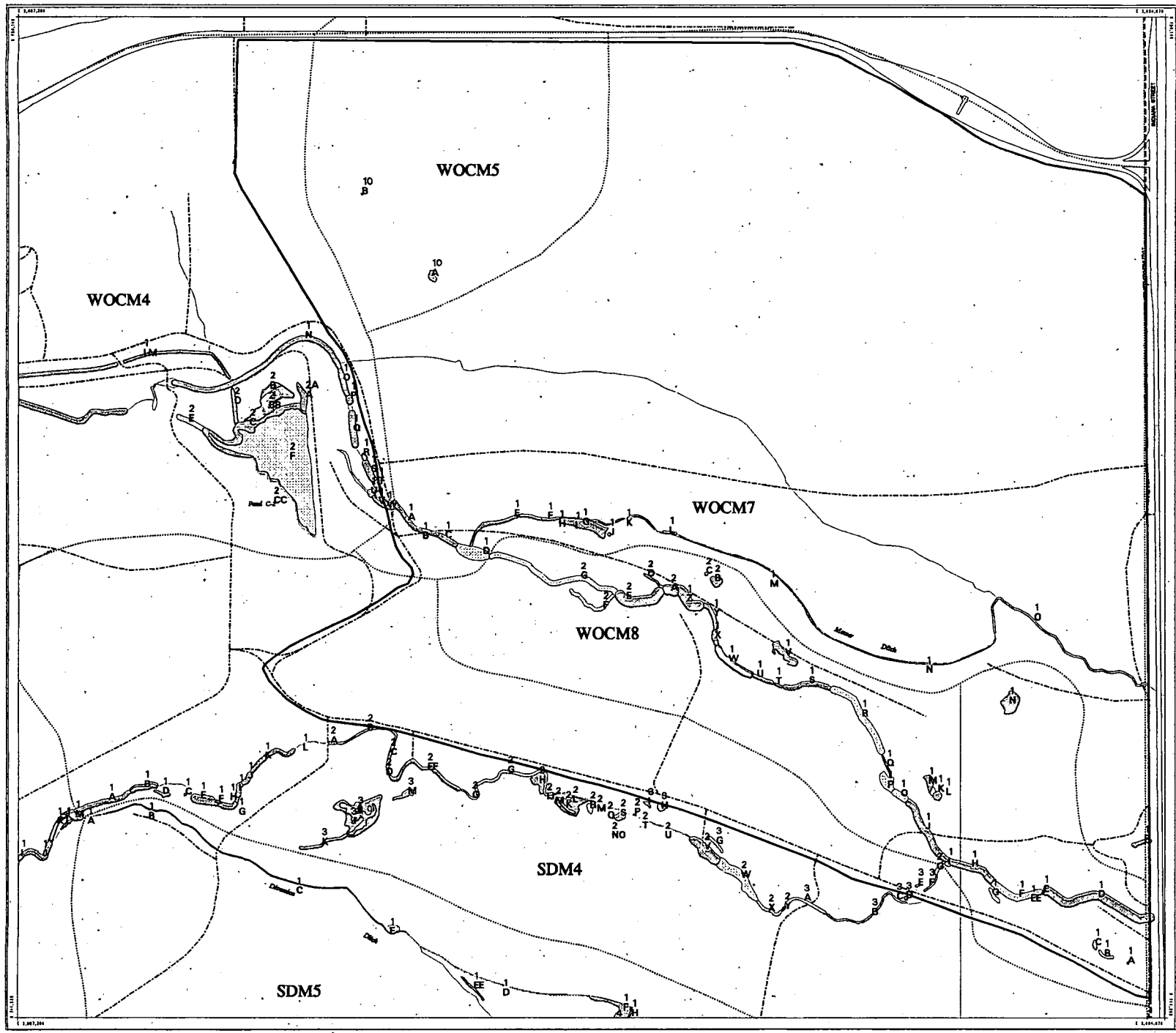

SE1 WETLANDS

August 20, 1995

(See wetlands base map for data source and notes)

Explanation

Buffer Zone Quadrants

Cowardin Wetlands Codes

- L1UBH
- PABH
- PEMA
- PEMB
- PEMC
- PEMF
- PFOA
- PFOC
- PSSA
- PSSC
- PUBF
- PUBH
- PUSC
- R4SBC
- R4SBG
- R4SBH
- R4SBJ

Non-Wetland Features

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Streams, ditches, or other drainage features
- Tributary Boundaries (eg., WCB = watershed drainage)
- Fences
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

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MAP ID: SE1

August 17, 1995

/gis/data/rfp-map-ems/wetlands-map/landuse/wet-qued.aml

SE1 Soils Map

From Soil Conservation Service August 20, 1995

(See Soils Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Arglustolls
- Paleustolls
- Haplargids
- Mollisol/Rock Outcrop complex
- Torrifluvents
- Haplustolls
- Torriorthents
- Camborthids
- Haplustolls
- Cryofluvents
- Haplaquolls
- Natrargids
- Argiborolls
- Gravel and Clay Pit
- Rock Outcrop
- DAM
- WATER

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

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MAP ID: SE1

August 17, 1995

/gis/data/rfp-map-emls/soil-maps/landuse/soil-quad.aml

SE1 Geologic Units

August 20, 1995
(See Geologic Units Basemap)
(for Data Source)

EXPLANATION

af Qp Qo Qls
Qt
Qv
Qrf
Ka
Kl
Kfh

Geologic Map Units

af - Artificial fill
Qp - Post-Piney Creek and Piney Creek Alluvium
Qt - Terrace Alluvium
Qo - Colluvium
Qls - Landslide deposits
Qs - Slocum Alluvium
Qv - Verdos Alluvium
Qrf - Rocky Flats Alluvium
Ka - Arapahoe Formation
Kl - Laramie Formation
Kfh - Fox Hills Sandstone

Shallow closed depression
Scarp of young landslide
Areas of vegetation at and near springs
Boundary of gravel and clay pit
Spring
Strike and dip of beds
Chert identification site
Capitol Mine (abandoned)
Geologic Units boundaries
Buffer Zone Quadrants
Buildings or other structures
Lakes and ponds
Streams, ditches, or other drainage features
Fences
Contours (20' Intervals)
Rocky Flats boundary
Paved roads
Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information System Group
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: SE1
August 20, 1995

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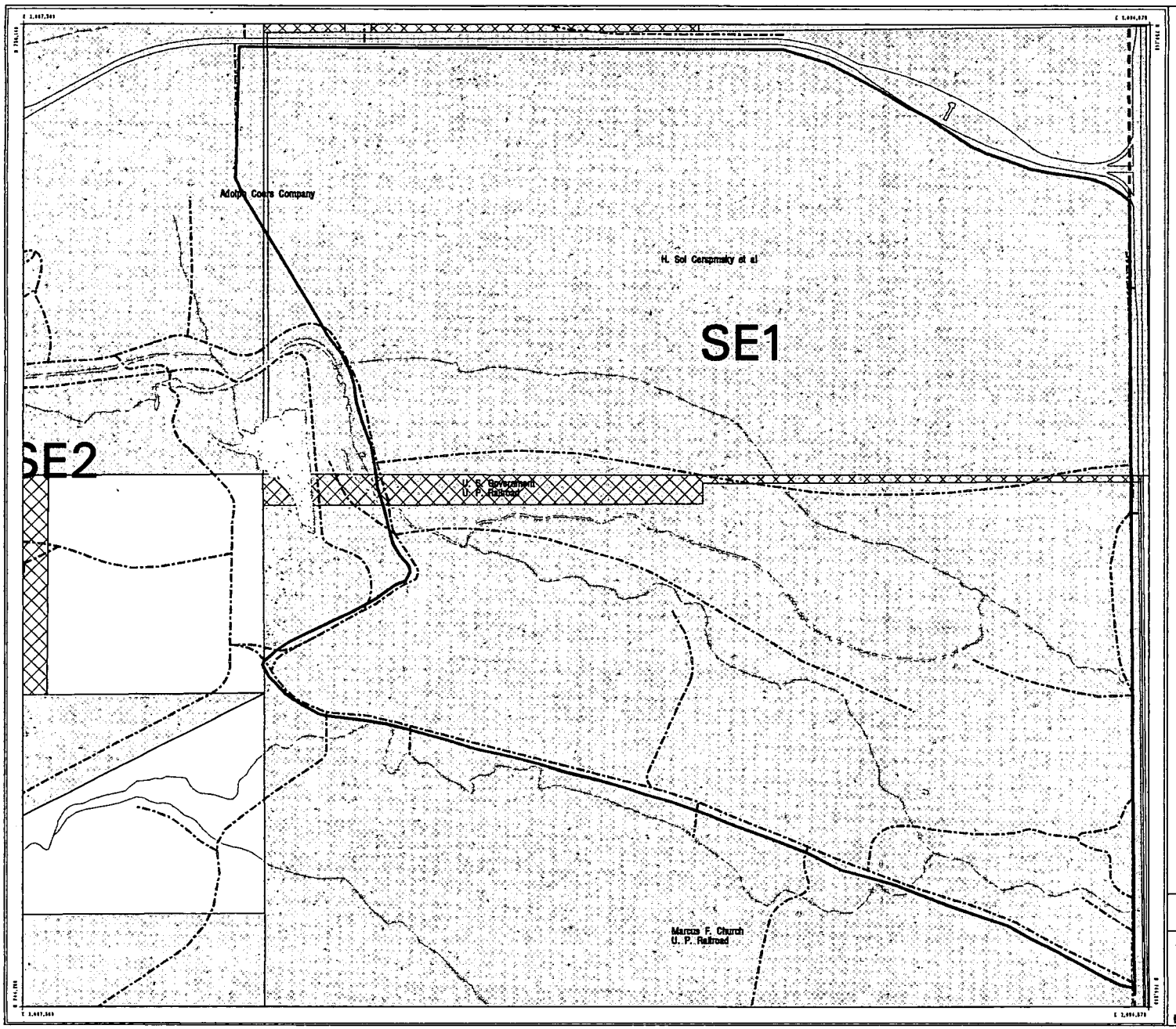

SE1 Mineral Rights at Rocky Flats Environmental Technology Site

August 20, 1995
(See Mineral Rights Basemap for Data Source)

EXPLANATION

- Private
- Government
- Both Government and Private
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

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MAP ID: SE1

August 17, 1995

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SE1 Borehole Sampling Locations

August 20, 1995

(See Borehole Basemap for Data Source)

EXPLANATION

- Borehole locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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Rocky Flats Environmental Technology Site

Prepared by:

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MAP ID: SE1

August 17, 1995

/gis/data/rfp-map-ems/borehole-maps/landuse/bh-quad.aml

SE1 SEDIMENT SAMPLING LOCATIONS

August 20, 1995

(See Sediment Basemap for Data Source)

EXPLANATION

- Sediment Sample Locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 500 1000m

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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MAP ID: SE1

August 17, 1995

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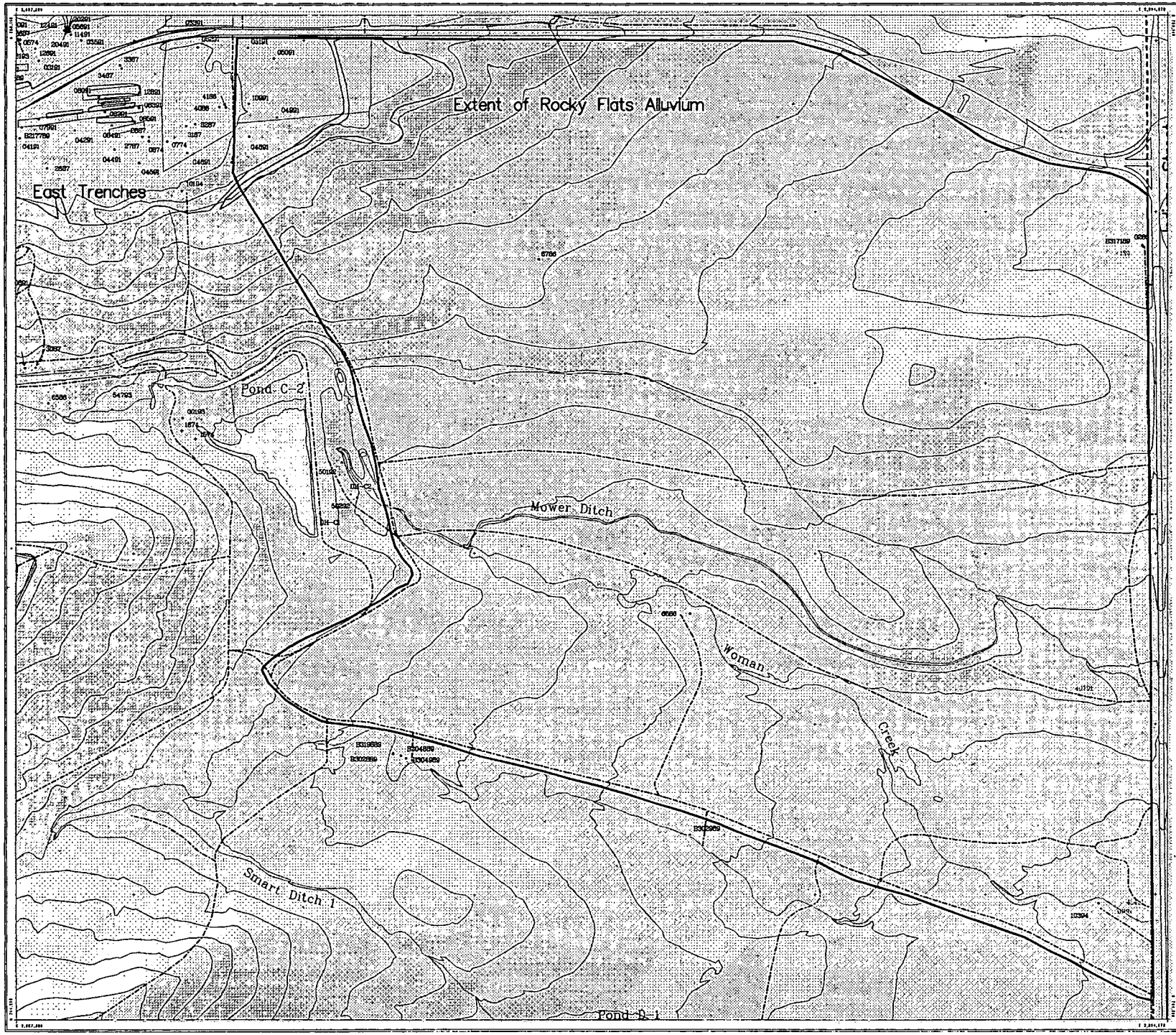

SE1 Groundwater Monitoring Well Location Map

(See Groundwater Basemap for Data Source)

WELL TYPES

- Boundary Wells
- CERCLA Characterization Wells
- RCRA Regulatory
- RCRA Characterization Wells
- Special Purpose Wells

Groundwater Monitoring Program Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock

Inactive Groundwater Monitoring Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock
- Abandoned Groundwater Monitoring Wells

Other

- Buildings and other structures
- Ponds & Lakes
- Buffer Zone Quadrants
- Individual Hazardous Substance Sites
- Extent of Rocky Flats Alluvium
- Fences
- Contours (20' Interval)
- Rocky Flats boundary
- Paved roads
- Dirt roads

100 0 200 400ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
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Golden, CO 80402-0464

MAP ID: SE1

August 10, 1998

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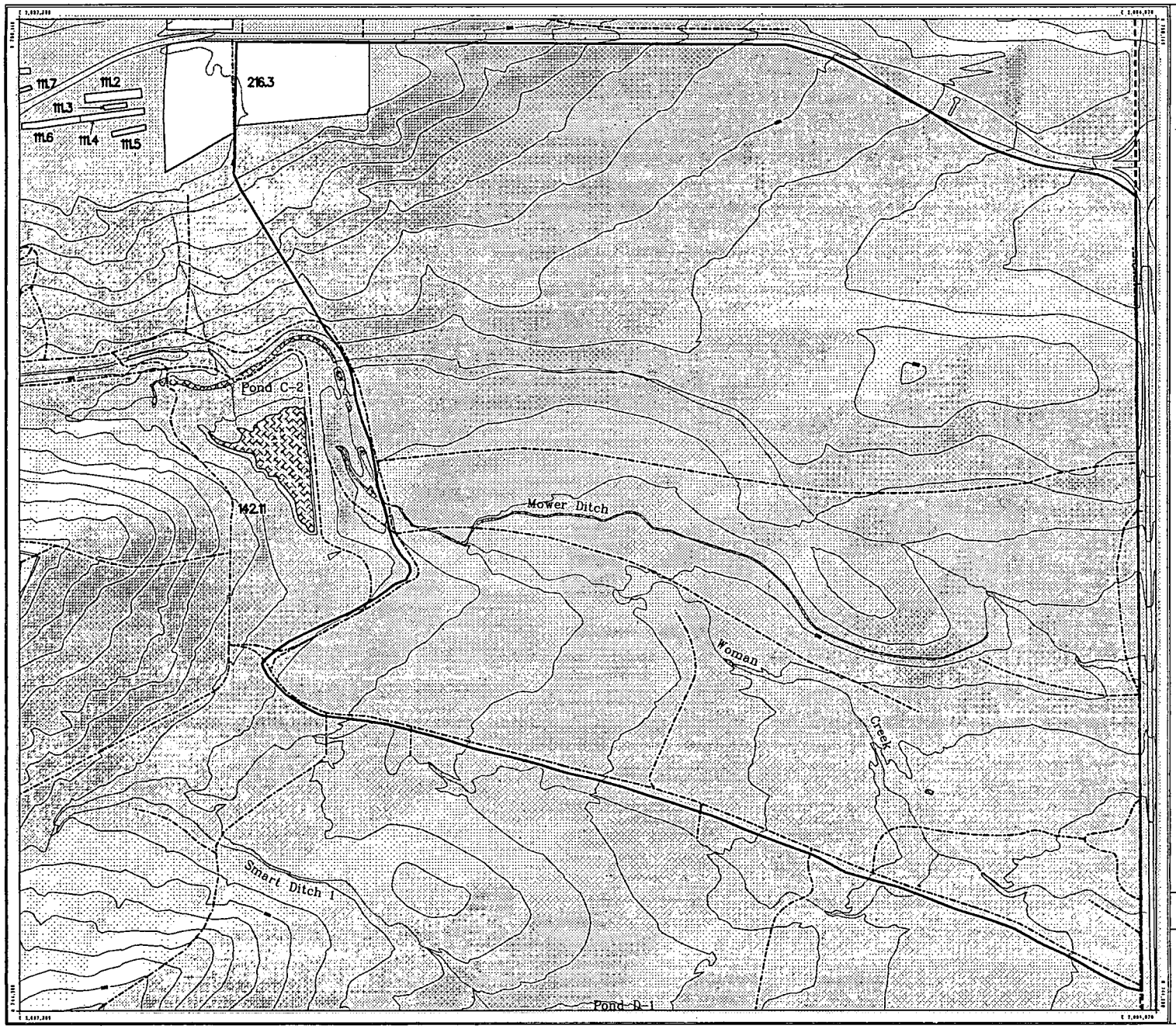
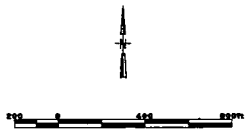


SE1 IHSS

(See IHSS Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Operable Unit 1
- Operable Unit 2
- Operable Unit 4
- Operable Unit 5
- Operable Unit 6
- Operable Unit 7
- Operable Unit 8
- Operable Unit 9
- Operable Unit 10
- Operable Unit 11
- Operable Unit 12
- Operable Unit 13
- Operable Unit 14
- Operable Unit 15
- Operable Unit 16
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads



State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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Rocky Flats Environmental Technology Site

Prepared by:

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P.O. Box 464
Golden, CO 80402-0464

MAP ID: SE1

August 18, 1995

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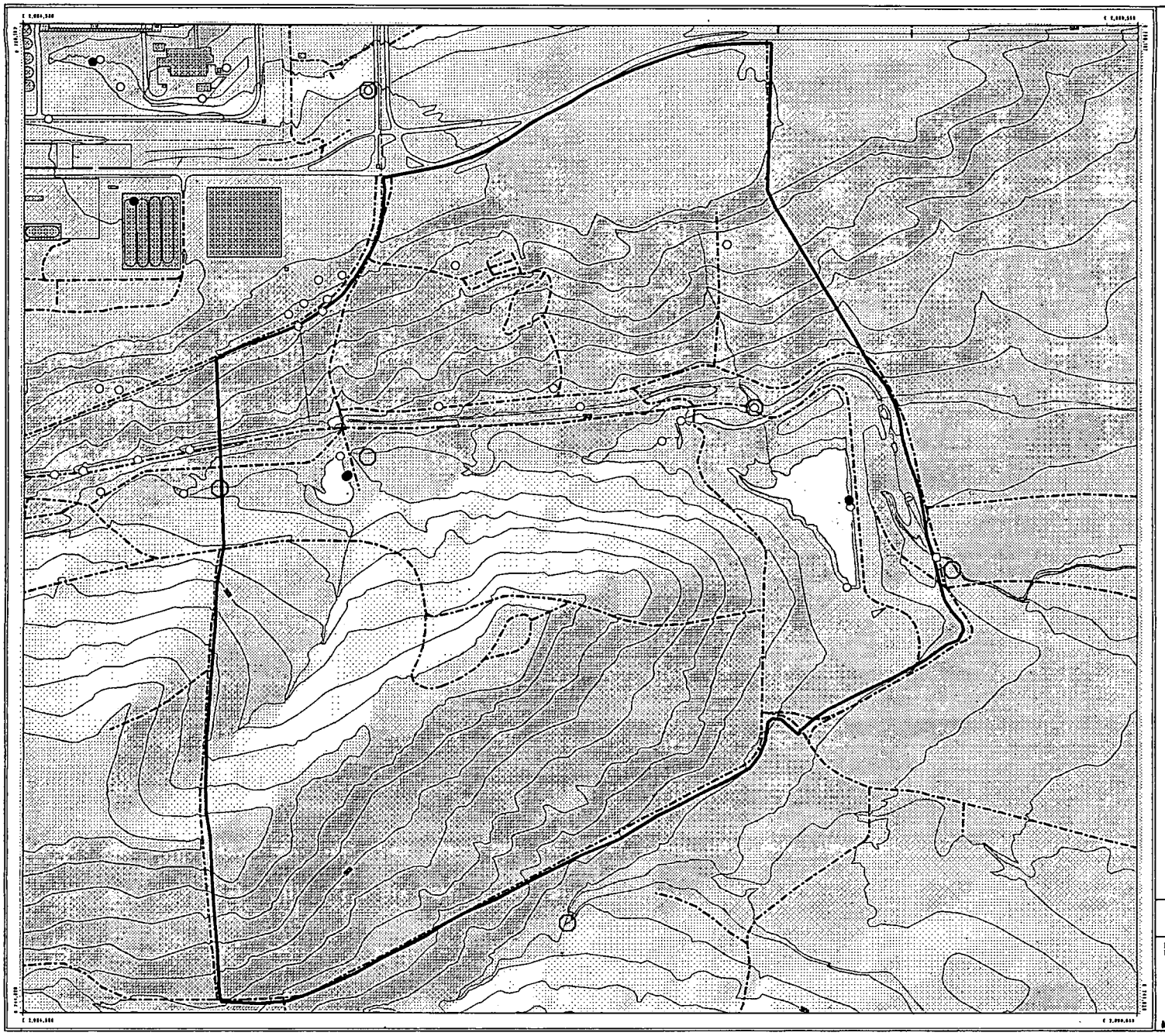

SE2 Surface Water Sampling Locations

August 20, 1995
(See Surface Water Basemap for Data Source)

EXPLANATION

- Surface water stations
- Routine operational sites
- NPDES/FFCA permit monitoring sites
- Gaging stations
- NPDES storm water permit sampling sites
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
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Rocky Flats Environmental Technology Site
P.O. Box 464
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MAP ID: SE2

August 17, 1995

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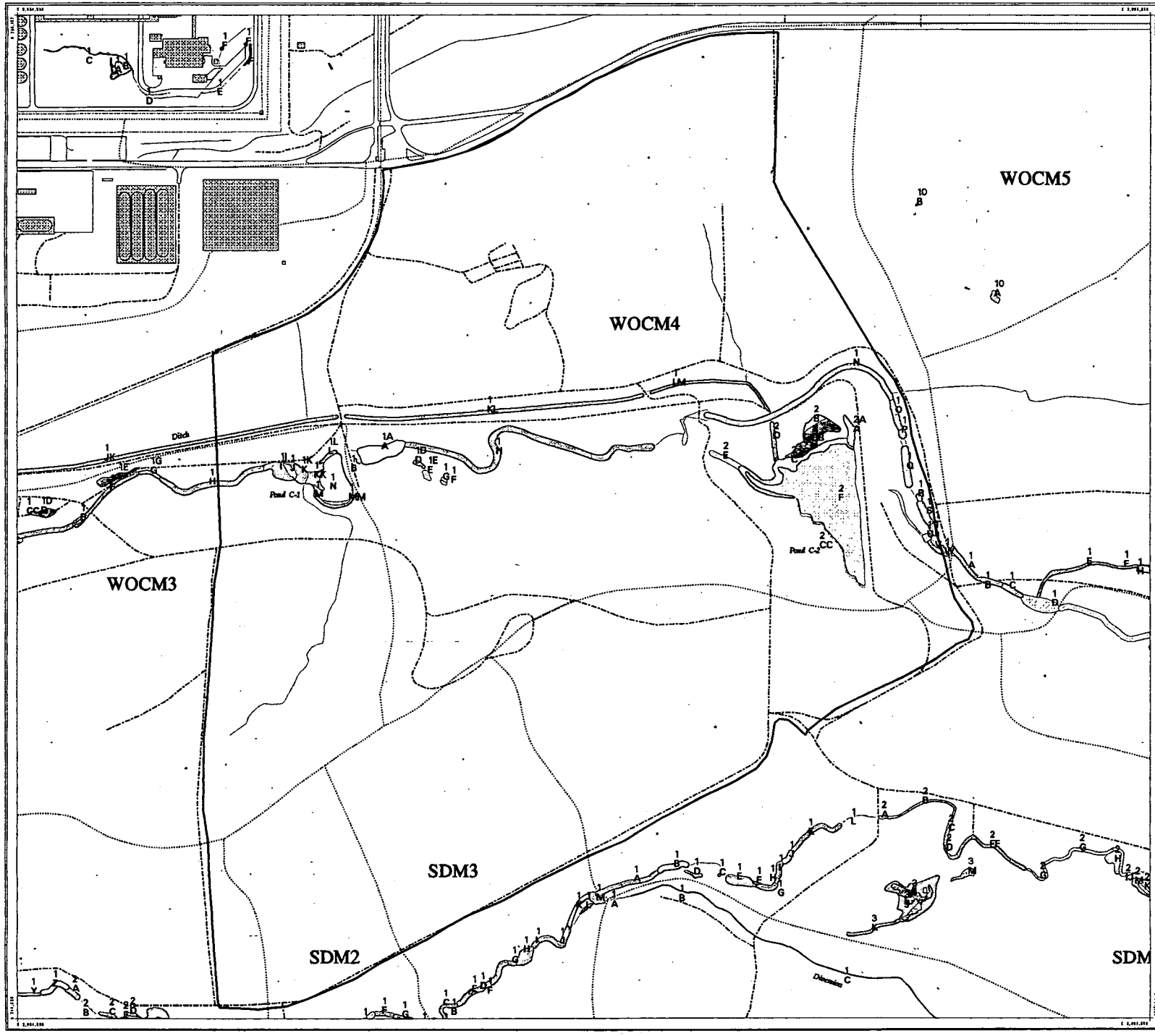

SE2 WETLANDS

August 20, 1995

(See wetlands base map for data source and notes)

Explanation

Buffer Zone Quadrants

Cowardin Wetlands Codes

- L1UBH
- PABH
- PEMA
- PEMB
- PEMC
- PEMF
- PFOA
- PFOC
- PSSA
- PSSC
- PUBF
- PUBH
- PUSC
- R4SBC
- R4SBG
- R4SBH
- R4SBJ

Non-Wetland Features

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Streams, ditches, or other drainage features
- Tributary Boundaries (e.g., WCB = watershed drainage)
- Fences
- Rocky Flats boundary
- Paved roads
- Dirt roads

N

100 0 200 400ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

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Golden, CO 80402-0464

MAP ID: SE2

August 17, 1995

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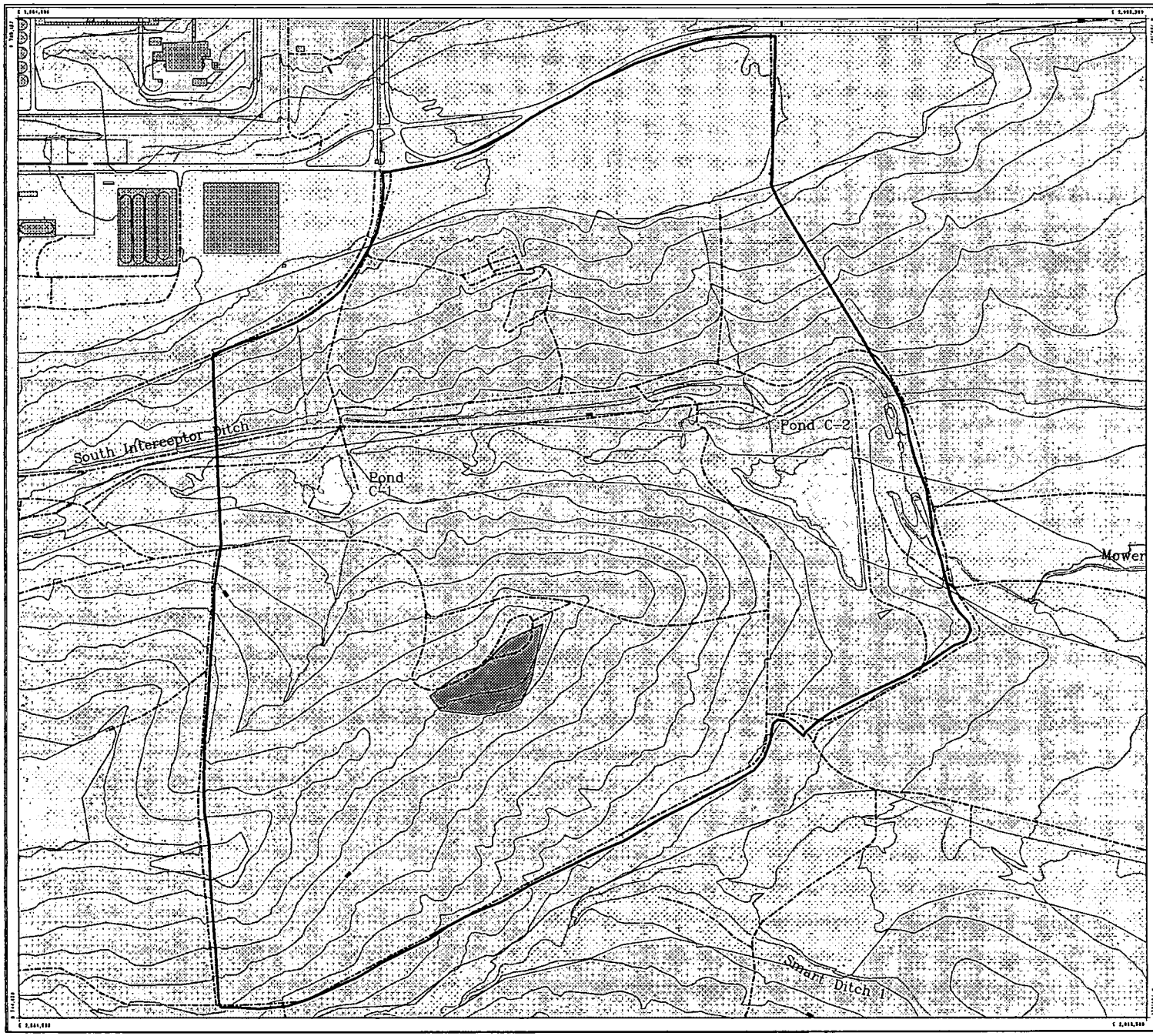

SE2 Soils Map

From Soil Conservation Service
August 20, 1995

(See Soils Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Argiustolls
- Paleustolls
- Haplargids
- Mollisol/Rock Outcrop complex
- Torrifluvents
- Haplustolls
- Torriorthents
- Camborthids
- Haplustolls
- Cryofluvents
- Haplaquolls
- Natrargids
- Argiborolls
- Gravel and Clay Pit
- Rock Outcrop
- DAM
- WATER

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: SE2

August 17, 1995

/gis/data/rfp-map-ems/landuse/soil-quad.eml

SE2 Geologic Units

August 20, 1995
(See Geologic Units Basemap)
(for Data Source)

EXPLANATION

af Qp Qo Qls
Qt
Qv
Qrf
Ka
Kl
Kfh

Geologic Map Units

af - Artificial fill
Qp - Post-Piney Creek and Piney Creek Alluvium
Qt - Terrace Alluvium
Qo - Colluvium
Qls - Landslide deposits
Qs - Slocum Alluvium
Qv - Verdos Alluvium
Qrf - Rocky Flats Alluvium
Ka - Arapahoe Formation
Kl - Laramie Formation
Kfh - Fox Hills Sandstone

Shallow closed depression
Scarp of young landslide
Areas of vegetation at and near springs
Boundary of gravel and clay pit
Spring
Strike and dip of beds
Clast identification site
Capitol Mine (abandoned)
Geologic Units boundaries
Buffer Zone Quadrants

Buildings or other structures
Lakes and ponds
Streams, ditches, or other drainage features
Fences
Contours (20' intervals)
Rocky Flats boundary
Paved roads
Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: SE2 August 20, 1995

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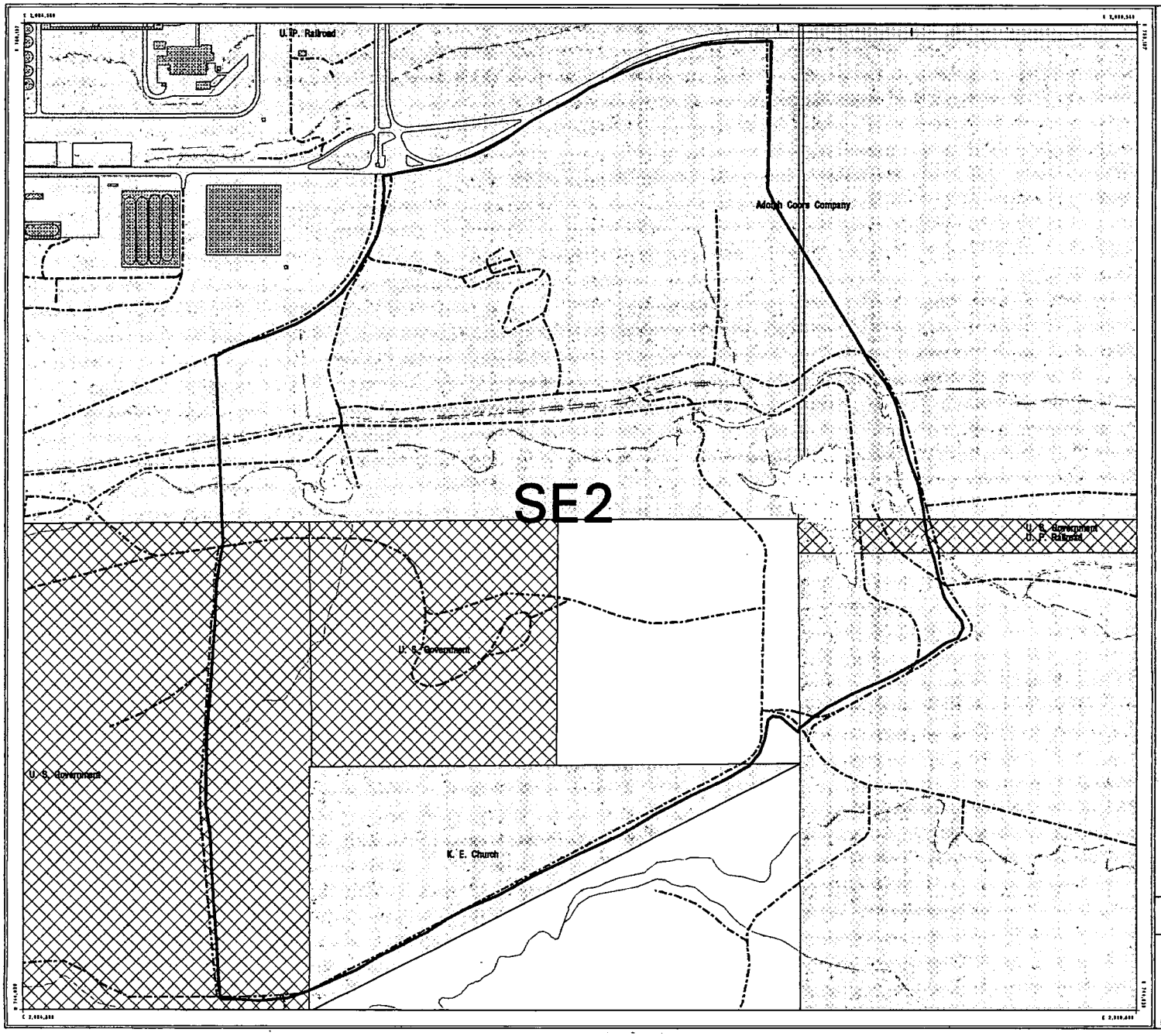

SE2 Mineral Rights at Rocky Flats Environmental Technology Site

August 20, 1995
(See Mineral Rights Basemap for Data Source)

EXPLANATION

- Private
- Government
- Both Government and Private
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
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Golden, CO 80402-0464

MAP ID: SE2

August 17, 1995

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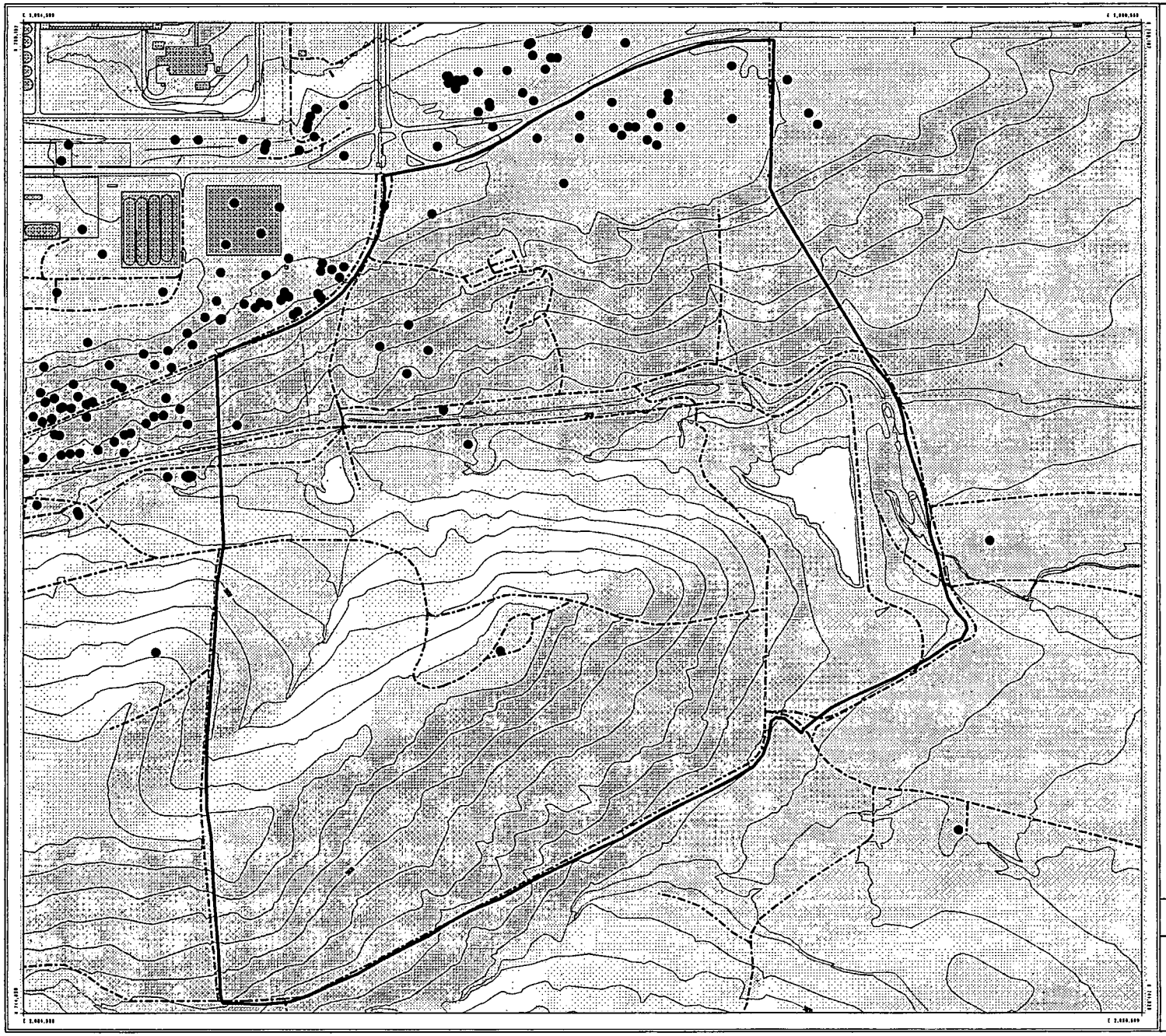

SE2 Borehole Sampling Locations
August 20, 1995

(See Borehole Basemap for Data Source)

EXPLANATION

- Borehole locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
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Prepared by:

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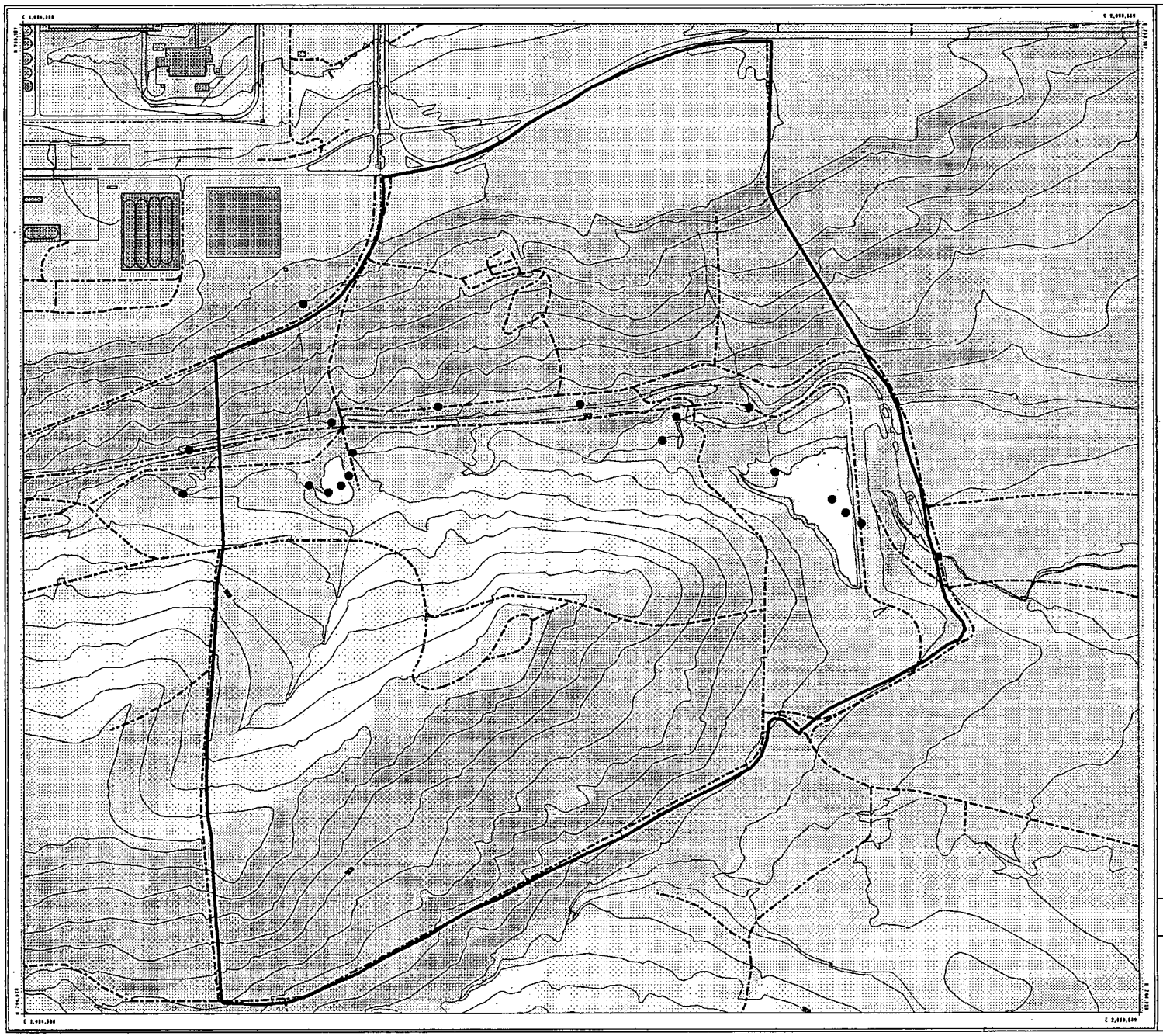
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: SE2

August 17, 1995

/gis/data/rfp-map-amls/borehole-maps/landuse/bh-quad.aml



SE2 SEDIMENT SAMPLING LOCATIONS

August 20, 1995

(See Sediment Basemap for Data Source)

EXPLANATION

- Sediment Sample Locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: SE2

August 17, 1995

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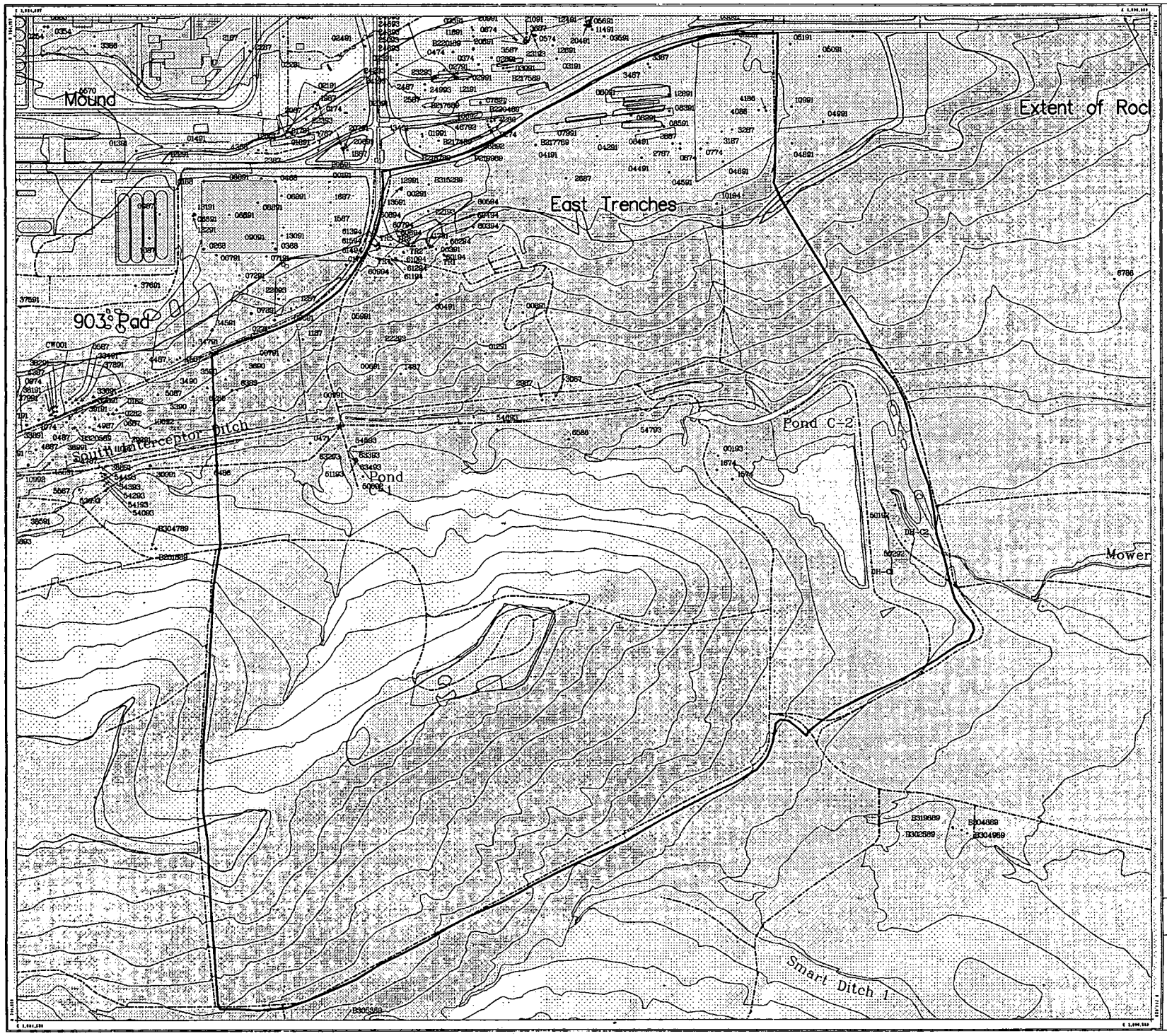

SE2 Groundwater Monitoring Well Location Map

(See Groundwater Basemap for Data Source)

WELL TYPES

- Boundary Wells
- CERCLA Characterization Wells
- RCRA Regulatory
- RCRA Characterization Wells
- Special Purpose Wells

Groundwater Monitoring Program Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock

Inactive Groundwater Monitoring Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock
- Abandoned Groundwater Monitoring Wells

Other

- Buildings and other structures
- Ponds & Lakes
- Buffer Zone Quadrants
- Individual Hazardous Substance Sites
- Extent of Rocky Flats Alluvium
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

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MAP ID: SE2

August 10, 1999

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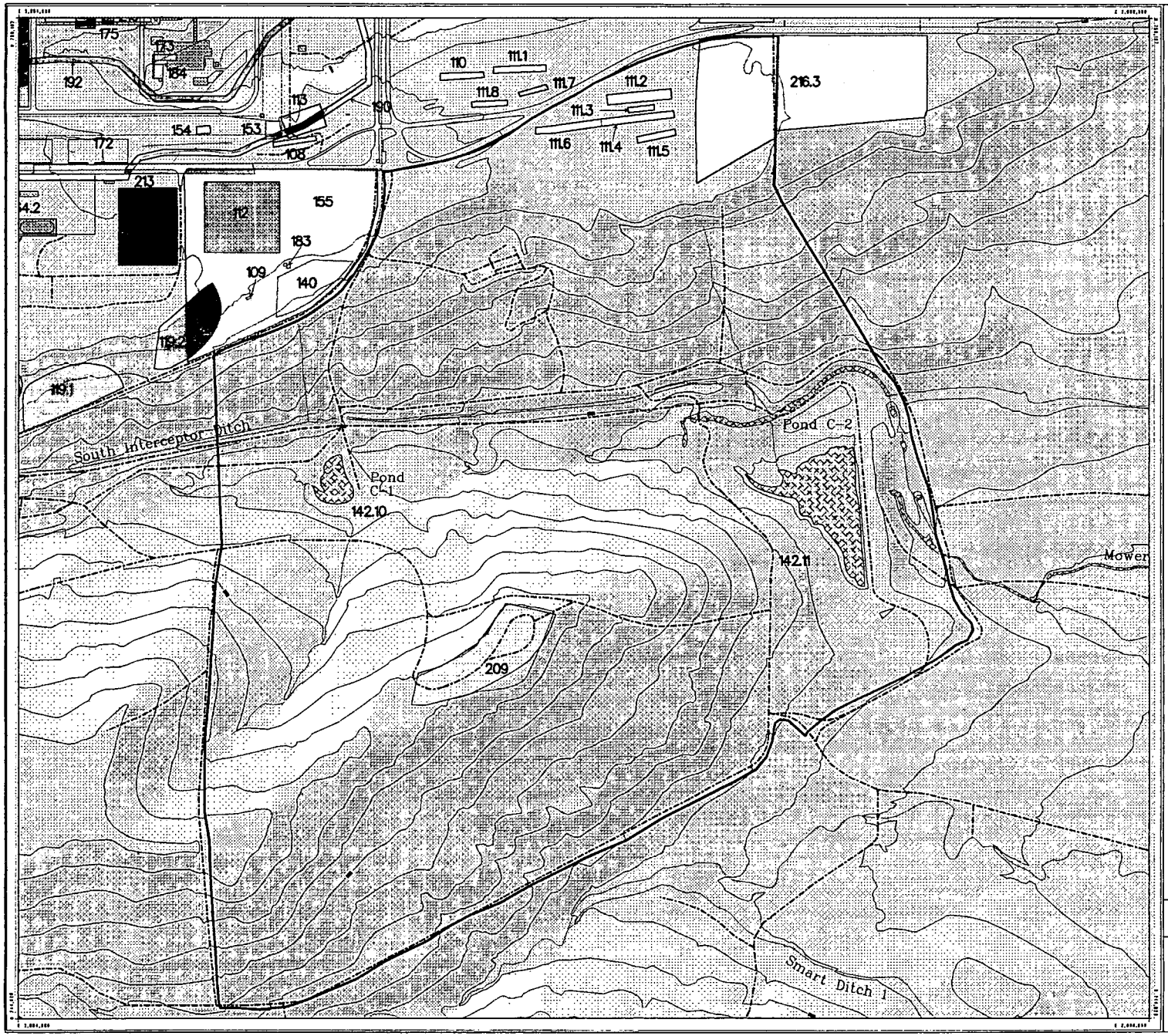

SE2 IHSS

(See IHSS Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Operable Unit 1
- Operable Unit 2
- Operable Unit 4
- Operable Unit 5
- Operable Unit 6
- Operable Unit 7
- Operable Unit 8
- Operable Unit 9
- Operable Unit 10
- Operable Unit 11
- Operable Unit 12
- Operable Unit 13
- Operable Unit 14
- Operable Unit 15
- Operable Unit 16

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

100 0 200 400FT

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

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Golden, CO 80402-0464

MAP ID: 622

August 15, 1996

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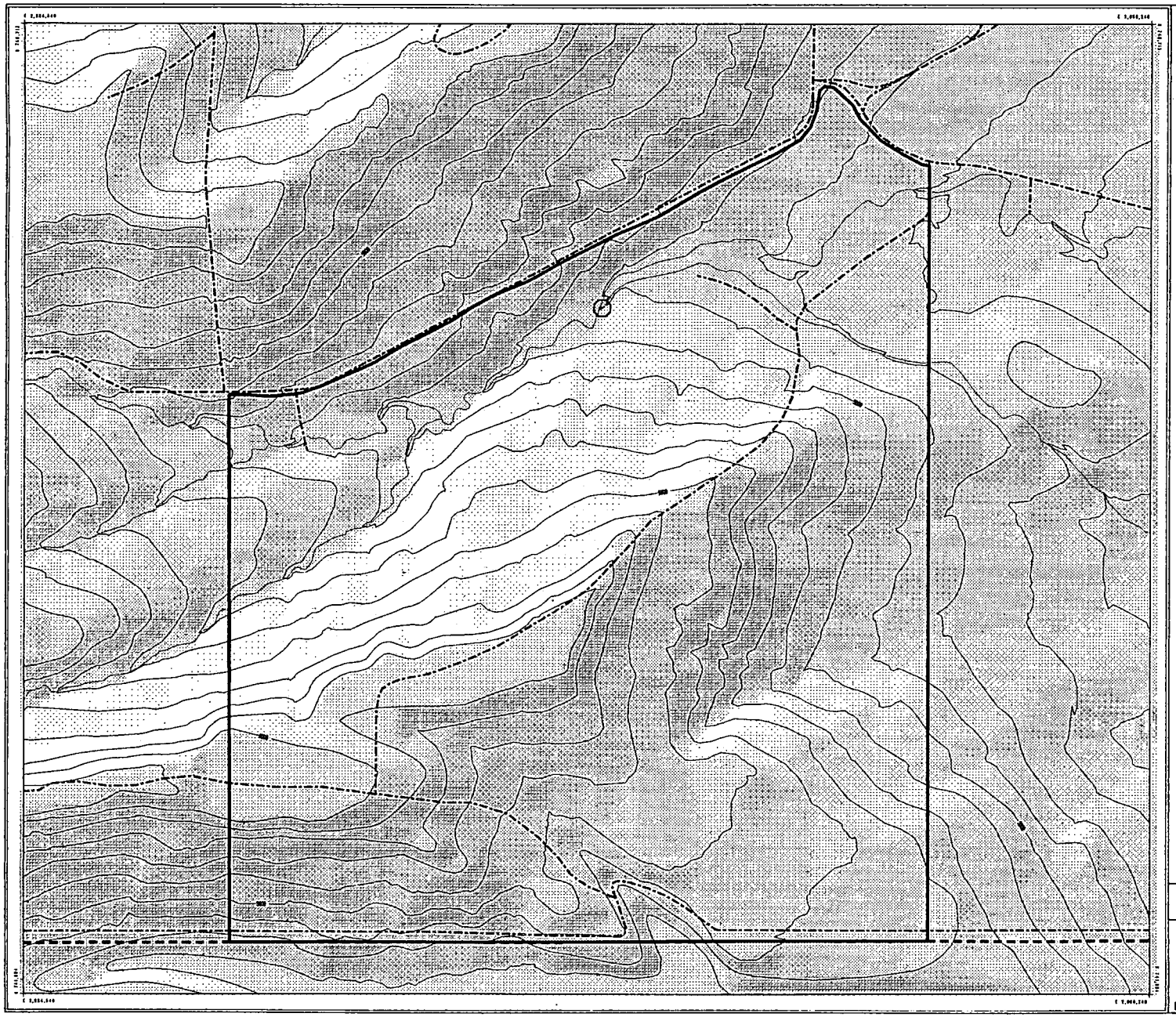

SE3 Surface Water Sampling Locations

August 20, 1995
(See Surface Water Basemap for Data Source)

EXPLANATION

- Surface water stations
- Routine operational sites
- NPDES/FFCA permit monitoring sites
- Gaging stations
- NPDES storm water permit sampling sites
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
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Golden, CO 80402-0464

MAP ID: SE3

August 17, 1995

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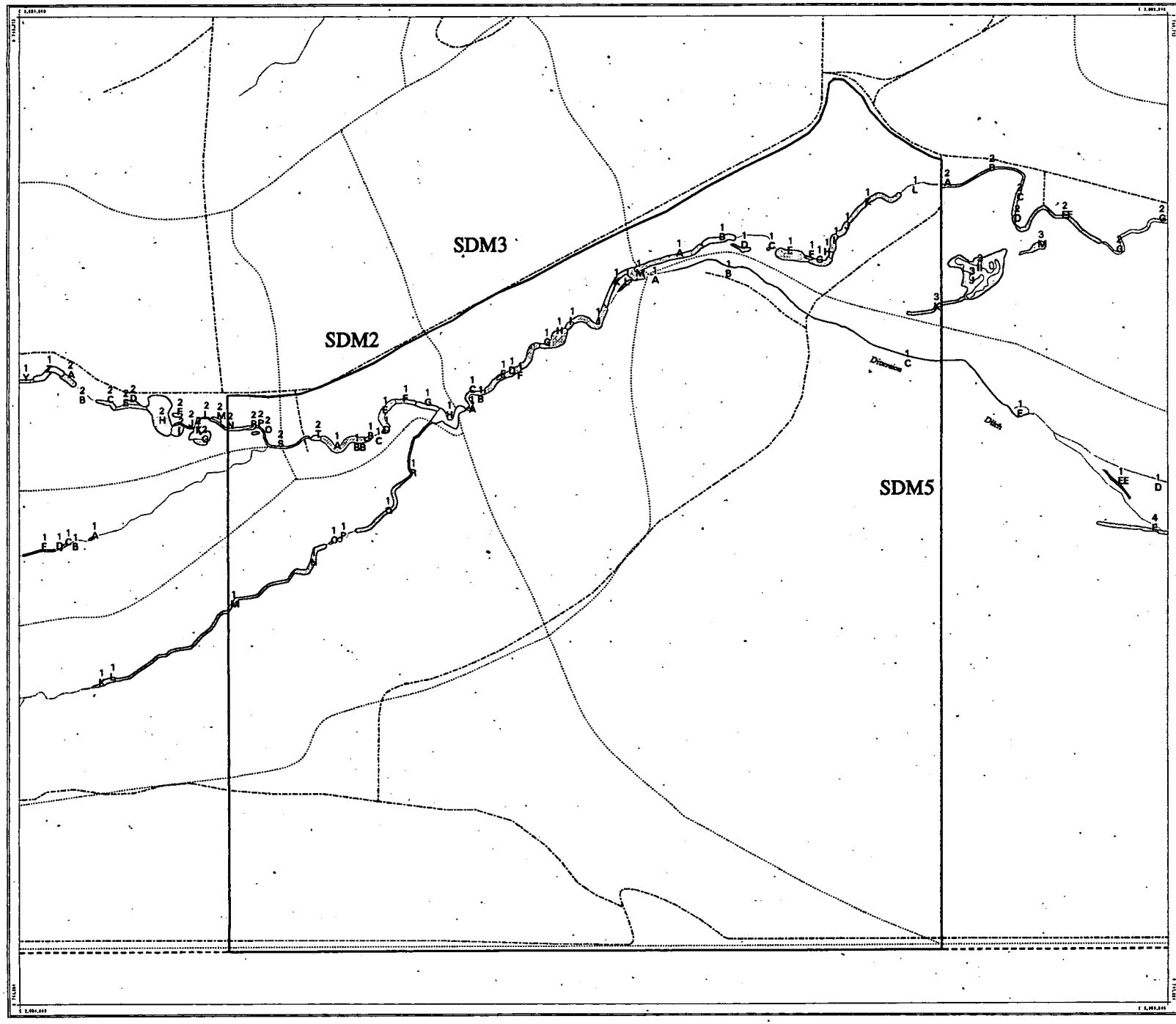

SE3 WETLANDS

August 20, 1995

(See wetlands base map for data source and notes)

Explanation

Buffer Zone Quadrants

Cowardin Wetlands Codes

- L1UBH
- PABH
- PEMA
- PEMB
- PEMC
- PEMF
- PFOA
- PFOC
- PSSA
- PSSC
- PUBF
- PUBH
- PUSC
- R4SBC
- R4SBG
- R4SBH
- R4SBJ

Non-Wetland Features

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Streams, ditches, or other drainage features
- Tributary Boundaries (e.g., WCB = watershed drainage)
- Fences
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
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Golden, CO 80402-0464

MAP ID: SE3 August 17, 1995

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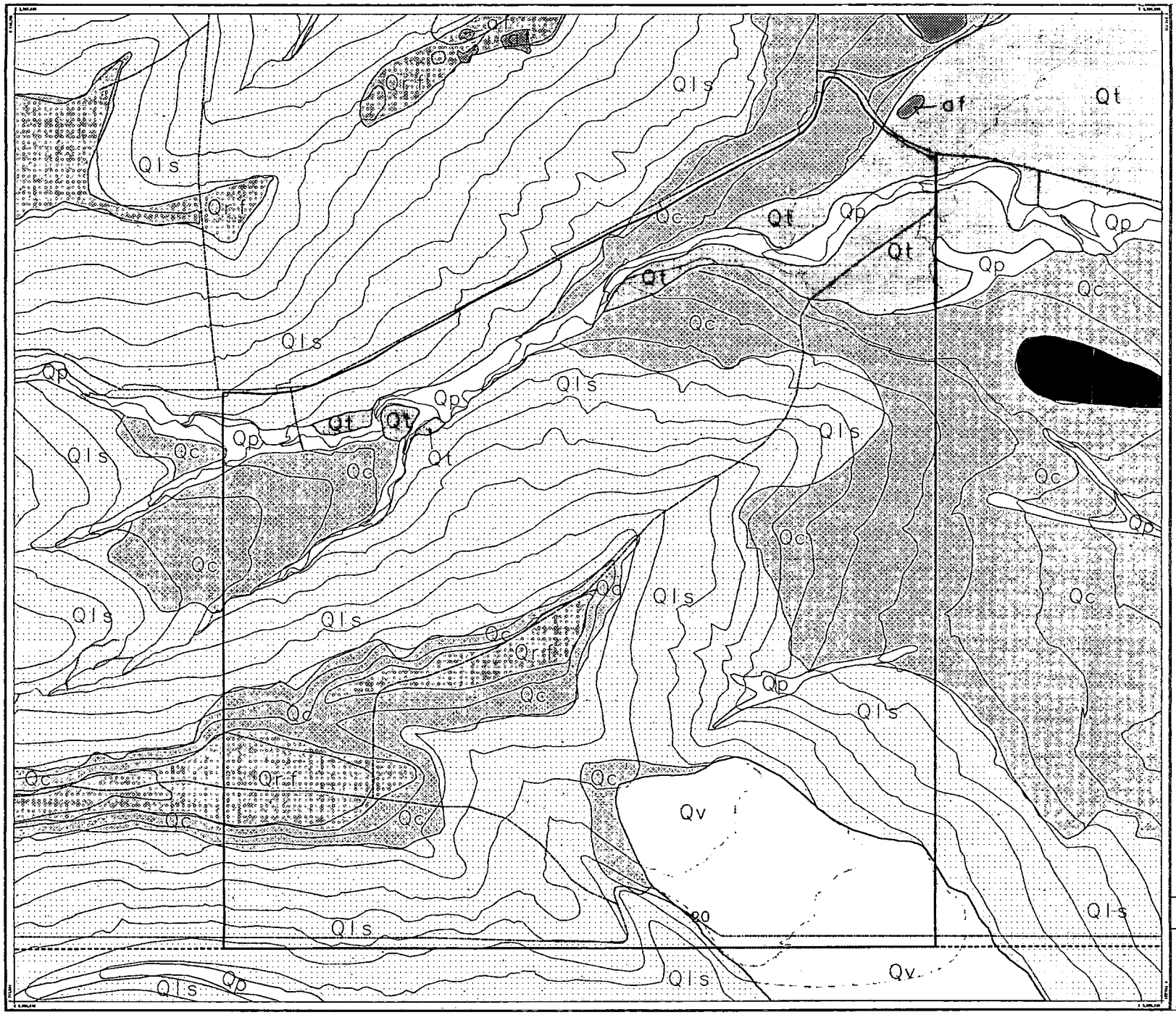

SE3 Geologic Units

August 20, 1995
(See Geologic Units Basemap)
(for Data Source)

EXPLANATION

Geologic Map Units

af - Artificial fill
Qp - Post-Piney Creek and Piney Creek Alluvium
Qt - Terrace Alluvium
Qc - Colluvium
Qls - Landslide deposits
Qs - Slocum Alluvium
Qv - Verdos Alluvium
Qrf - Rocky Flats Alluvium
Ka - Arapahoe Formation
Kl - Laramie Formation
Kfh - Fox Hills Sandstone

Shallow closed depression
Scarp of young landslide
Areas of vegetation at and near springs
Boundary of gravel and clay pit
Spring
Strike and dip of beds
Clast identification site
Capitol Mine (abandoned)
Geologic Units boundaries
Buffer Zone Quadrants

Buildings or other structures
Lakes and ponds
Streams, ditches, or other drainage features
Fences
Contours (20' Intervals)
Rocky Flats boundary
Paved roads
Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
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Golden, CO 80403-0464

MAP ID: SE3
August 20, 1995

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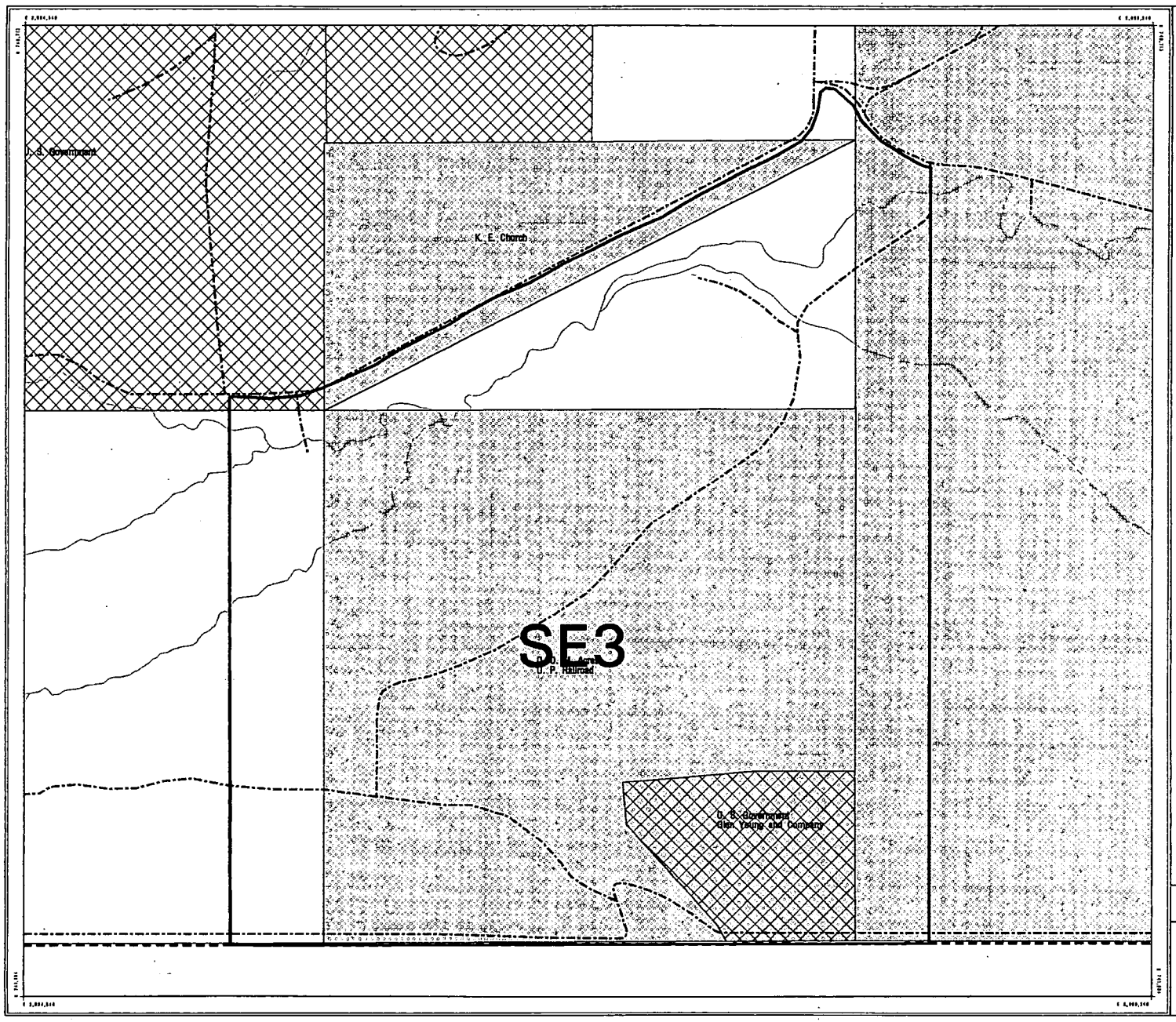

SE3 Mineral Rights at Rocky Flats Environmental Technology Site

August 20, 1995
(See Mineral Rights Basemap for Data Source)

EXPLANATION

- Private
- Government
- Both Government and Private
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: SE3

August 17, 1995

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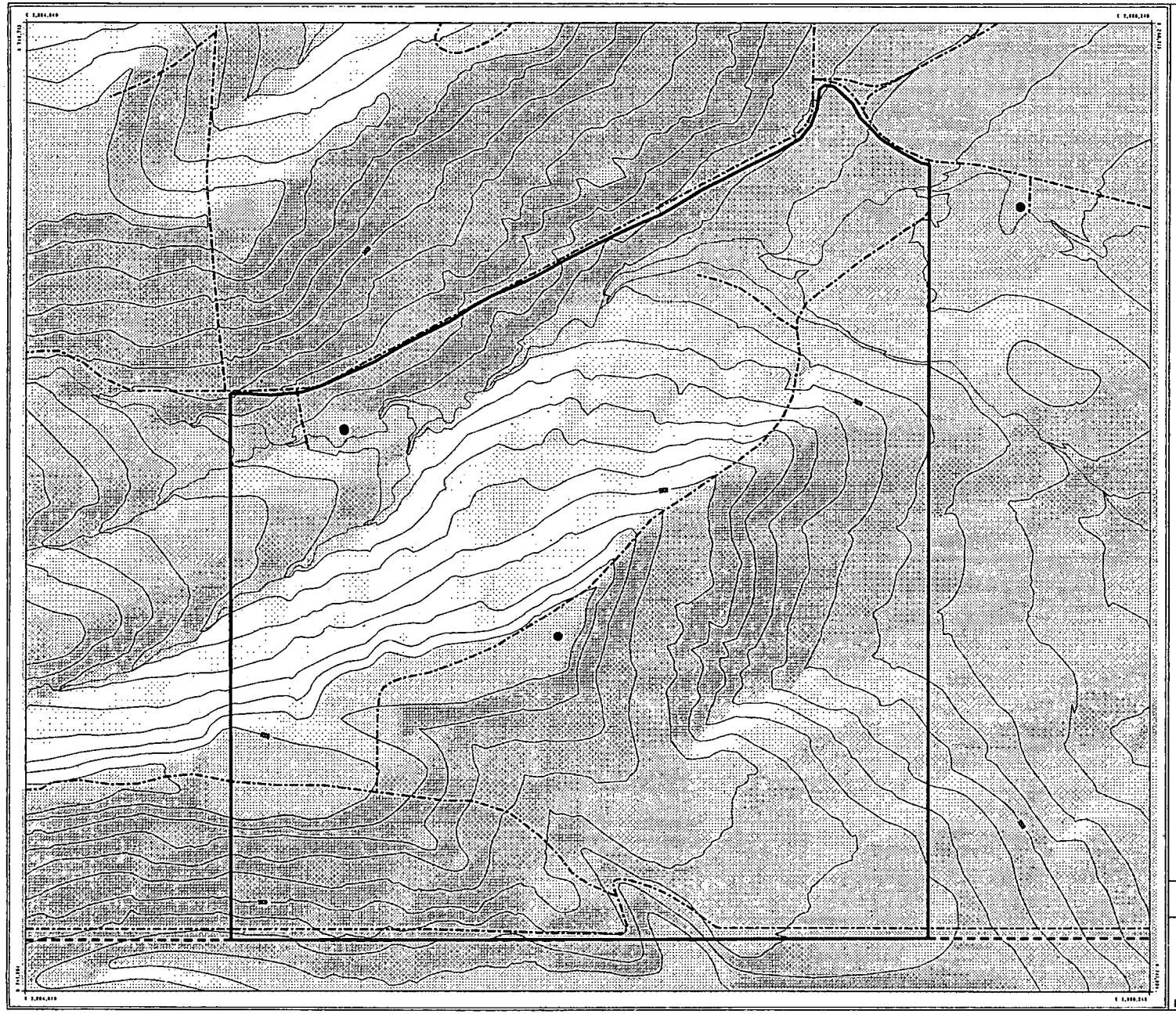

SE3 Borehole Sampling Locations

August 20, 1995

(See Borehole Basemap for Data Source)

EXPLANATION

- Borehole locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
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MAP ID: SE8

August 17, 1995

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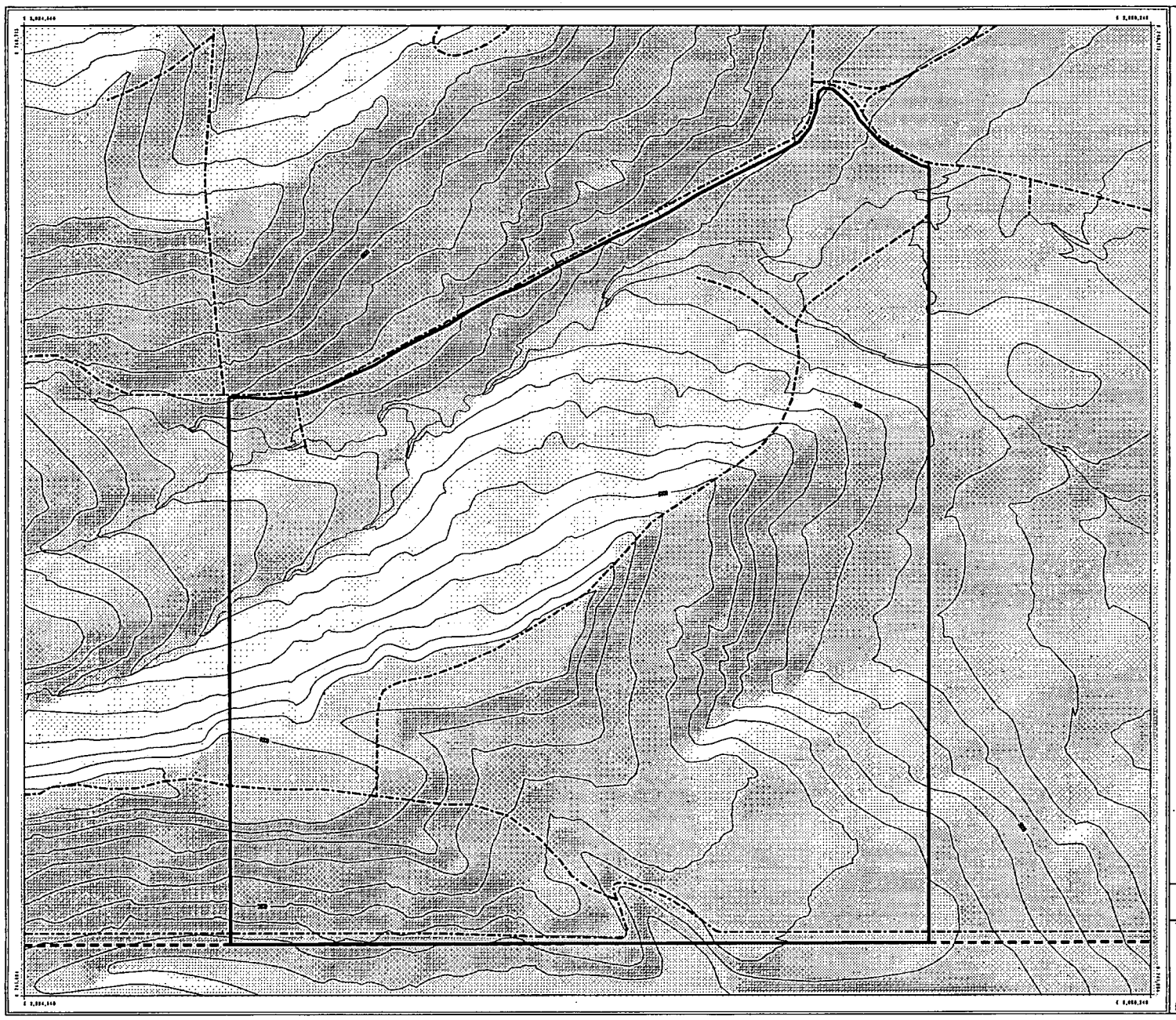

SE3 SEDIMENT SAMPLING LOCATIONS

August 20, 1995

(See Sediment Basemap for Data Source)

EXPLANATION

- Sediment Sample Locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
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MAP ID: SE3

August 17, 1995

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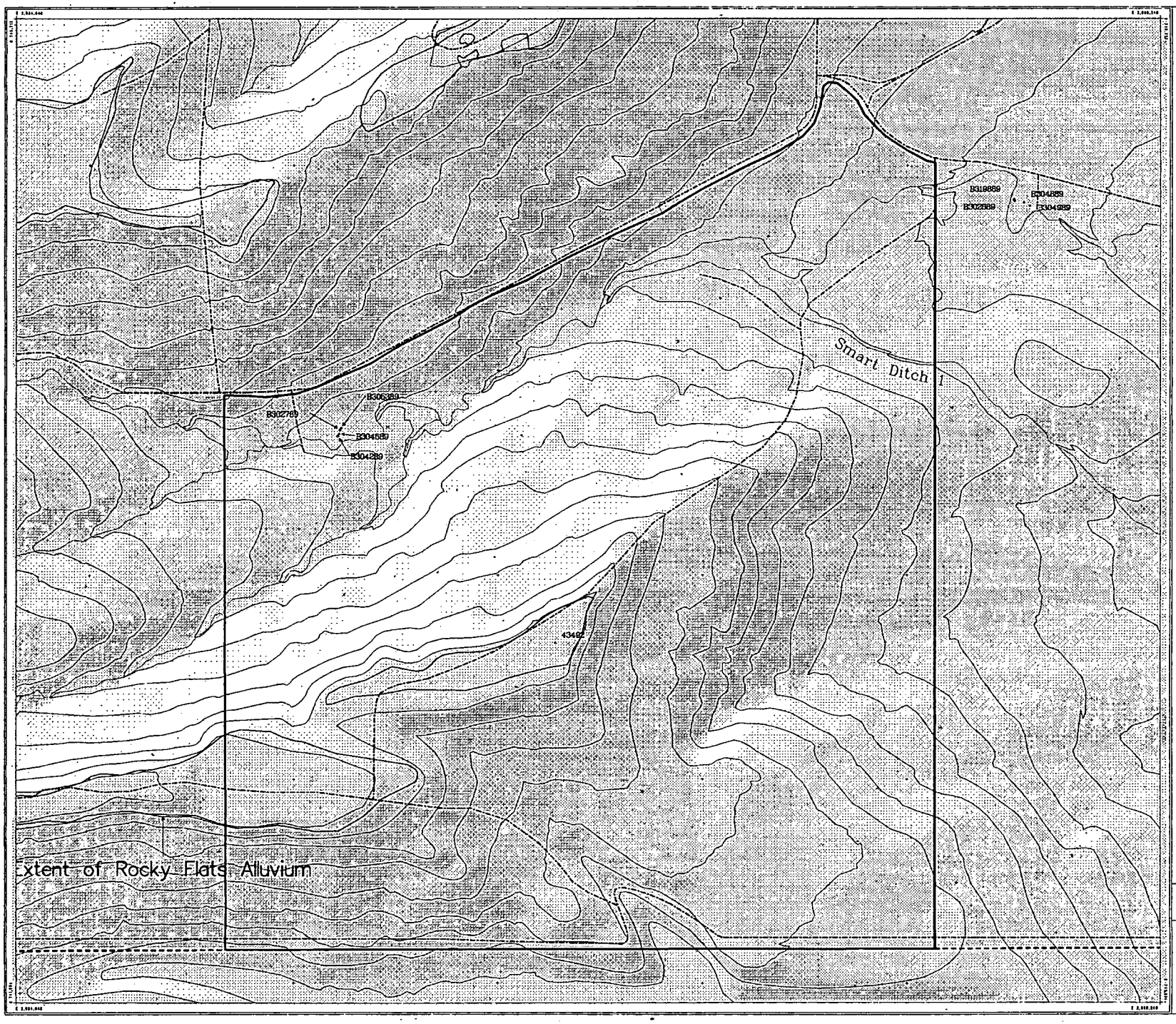

SE3 Groundwater Monitoring Well Location Map

(See Groundwater Basemap for Data Source)

WELL TYPES

- Boundary Wells
- CERCLA Characterization Wells
- RCRA Regulatory
- RCRA Characterization Wells
- Special Purpose Wells

Groundwater Monitoring Program Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock

Inactive Groundwater Monitoring Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock
- Abandoned Groundwater Monitoring Wells

Other

- Buildings and other structures
- Ponds & Lakes
- Buffer Zone Quadrants
- Individual Hazardous Substance Sites
- Extent of Rocky Flats Alluvium
- Fences
- Contours 20' Interval
- Rocky Flats boundary
- Paved roads
- Dirt roads

N

100 0 200 400ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
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MAP ID: SE3

August 10, 1995

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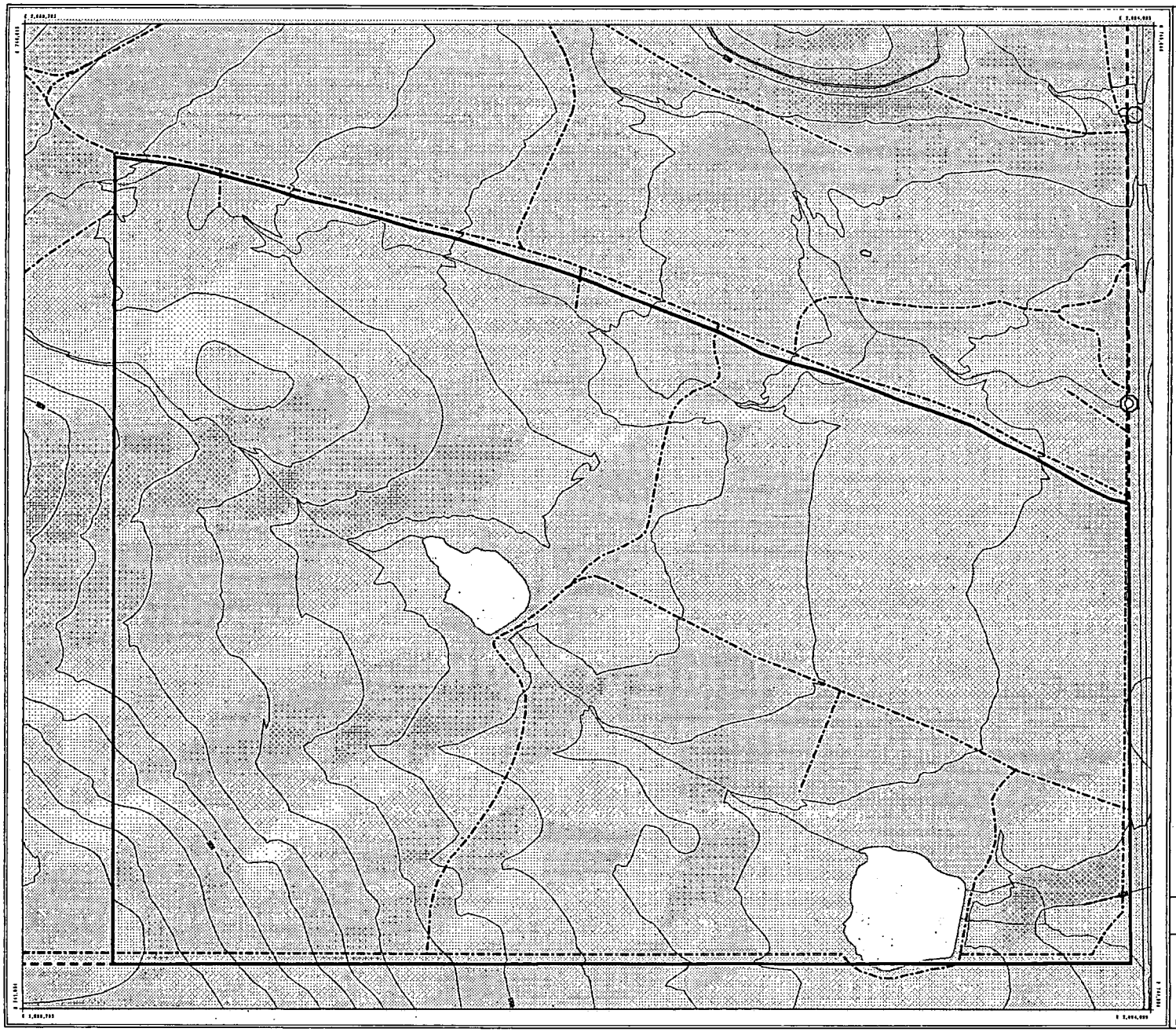

SE4 Surface Water Sampling Locations

August 20, 1995
(See Surface Water Basemap for Data Source)

EXPLANATION

- Surface water stations
- Routine operational sites
- NPDES/FFCA permit monitoring sites
- Gaging stations
- NPDES storm water permit sampling sites
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
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Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: SE4

August 21, 1995

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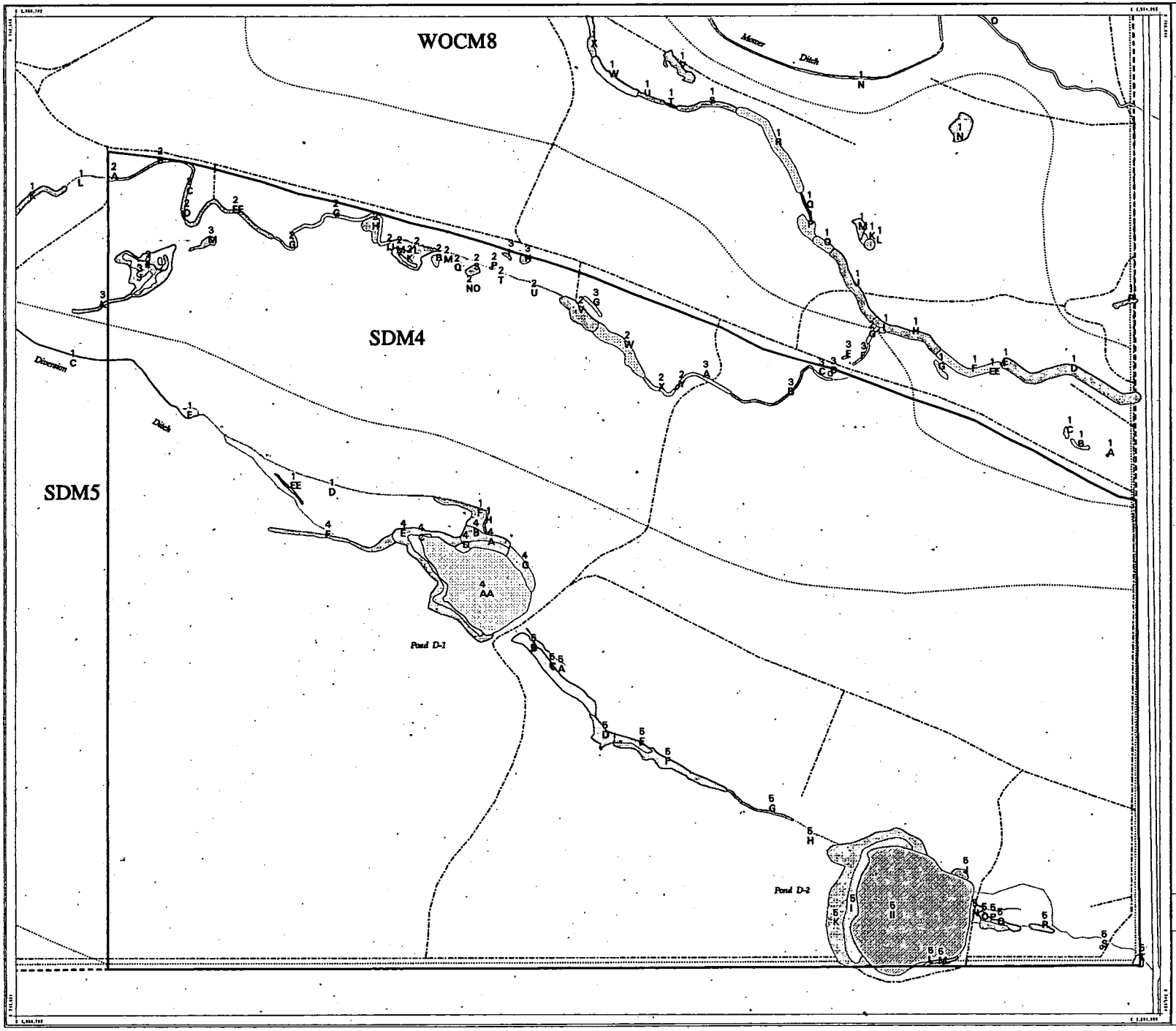

SE4 WETLANDS

August 20, 1995

(See wetlands base map for data source and notes)

Explanation

Buffer Zone Quadrants

Cowardin Wetlands Codes

- L1UBH
- PABH
- PEMA
- PEMB
- PEMC
- PEMF
- PFOA
- PFOC
- PSSA
- PSSC
- PUBF
- PUBH
- PUSC
- R4SBC
- R4SBG
- R4SBH
- R4SBJ

Non-Wetland Features

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Streams, ditches, or other drainage features
- Tributary Boundaries (eg., WCB = watershed drainage)
- Fences
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
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MAP ID: SE4

August 17, 1995

/gis/data/rfp-map-amls/wetlands-maps/landuse/wet-quad.aml

SE4 Soils Map

From Soil Conservation Service
August 20, 1995

(See Soils Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Argiustolls
- Paleustolls
- Haplargids
- Mollisol/Rock Outcrop complex
- Torrifluvents
- Haplustolls
- Torriorthents
- Camborthids
- Haplustolls
- Cryofluvents
- Haplaquolls
- Natrargids
- Argiborolls
- Gravel and Clay Pit
- Rock Outcrop
- DAM
- WATER

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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MAP ID: SE4 August 17, 1995

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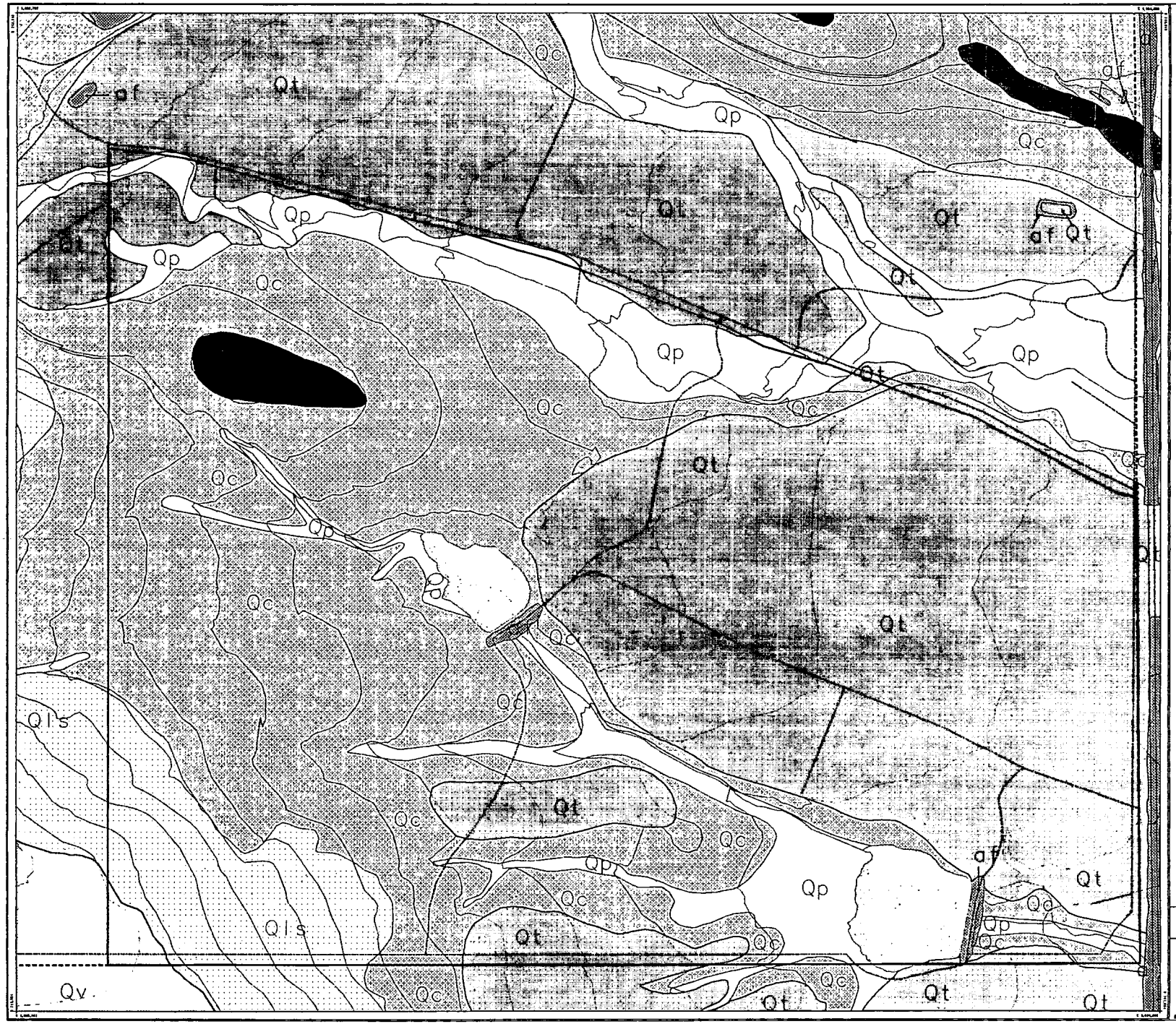

SE4 Geologic Units

August 20, 1995
(See Geologic Units Basemap)
(for Data Source)

EXPLANATION

Geologic Map Units

af - Artificial fill
Qp - Post-Piney Creek and Piney Creek Alluvium
Qt - Terrace Alluvium
Qc - Colluvium
Qls - Landslide deposits
Qs - Slocum Alluvium
Qv - Verdos Alluvium
Qrf - Rocky Flats Alluvium
Ka - Arapahoe Formation
Kl - Laramie Formation
Kfh - Fox Hills Sandstone

Shallow closed depression
Scarp of young landslide
Areas of vegetation at and near springs
Boundary of gravel and clay pit
Spring
Strike and dip of beds
Clast identification site
Capitol Mine (abandoned)
Geologic Units boundaries
Buffer Zone Quadrants

Buildings or other structures
Lakes and ponds
Streams, ditches, or other drainage features
Fences
Contours (20' Intervals)
Rocky Flats boundary
Paved roads
Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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Rocky Flats Environmental Technology Site

Prepared by:
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Golden, CO 80402-0464

MAP ID: SE4 August 20, 1995

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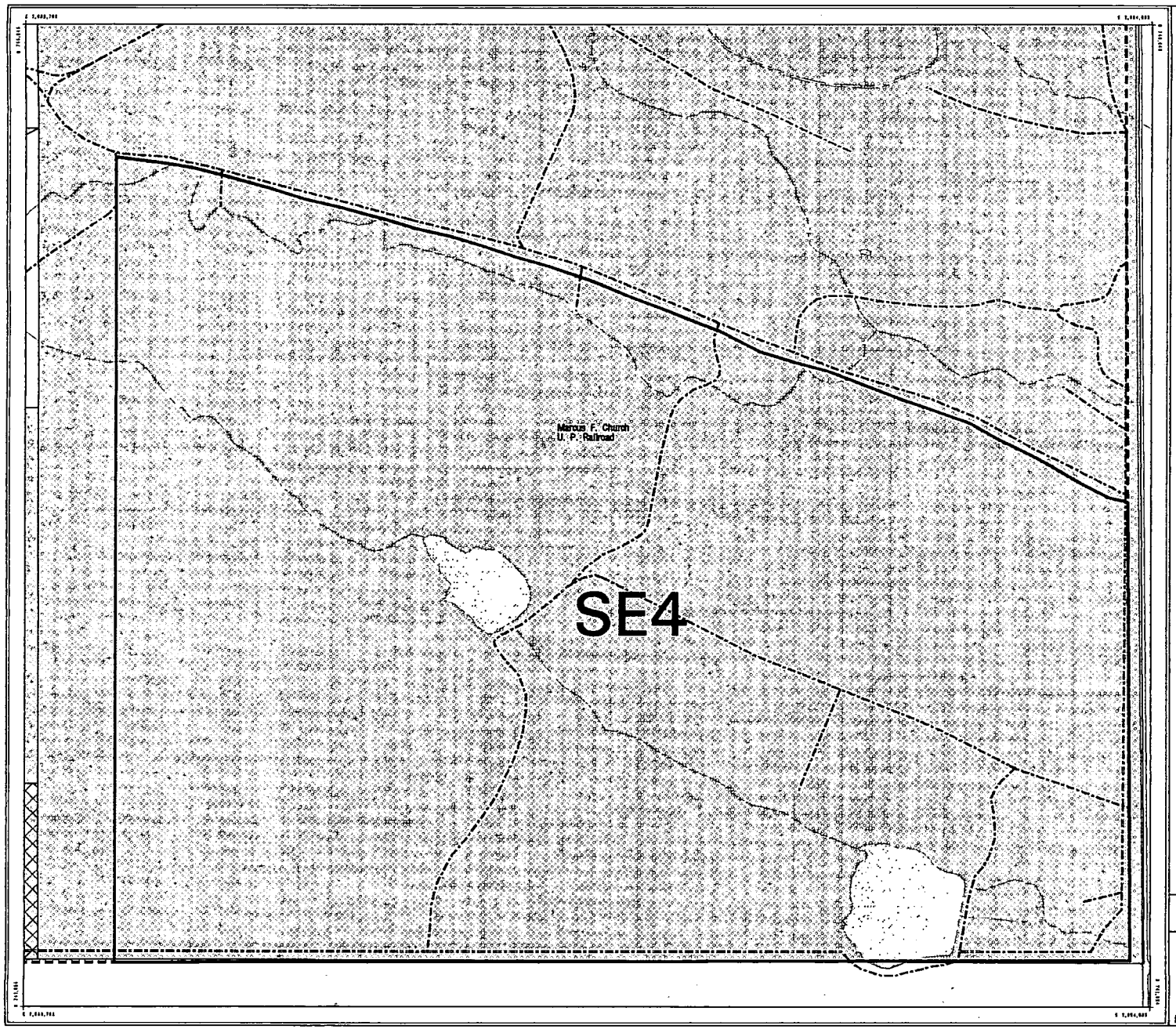

SE4 Mineral Rights at Rocky Flats Environmental Technology Site

August 20, 1995
(See Mineral Rights Basemap for Data Source)

EXPLANATION

- Private
- Government
- Both Government and Private
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr. EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: SE4

August 17, 1995

/gis/data/rfp-map-emis/m in-rights/landuse/m in-quad.aml

SE4 Borehole Sampling Locations

August 20, 1995

(See Borehole Basemap for Data Source)

EXPLANATION

- Borehole locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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Prepared by:

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Golden, CO 80402-0464

MAP ID: SE4

August 17, 1995

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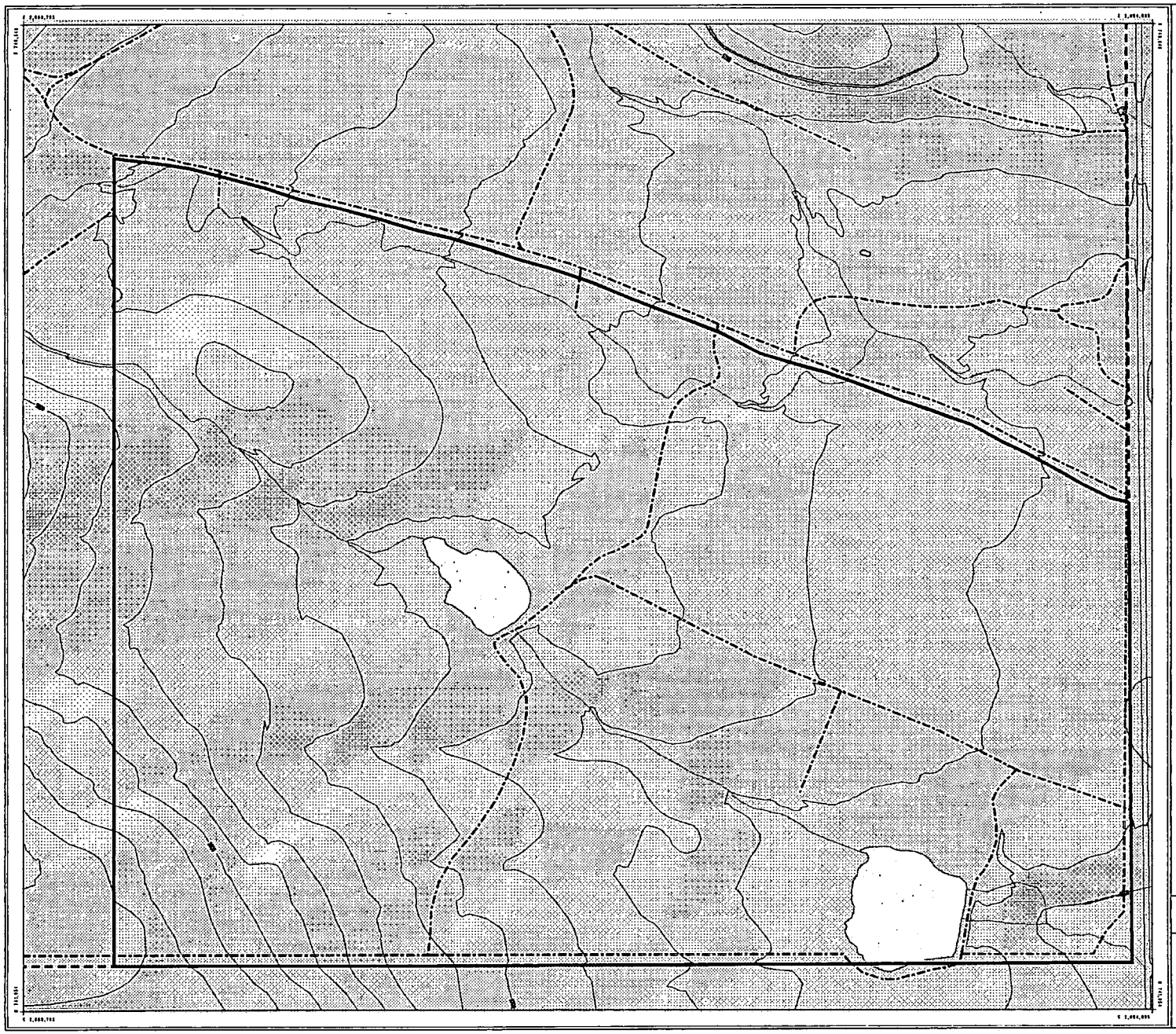

SE4 SEDIMENT SAMPLING LOCATIONS

August 20, 1995

(See Sediment Basemap for Data Source)

EXPLANATION

- Sediment Sample Locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

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Geographic Information Systems Group
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: SE4

August 17, 1995

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SE4 Groundwater Monitoring Well Location Map

(See Groundwater Basemap for Data Source)

WELL TYPES

- Boundary Wells
- CERCLA Characterization Wells
- RCRA Regulatory
- RCRA Characterization Wells
- Special Purpose Wells

Groundwater Monitoring Program Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock

Inactive Groundwater Monitoring Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock
- Abandoned Groundwater Monitoring Wells

Other

- Buildings and other structures
- Ponds & Lakes
- Buffer Zone Quadrants
- Individual Hazardous Substance Sites
- Extent of Rocky Flats Alluvium
- Fences
- Contours (20' Interval)
- Rocky Flats boundary
- Paved roads
- Dirt roads

100 0 100 400

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
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Rocky Mountain Remediation Services, L.L.C.
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Golden, CO 80402-0464

MAP ID: SE4

August 10, 1995

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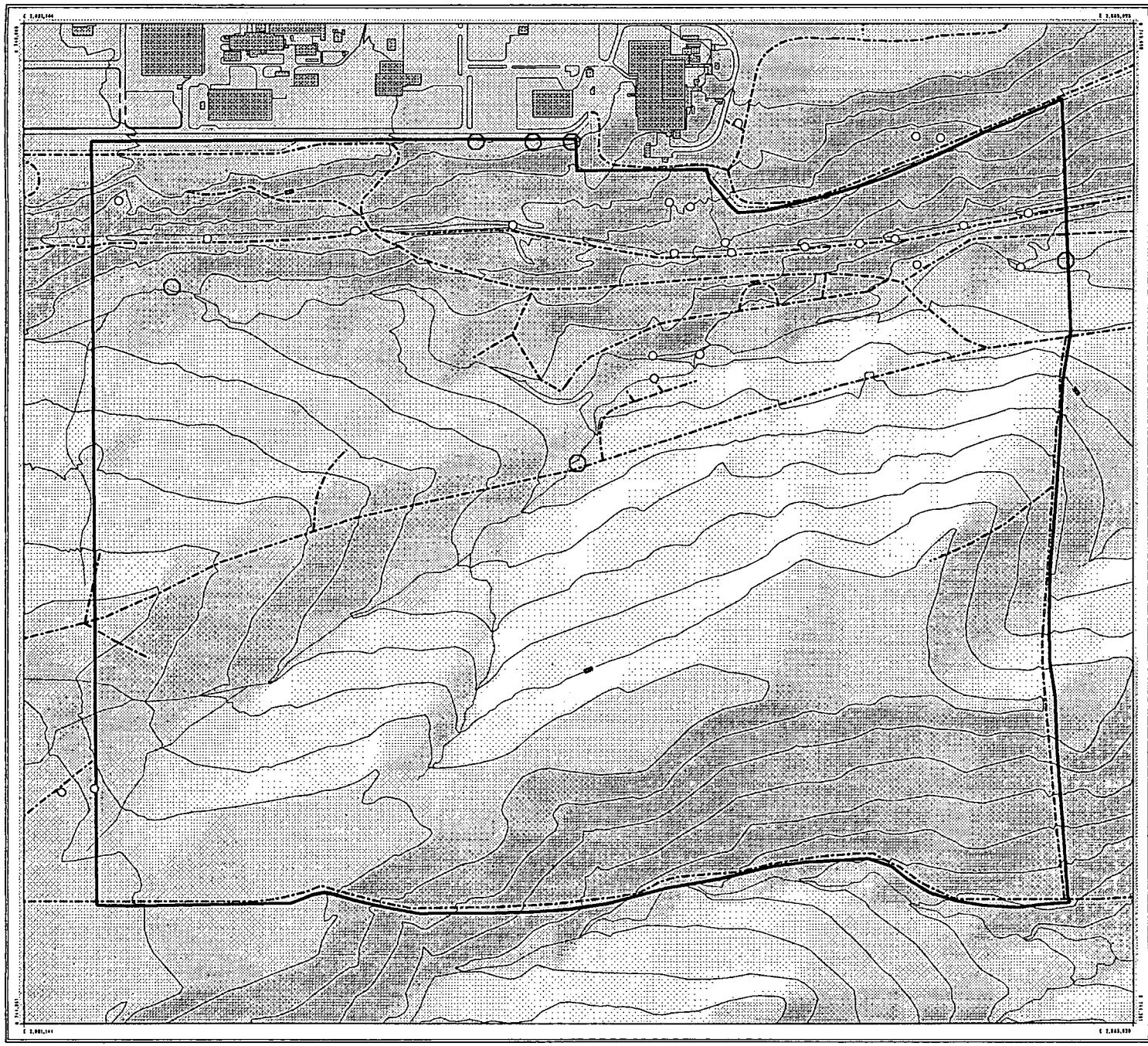

SW1 Surface Water Sampling Locations

August 20, 1995
(See Surface Water Basemap for Data Source)

EXPLANATION

- Surface water stations
- Routine operational sites
- NPDES/FFCA permit monitoring sites
- Gaging stations
- NPDES storm water permit sampling sites
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: SW1

August 17, 1995

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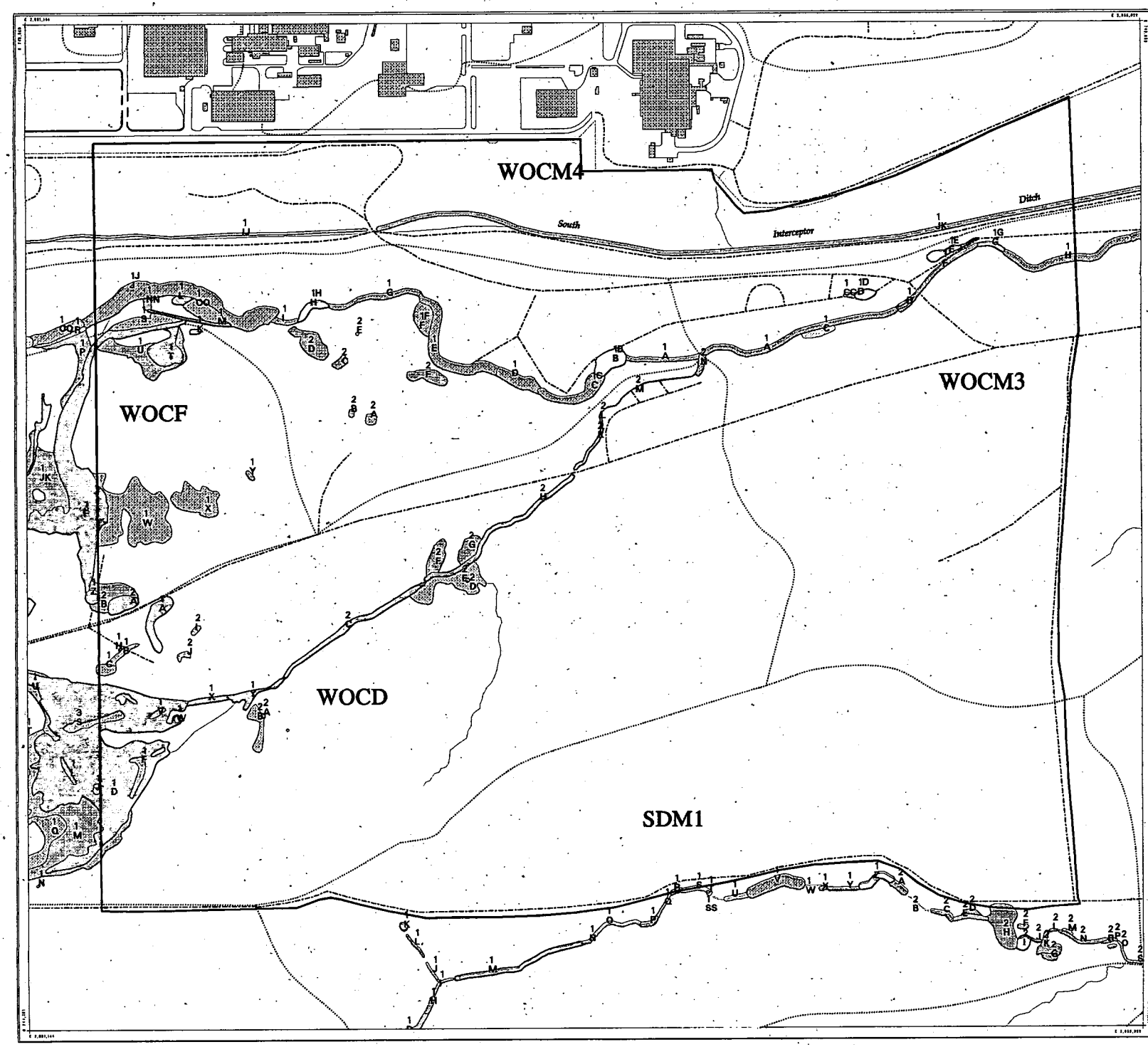

SW1 WETLANDS

August 20, 1995

(See wetlands base map for data source and notes)

Explanation

Buffer Zone Quadrants

Cowardin Wetlands Codes

- L1UBH
- PABH
- PEMA
- PEMB
- PEMC
- PEMF
- PFOA
- PFOC
- PSSA
- PSSC
- PUBF
- PUBH
- PUSC
- R4SBC
- R4SBG
- R4SBH
- R4SBJ

Non-Wetland Features

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Streams, ditches, or other drainage features
- Tributary Boundaries (eg., WCB = watershed drainage)
- Fences
- Rocky Flats boundary
- Paved roads
- Dirt roads

100 0 250 500ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
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MAP ID: SW1

August 17, 1995

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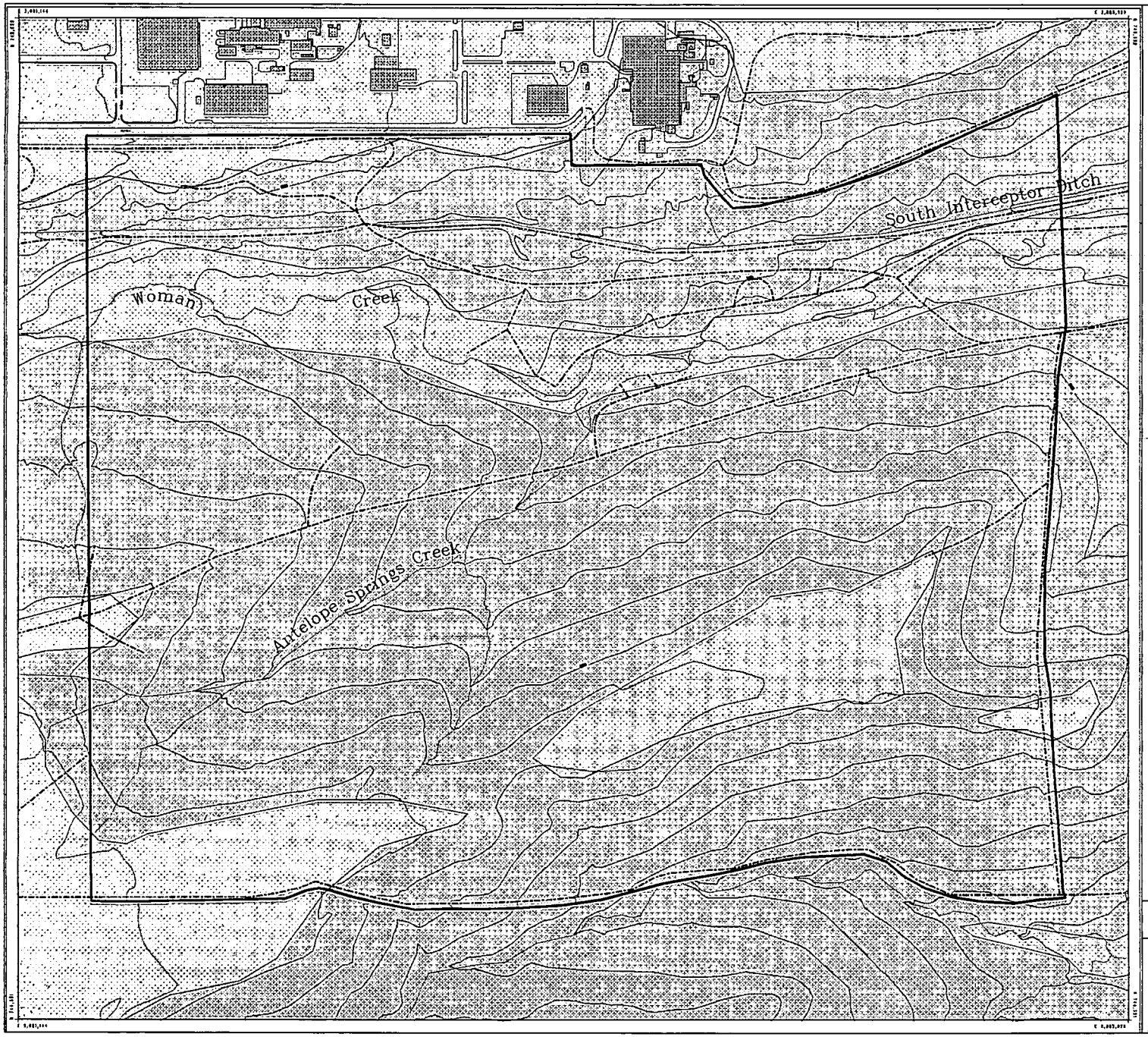

SW1 Soils Map

From Soil Conservation Service August 20, 1995

(See Soils Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Argiustolls
- Paleustolls
- Haplargids
- Mollisol/Rock Outcrop complex
- Torrifluvents
- Haplustolls
- Torriorthents
- Camborthids
- Haplustolls
- Cryofluvents
- Haplaquolls
- Natrargids
- Argiborolls
- Gravel and Clay Pit
- Rock Outcrop
- DAM
- WATER

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
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Golden, CO 80402-0464

MAP ID: SW1

August 17, 1995

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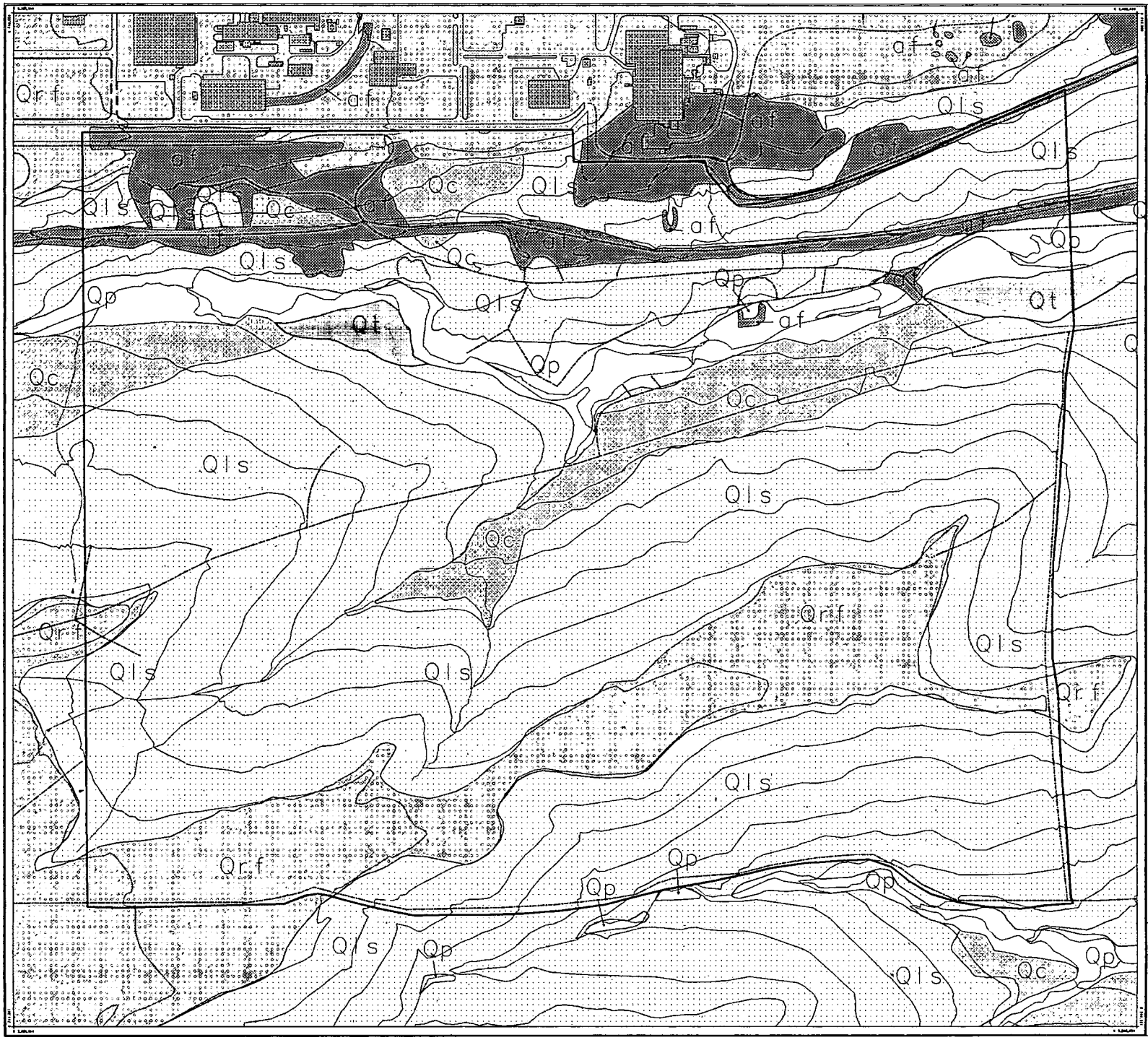
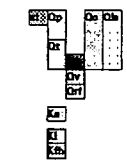


SW1 Geologic Units

August 20, 1995
(See Geologic Units Basemap)
(for Data Source)

EXPLANATION



Geologic Map Units

af - Artificial fill
Qp - Post-Piney Creek and Piney Creek Alluvium
Qt - Terrace Alluvium
Qc - Colluvium
Qls - Landslide deposits
Qs - Slocum Alluvium
Qv - Verdos Alluvium
Qrf - Rocky Flats Alluvium
Ka - Arapahoe Formation
Kl - Laramie Formation
Kfh - Fox Hills Sandstone

Shallow closed depression
Scarp of young landslide
Areas of vegetation at and near springs
Boundary of gravel and clay pit
Spring
Strike and dip of beds
Clast identification site
Capitol Mine (abandoned)
Geologic Units boundaries
Buffer Zone Quadrants

Buildings or other structures
Lakes and ponds
Streams, ditches, or other drainage features
Fences
Contours (20' intervals)
Rocky Flats boundary
Paved roads
Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
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MAP ID: SW1 August 20, 1995

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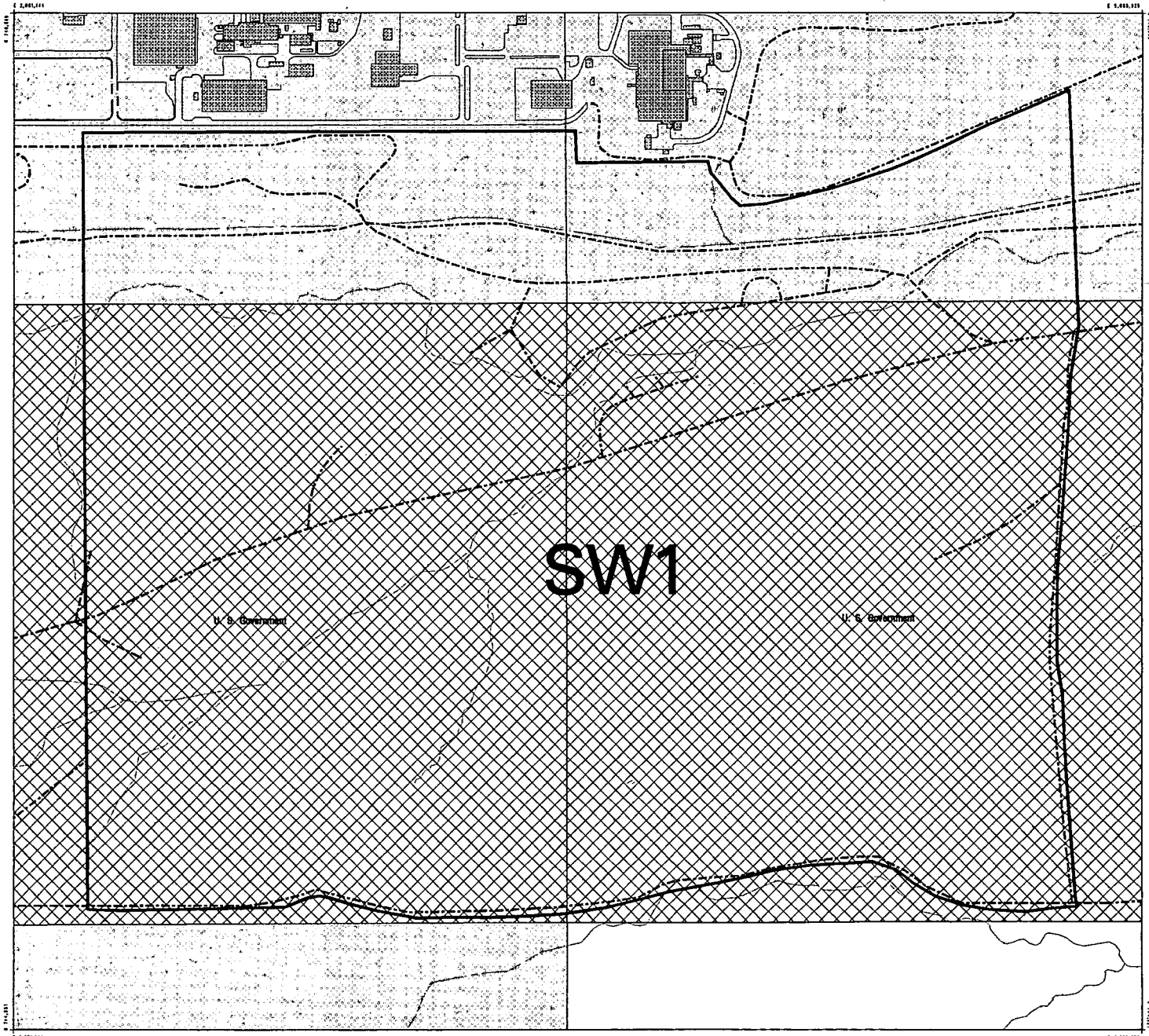

SW1 Mineral Rights at Rocky Flats Environmental Technology Site

August 20, 1995
(See Mineral Rights Basemap for Data Source)

EXPLANATION

- Private
- Government
- Both Government and Private
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: SW1

August 17, 1996

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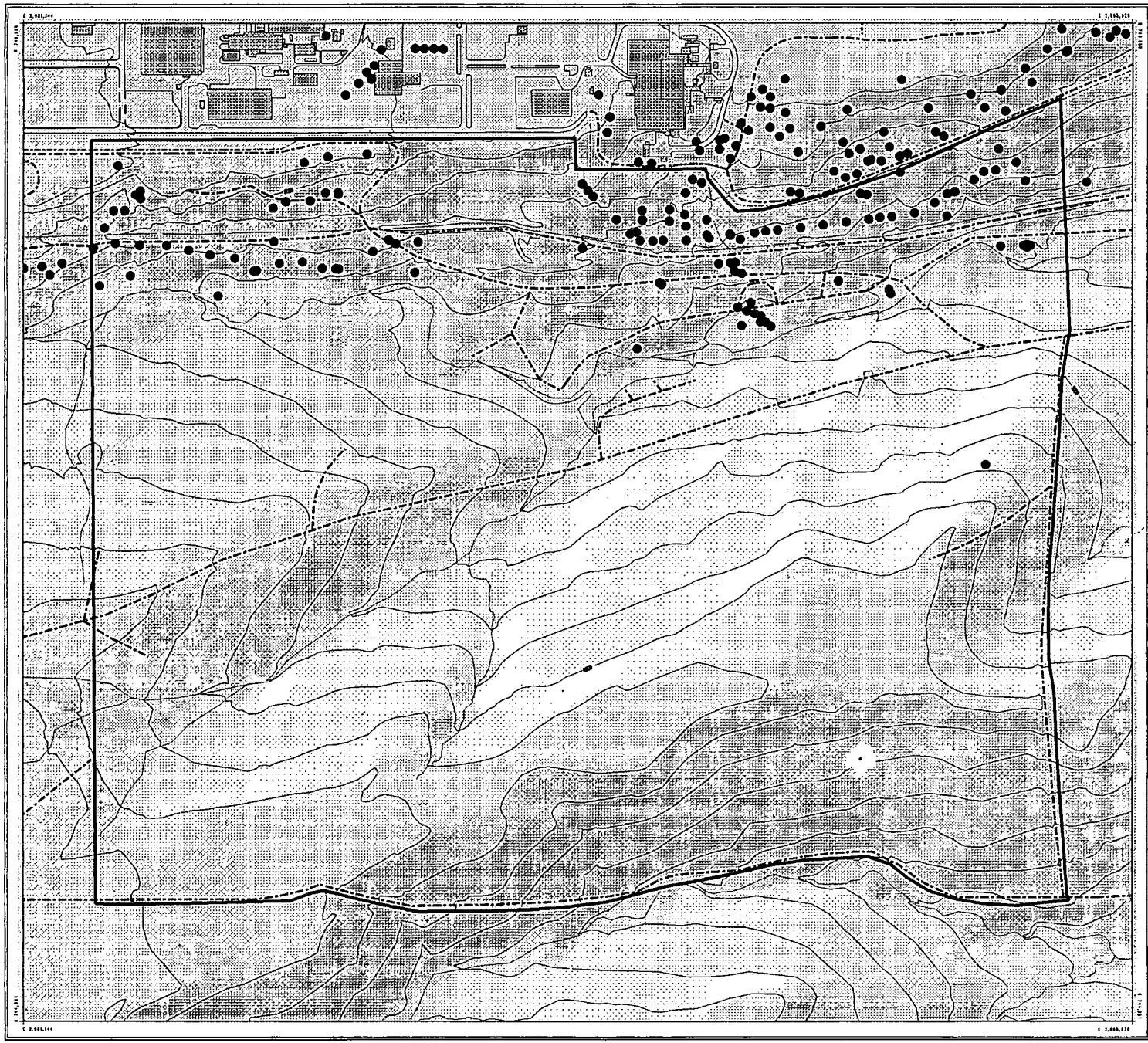

SW1 Borehole Sampling Locations

August 20, 1995

(See Borehole Basemap for Data Source)

EXPLANATION

- Borehole locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
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MAP ID: SW1

August 17, 1995

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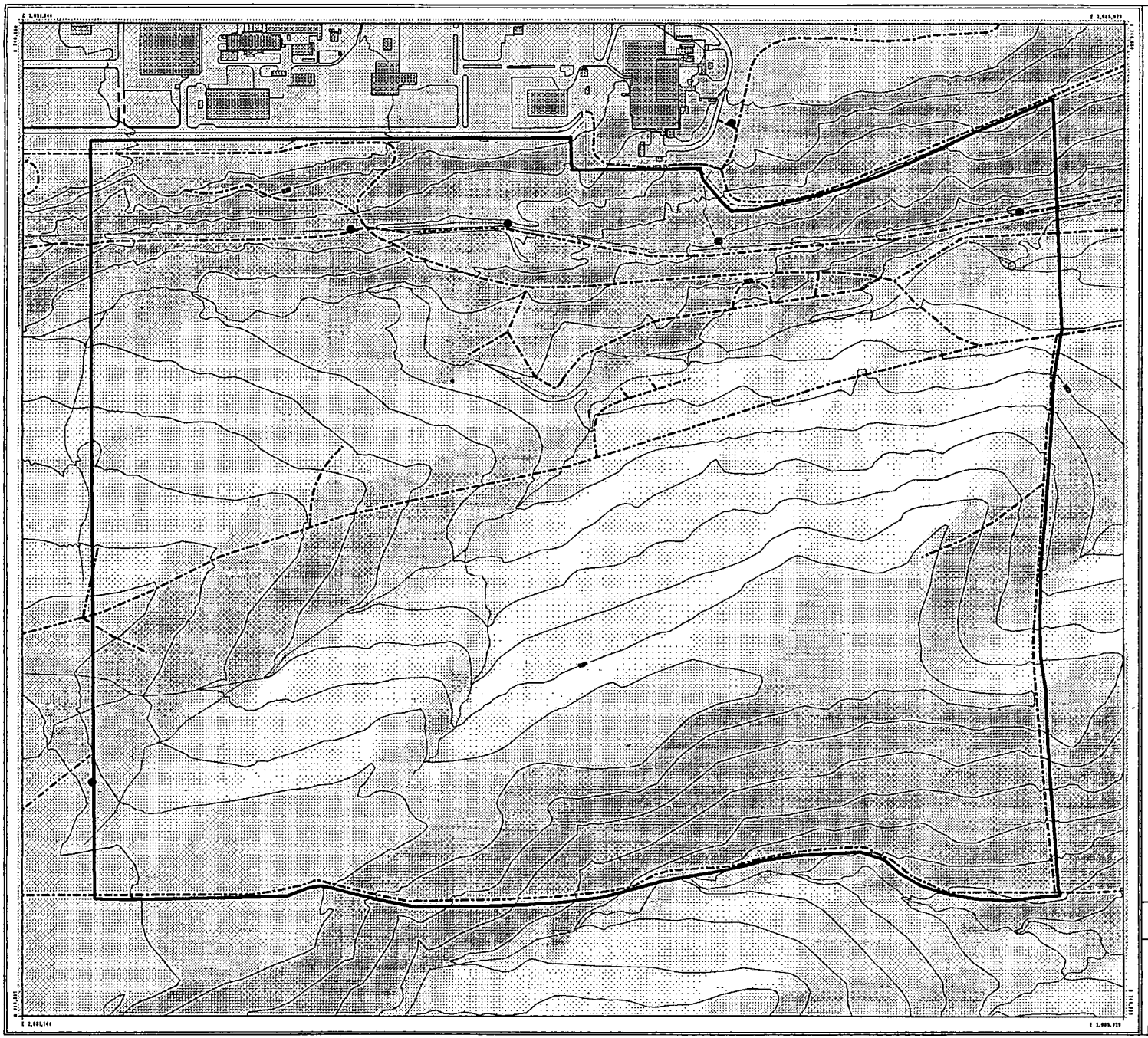

SW1 SEDIMENT SAMPLING LOCATIONS

August 20, 1995

(See Sediment Basemap for Data Source)

EXPLANATION

- Sediment Sample Locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

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Golden, CO 80402-0464

MAP ID: SW1

August 17, 1995

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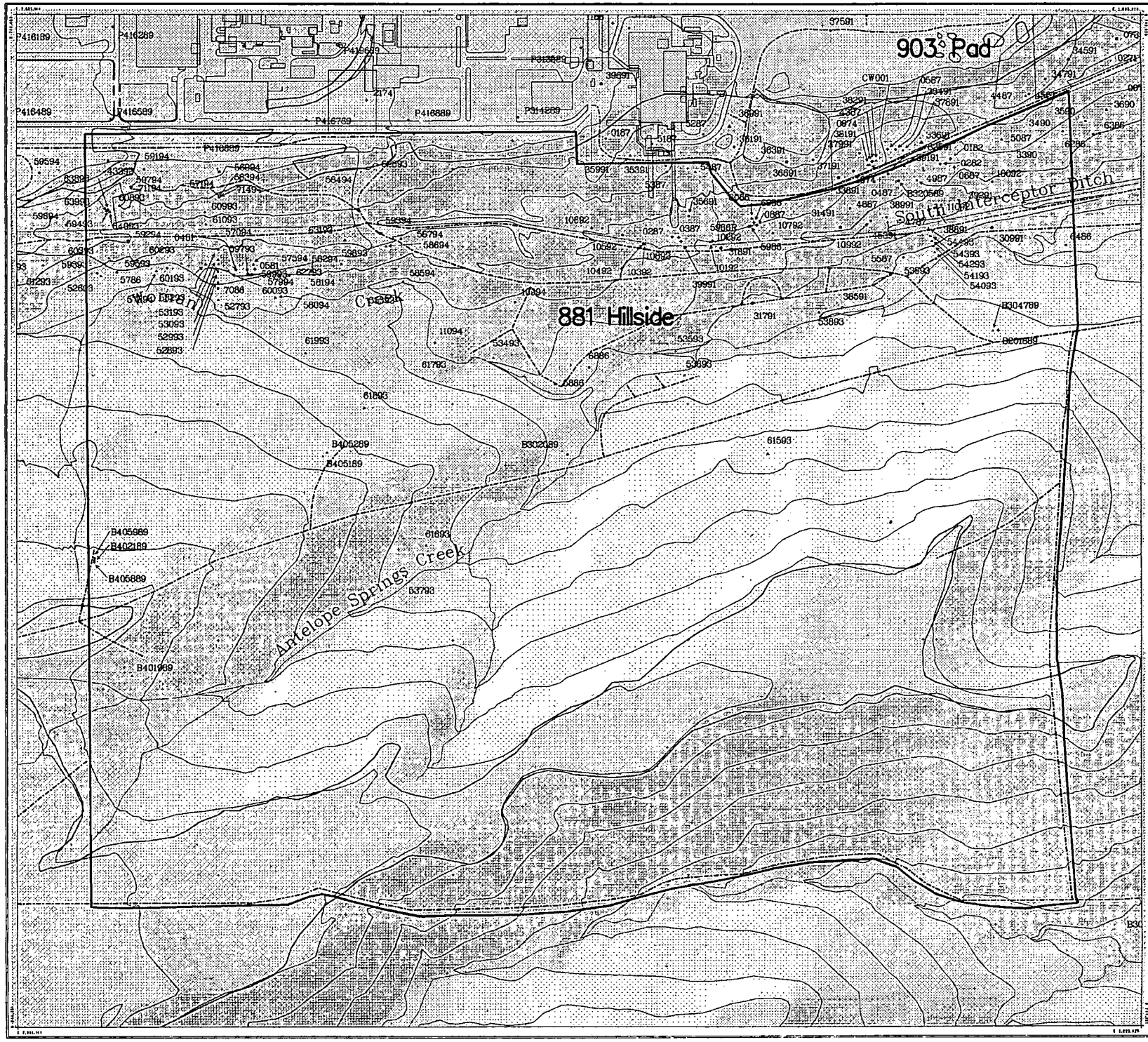

SW1 Groundwater Monitoring Well Location Map

(See Groundwater Basemap for Data Source)

WELL TYPES

- Boundary Wells
- CERCLA Characterization Wells
- RCRA Regulatory
- RCRA Characterization Wells
- Special Purpose Wells

Groundwater Monitoring Program Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock

Inactive Groundwater Monitoring Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock
- Abandoned Groundwater Monitoring Wells

Other

- Buildings and other structures
- Ponds & Lakes
- Buffer Zone Quadrants
- Individual Hazardous Substance Sites
- Extent of Rocky Flats Alluvium
- Fences
- Contours (20' Interval)
- Rocky Flats boundary
- Paved roads
- Dirt roads

N

100 0 200 400ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
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Golden, CO 80402-0464

MAP ID: SW1 August 10, 1998

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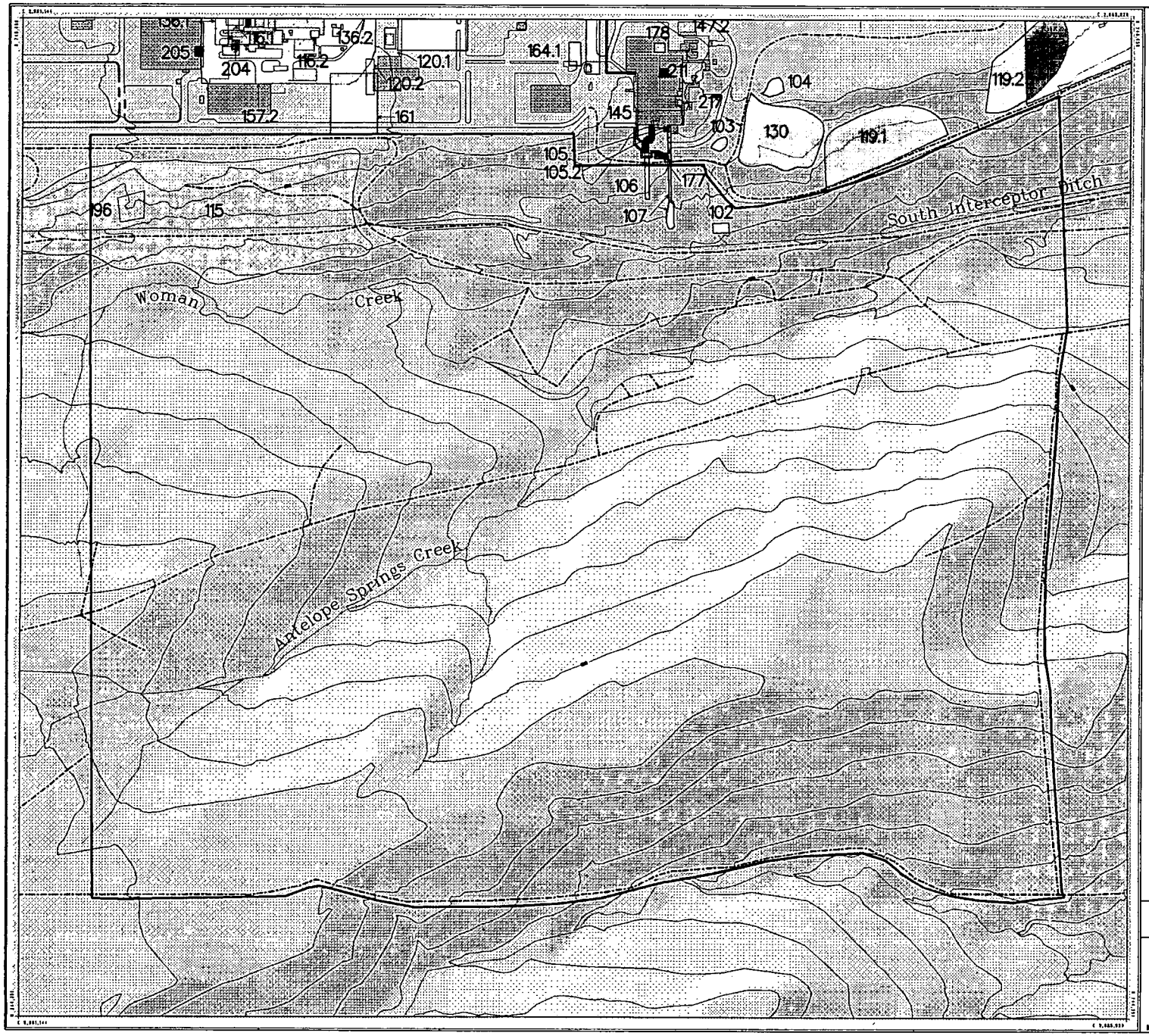

SW1 IHSS

(See IHSS Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Operable Unit 1
- Operable Unit 2
- Operable Unit 4
- Operable Unit 5
- Operable Unit 6
- Operable Unit 7
- Operable Unit 8
- Operable Unit 9
- Operable Unit 10
- Operable Unit 11
- Operable Unit 12
- Operable Unit 13
- Operable Unit 14
- Operable Unit 15
- Operable Unit 16
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: SW1

August 18, 1995

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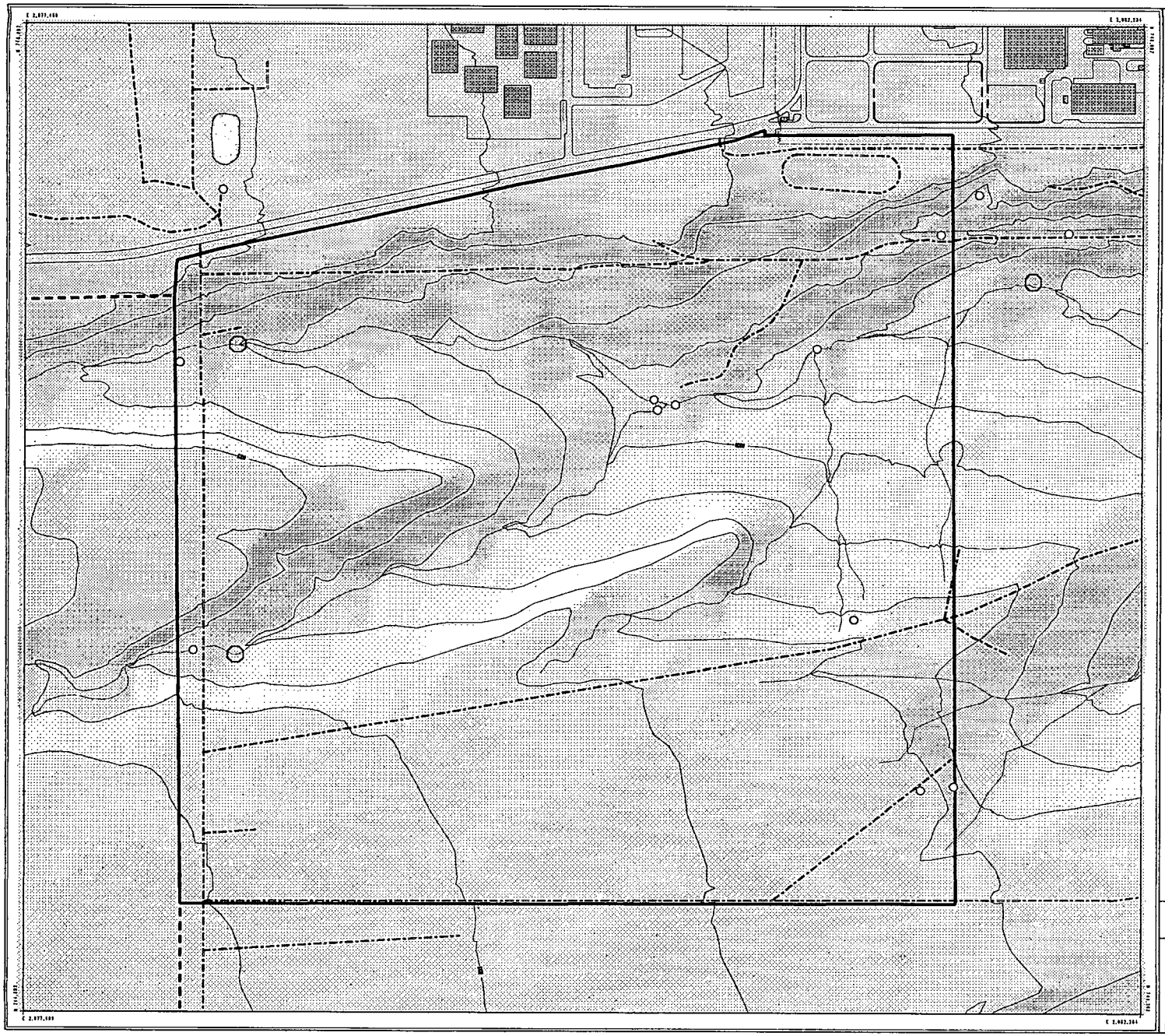

SW2 Surface Water Sampling Locations

August 20, 1995
(See Surface Water Basemap for Data Source)

EXPLANATION

- Surface water stations
- Routine operational sites
- NPDES/FFCA permit monitoring sites
- Gaging stations
- NPDES storm water permit sampling sites
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: SW2

August 17, 1995

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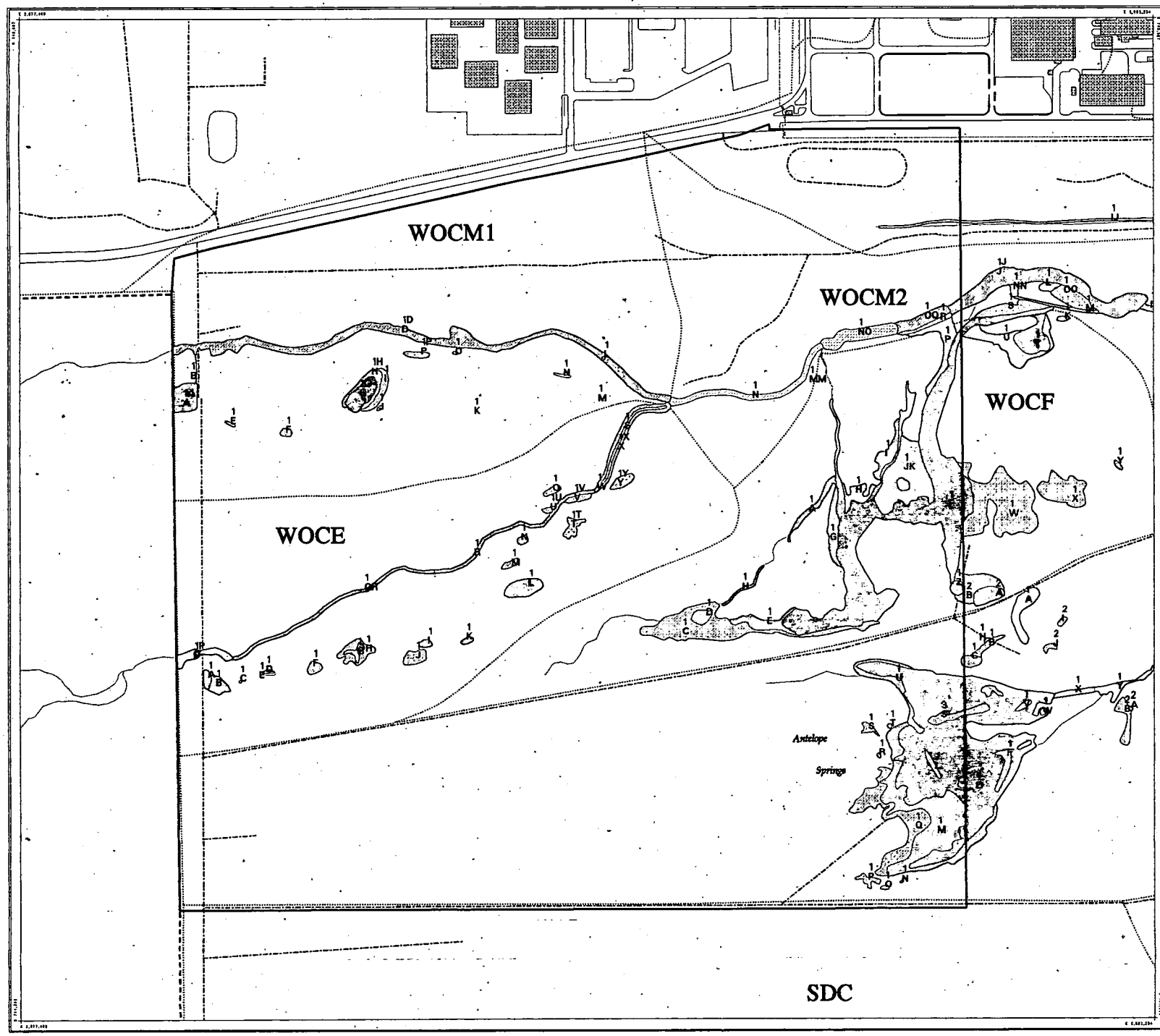

SW2 WETLANDS

August 20, 1995

(See wetlands base map for data source and notes)

Explanation

Buffer Zone Quadrants

Cowardin Wetlands Codes

- L1UBH
- PABH
- PEMA
- PEMB
- PEMC
- PEMF
- PFOA
- PFOC
- PSSA
- PSSC
- PUBF
- PUBH
- PUSC
- R4SBC
- R4SBG
- R4SBH
- R4SBJ

Non-Wetland Features

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Streams, ditches, or other drainage features
- Tributary Boundaries (e.g., WCB = watershed drainage)
- Fences
- Rocky Flats boundary
- Paved roads
- Dirt roads

100 0 200 400 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
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Golden, CO 80402-0464

MAP ID: SW2

August 17, 1995

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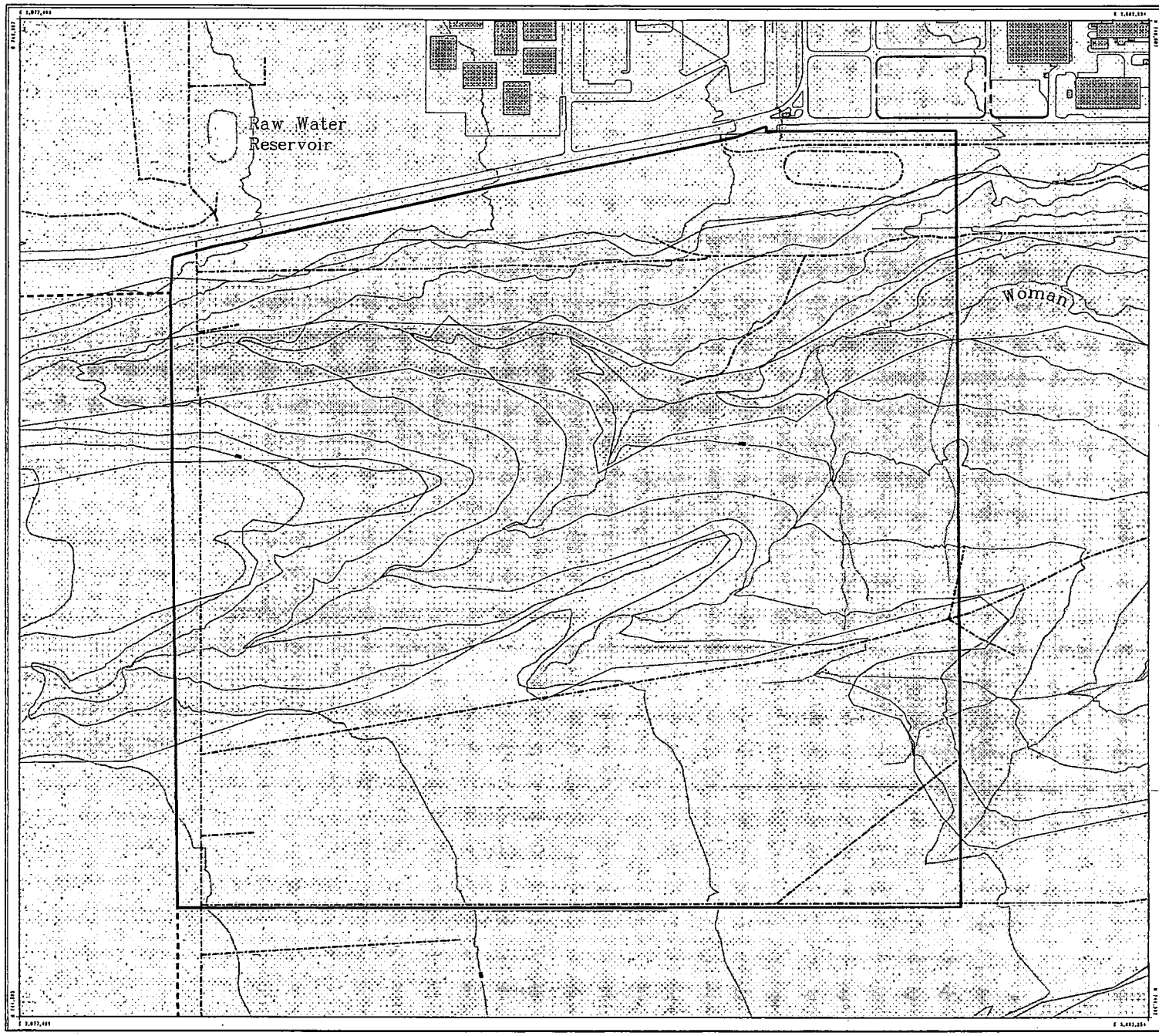

SW2 Soils Map

From Soil Conservation Service
August 20, 1995

(See Soils Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Arglustolls
- Paleustolls
- Haplargids
- Mollisol/Rock Outcrop complex
- Torrifluvents
- Haplustolls
- Torriorthents
- Camborthids
- Haplustolls
- Cryofluvents
- Haplaquolls
- Natrargids
- Argiborolls
- Gravel and Clay Pit
- Rock Outcrop
- DAM
- WATER

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

100 0 200 400ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: SW2

August 17, 1995

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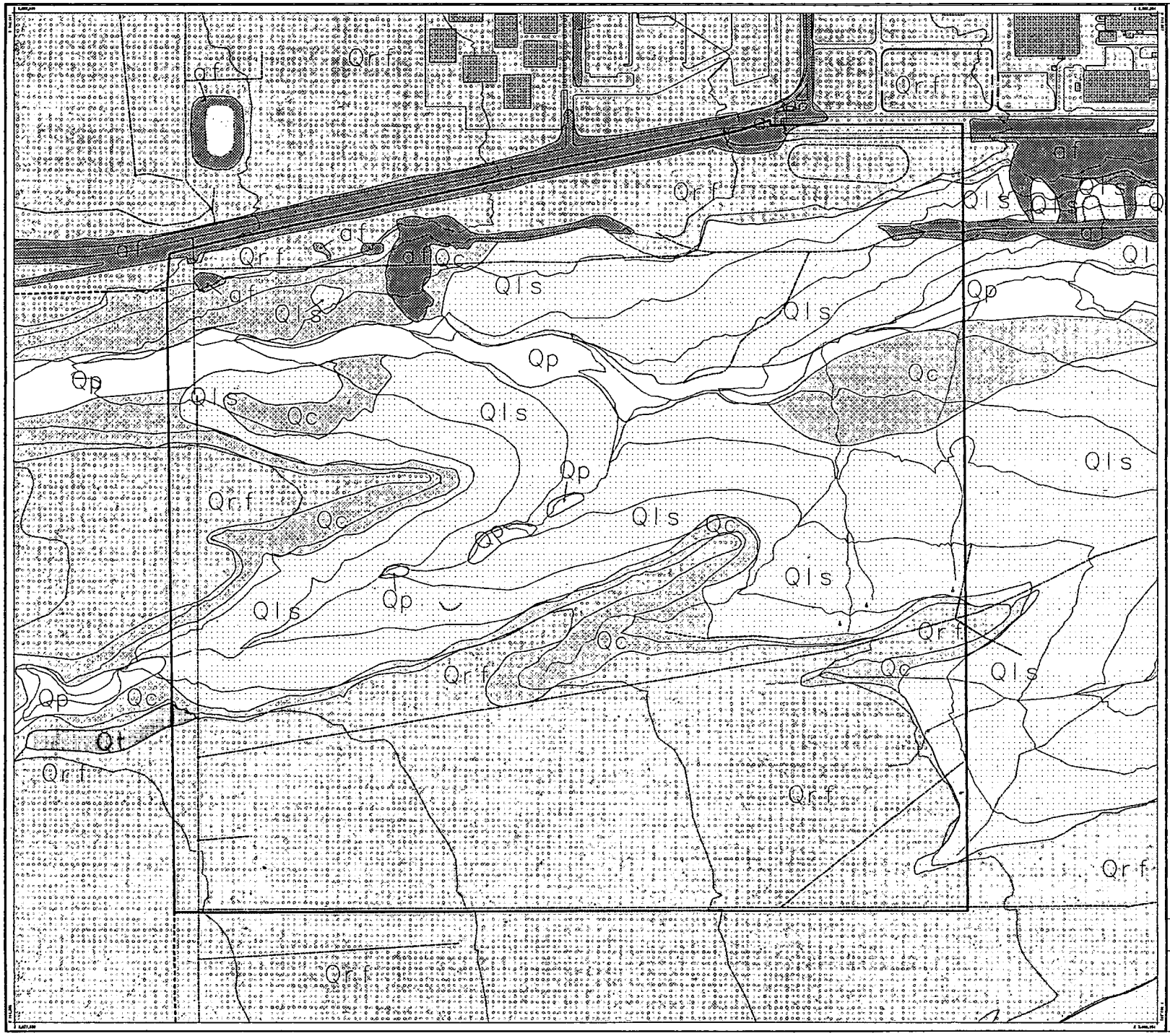

SW2 Geologic Units

August 20, 1995
(See Geologic Units Basemap)
(for Data Source)

EXPLANATION

Geologic Map Units

- af - Artificial fill
- Qp - Post-Piney Creek and Piney Creek Alluvium
- Qt - Terrace Alluvium
- Qc - Colluvium
- Qls - Landslide deposits
- Qs - Slocum Alluvium
- Qv - Verdos Alluvium
- Qrf - Rocky Flats Alluvium
- Ka - Arapahoe Formation
- Kl - Laramie Formation
- Kfh - Fox Hills Sandstone

- Shallow closed depression
- Scarp of young landslide
- Areas of vegetation at and near springs
- Boundary of gravel and clay pit
- Spring
- Strike and dip of beds
- Clast identification site
- Capital Mine (abandoned)
- Geologic Units boundaries
- Buffer Zone Quadrants
- Buildings or other structures
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
P.O. Box 464
Golden, CO 80402-0464

MAP ID: SW2

August 20, 1995

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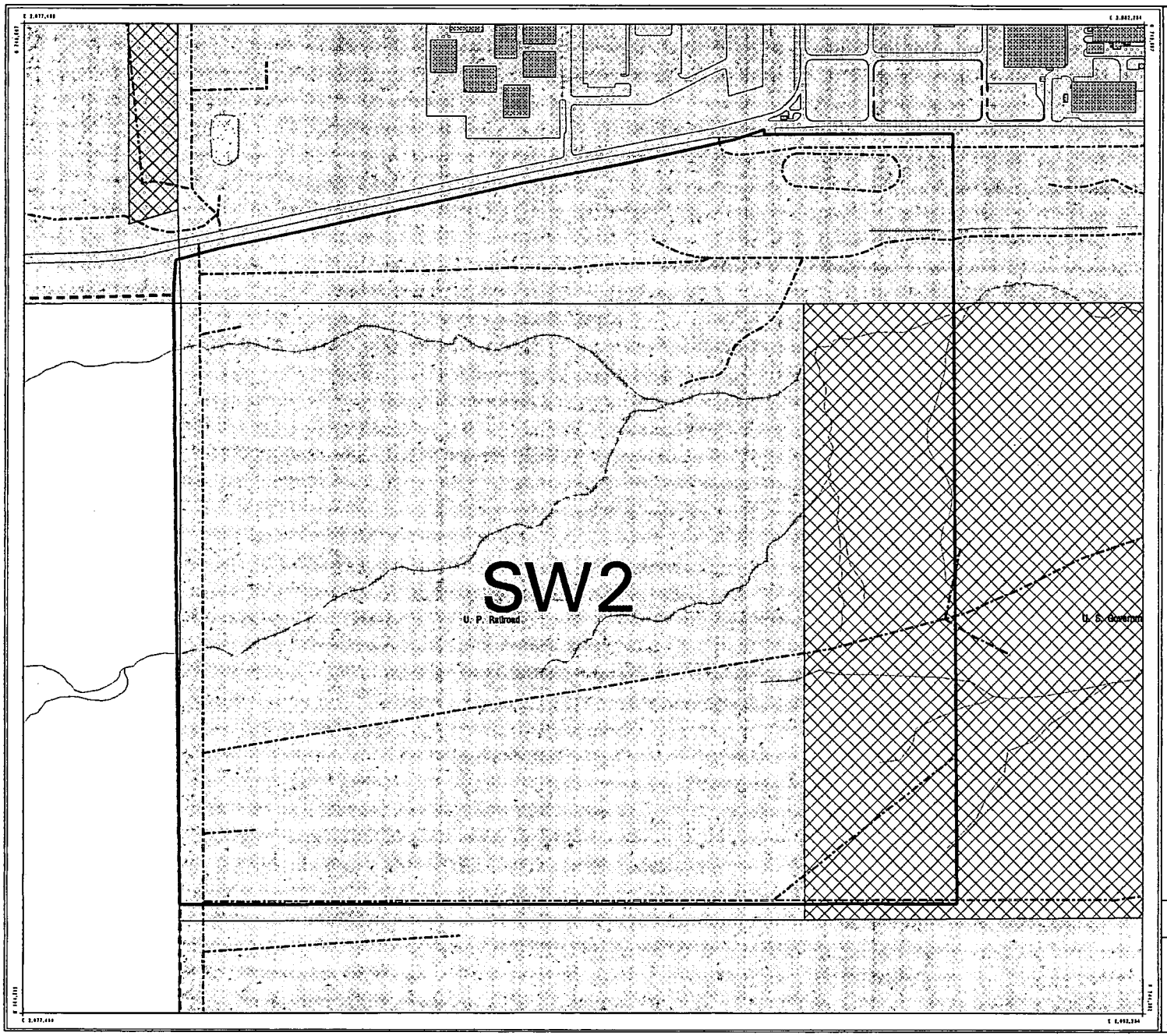

SW2 Mineral Rights at Rocky Flats Environmental Technology Site

August 20, 1995
(See Mineral Rights Basemap for Data Source)

EXPLANATION

- Private
- Government
- Both Government and Private
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: SW2

August 17, 1995

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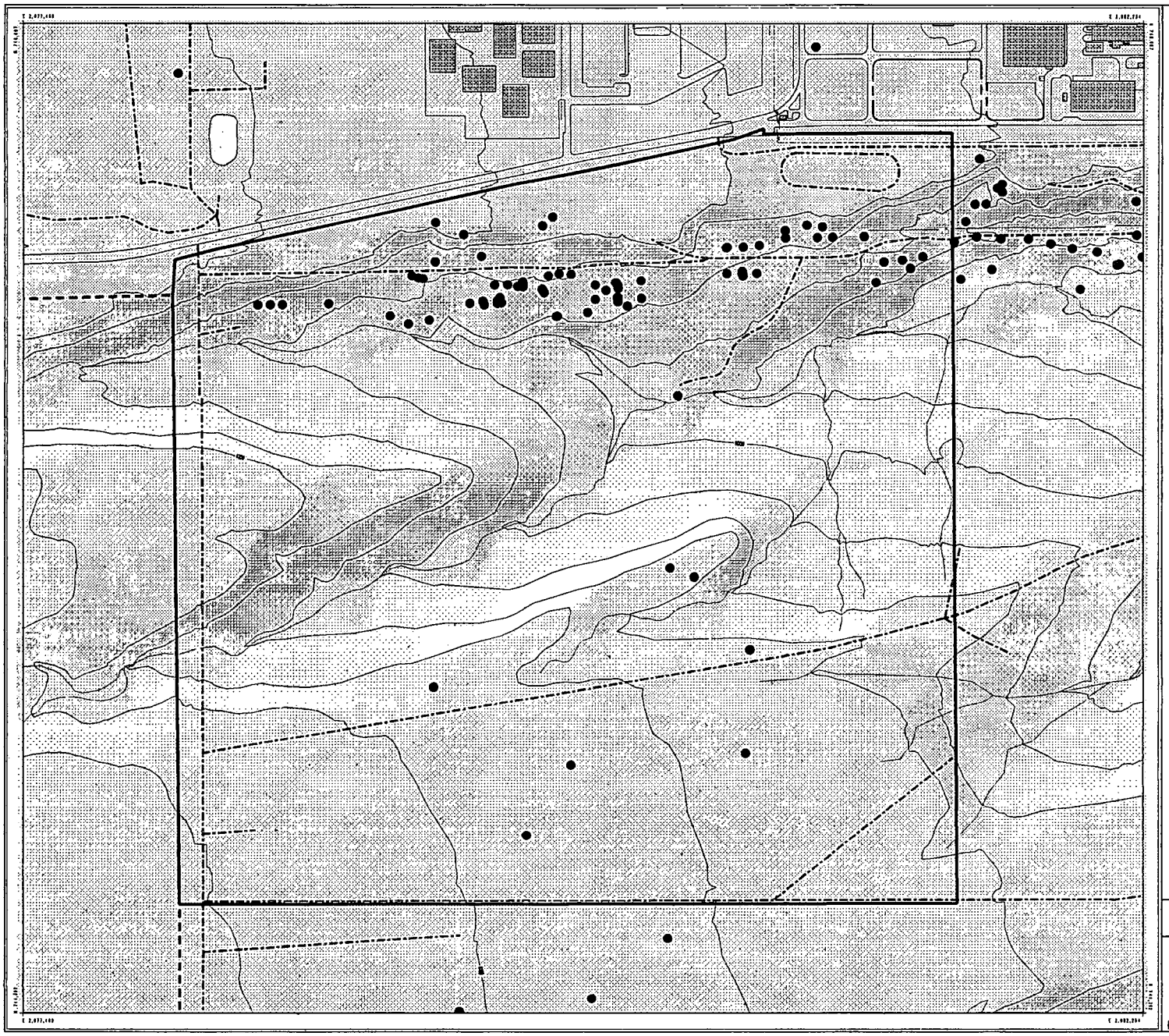

SW2 Borehole Sampling Locations
August 20, 1995

(See Borehole Basemap for Data Source)

EXPLANATION

- Borehole locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

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Golden, CO 80402-0464

MAP ID: SW2

August 17, 1995

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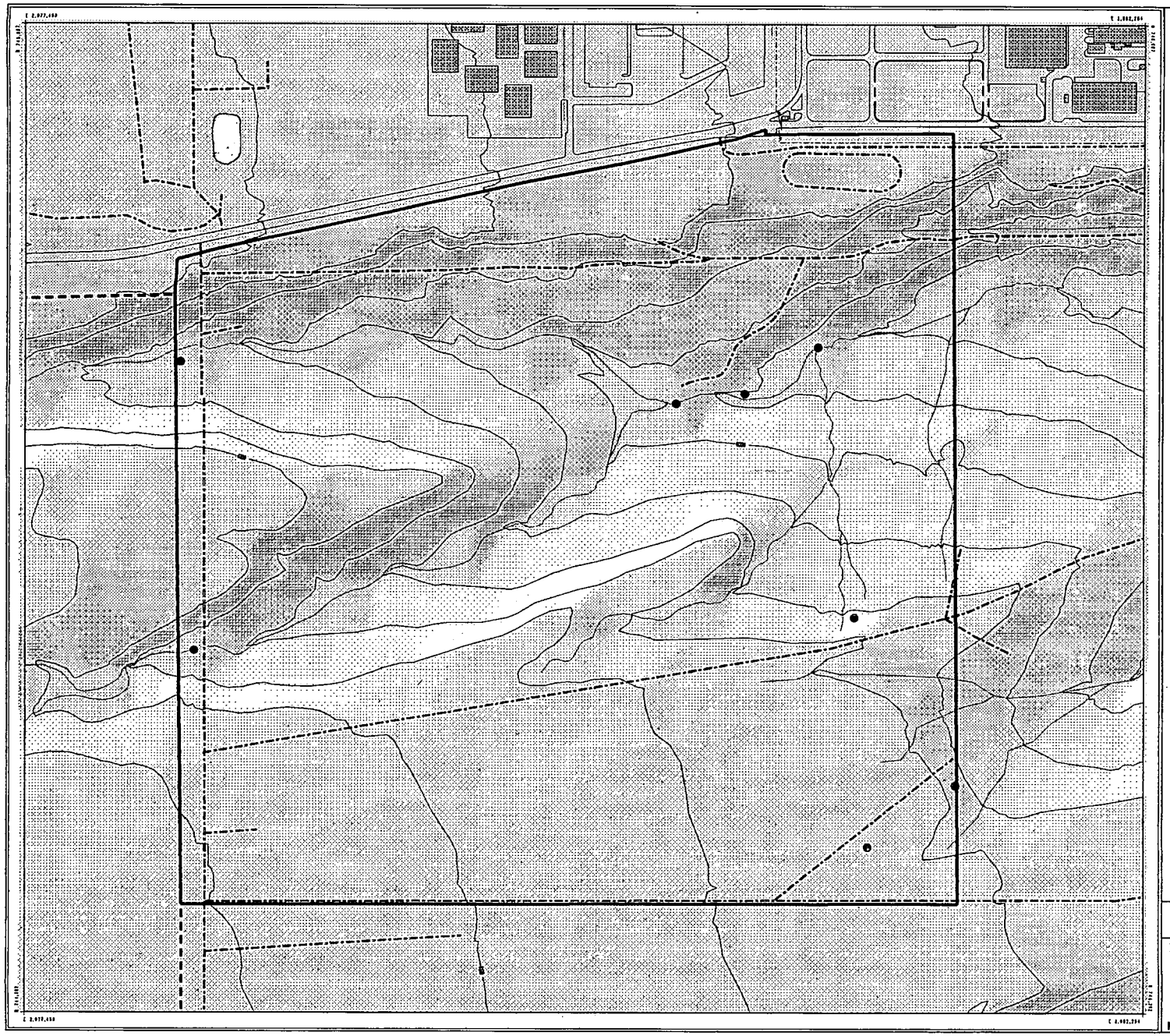

SW2 SEDIMENT SAMPLING LOCATIONS

August 20, 1995

(See Sediment Basemap for Data Source)

EXPLANATION

- Sediment Sample Locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
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Prepared by:

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Golden, CO 80402-0464

MAP ID: SW2

August 17, 1995

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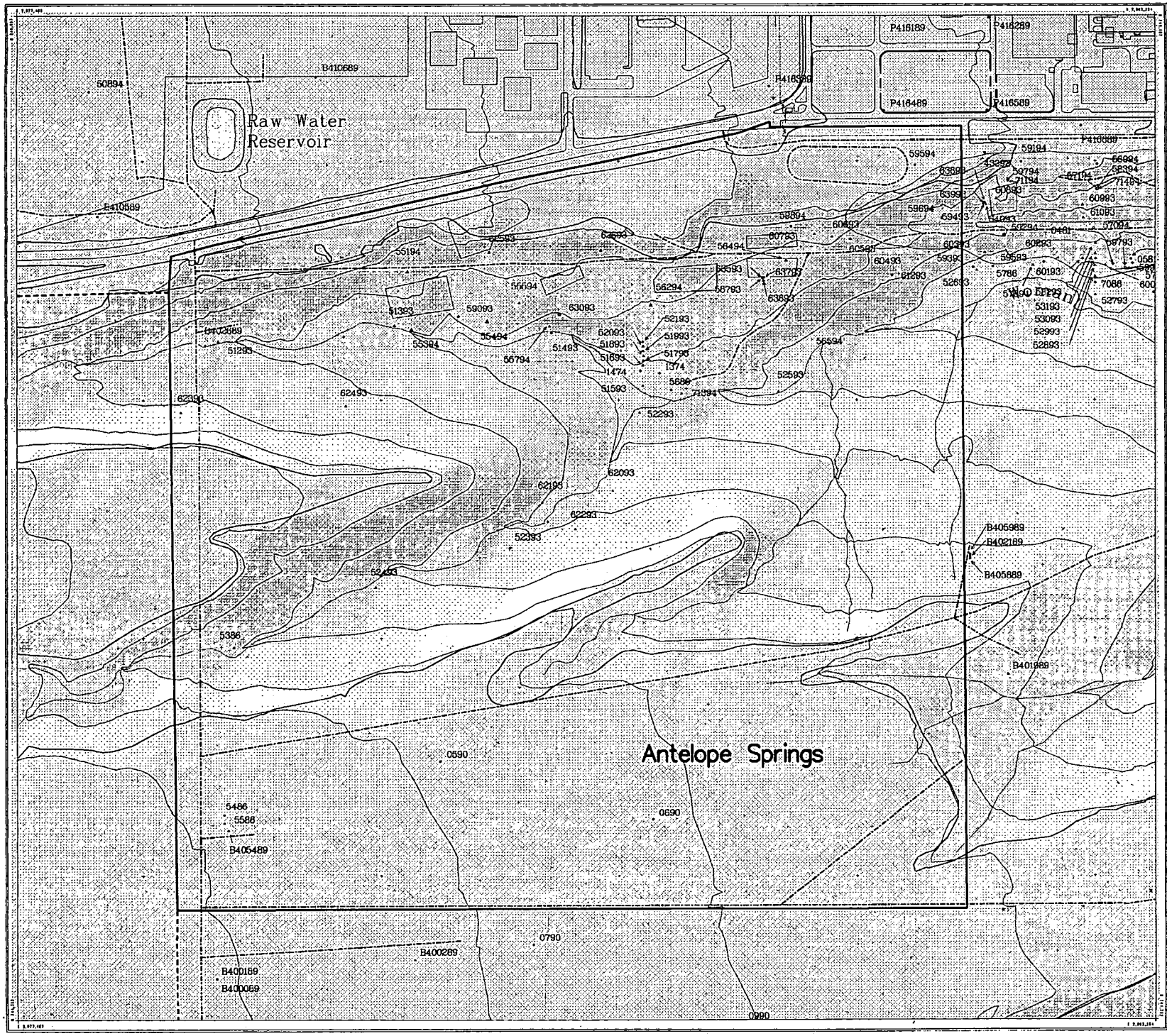

SW2 Groundwater Monitoring Well Location Map

(See Groundwater Basemap for Data Source)

WELL TYPES

- Boundary Wells
- CERCLA Characterization Wells
- RCRA Regulatory
- RCRA Characterization Wells
- Special Purpose Wells

Groundwater Monitoring Program Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock

Inactive Groundwater Monitoring Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock
- Abandoned Groundwater Monitoring Wells

Other

- Buildings and other structures
- Ponds & Lakes
- Buffer Zone Quadrants
- Individual Hazardous Substance Sites
- Extent of Rocky Flats Alluvium
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: GW2

August 10, 1995

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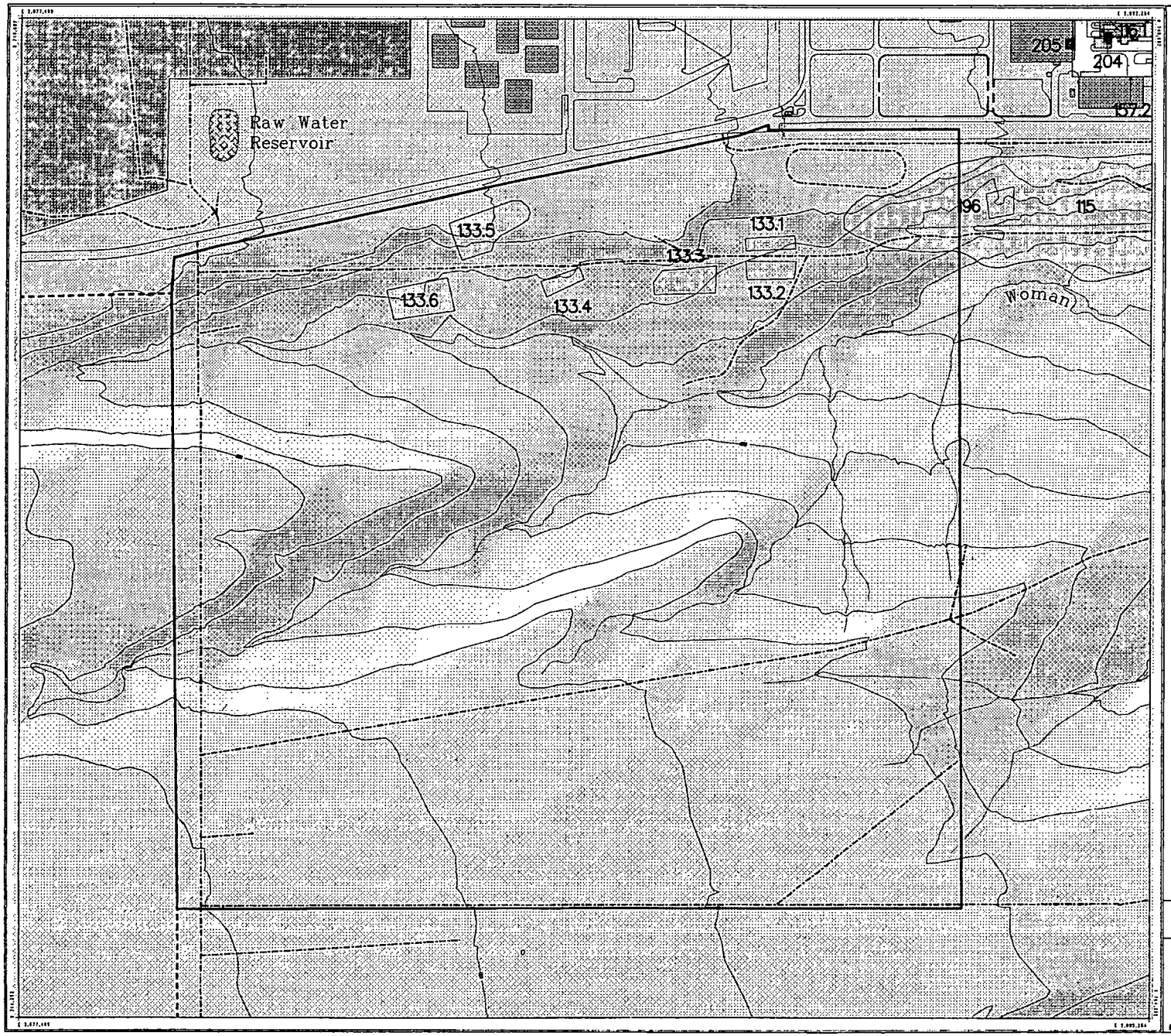

SW2 IHSS

(See IHSS Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Operable Unit 1
- Operable Unit 2
- Operable Unit 4
- Operable Unit 5
- Operable Unit 6
- Operable Unit 7
- Operable Unit 8
- Operable Unit 9
- Operable Unit 10
- Operable Unit 11
- Operable Unit 12
- Operable Unit 13
- Operable Unit 14
- Operable Unit 15
- Operable Unit 16

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

100 0 200 400ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
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P.O. Box 464
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MAP ID: SW2

August 18, 1995

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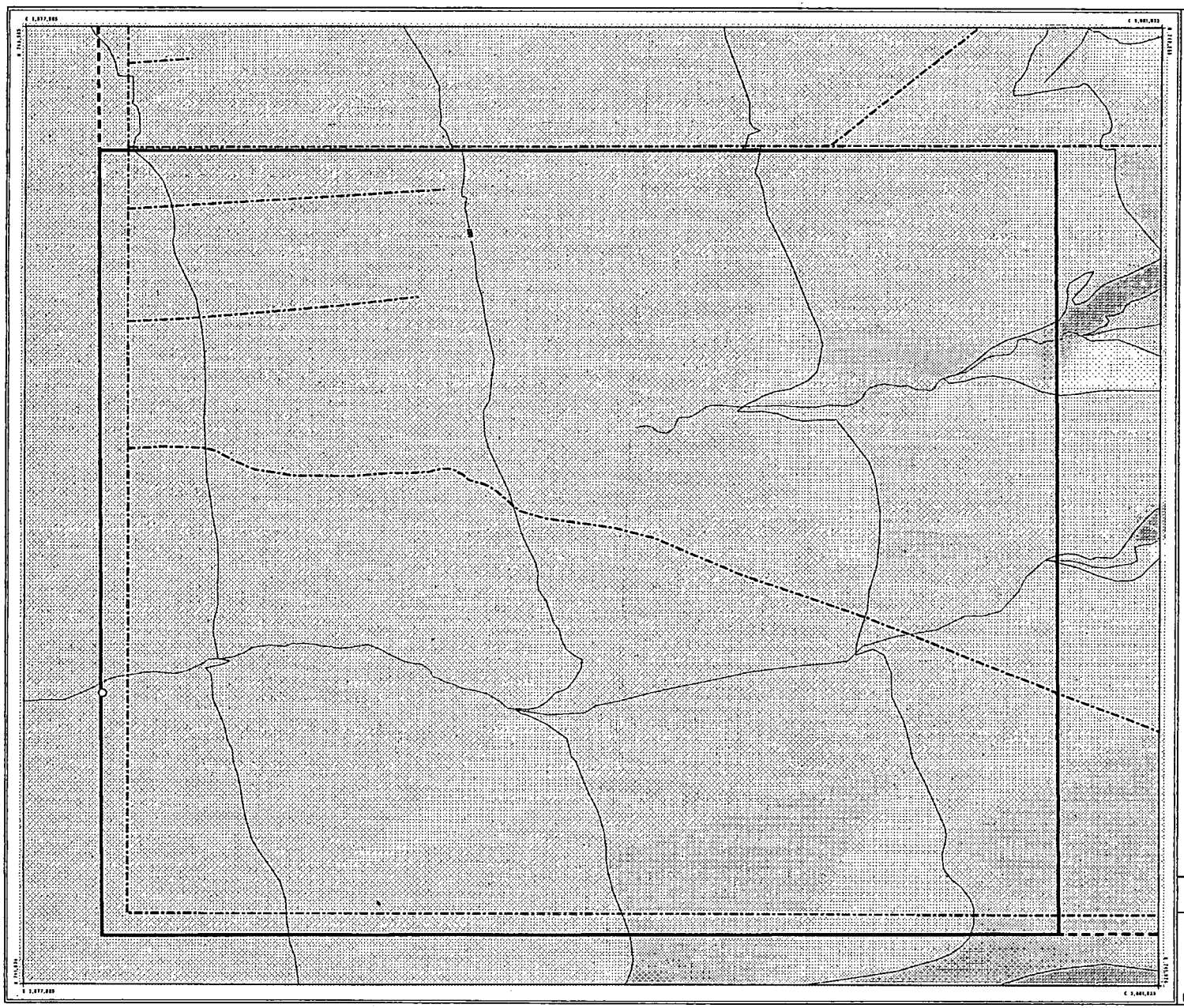

SW3 Surface Water Sampling Locations

August 20, 1995
(See Surface Water Basemap for Data Source)

EXPLANATION

- Surface water stations
- Routine operational sites
- NPDES/FFCA permit monitoring sites
- Gaging stations
- NPDES storm water permit sampling sites
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

100 0 200 400ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
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MAP ID: SW3

August 17, 1995

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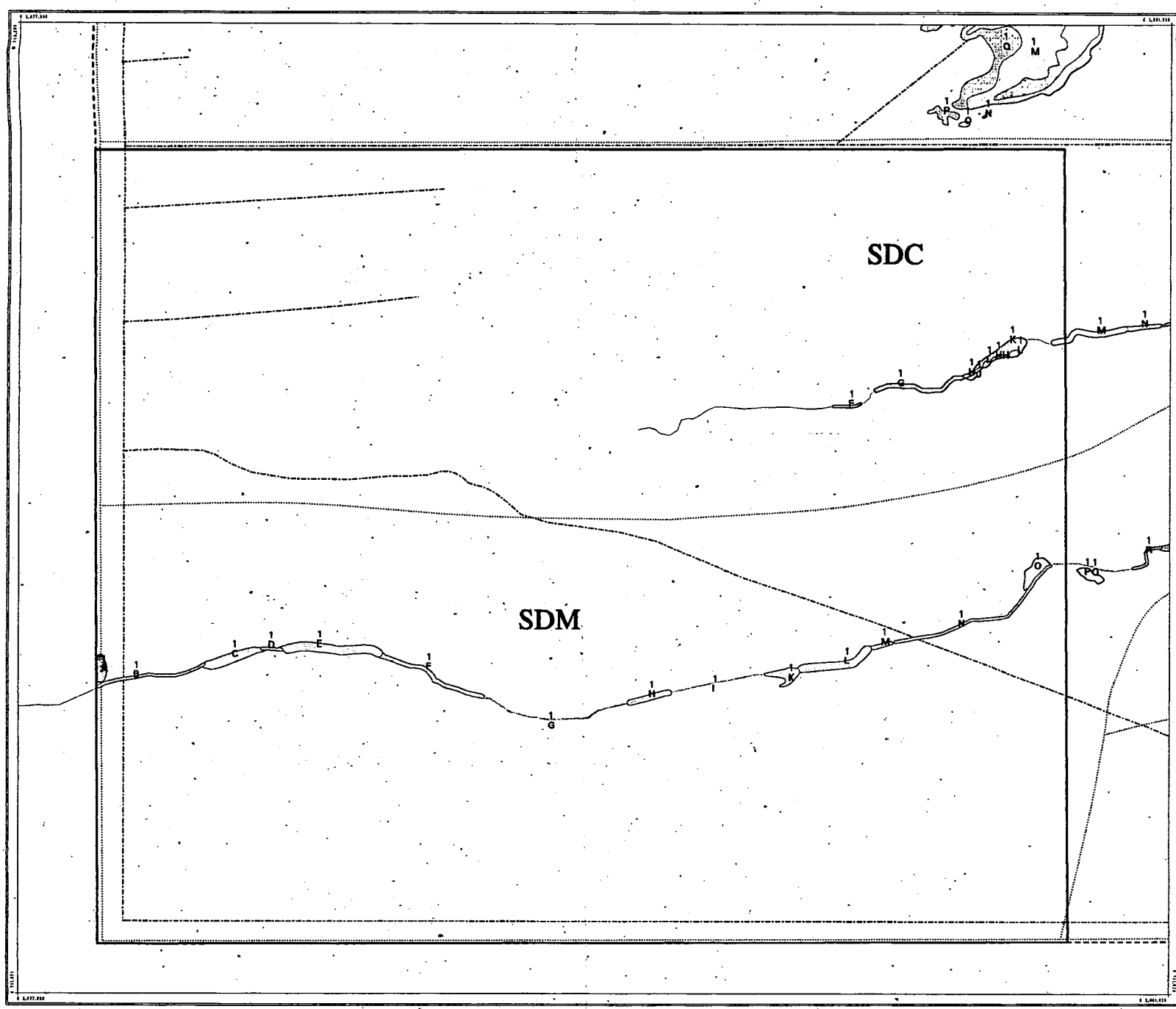

SW3 WETLANDS

August 20, 1995

(See wetlands base map for data source and notes)

Explanation

Buffer Zone Quadrants

Cowardin Wetlands Codes

- L1UBH
- PABH
- PEMA
- PEMB
- PEMC
- PEMF
- PFOA
- PFOC
- PSSA
- PSSC
- PUBF
- PUBH
- PUSC
- R4SBC
- R4SBG
- R4SBH
- R4SBJ

Non-Wetland Features

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Streams, ditches, or other drainage features
- Tributary Boundaries (e.g., WCB = watershed drainage)
- Fences
- Rocky Flats boundary
- Paved roads
- Dirt roads

N

100 0 200 400

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared for:

RMRS Rocky Mountain Remediation Services, L.L.C.
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MAP ID: SW3

August 17, 1995

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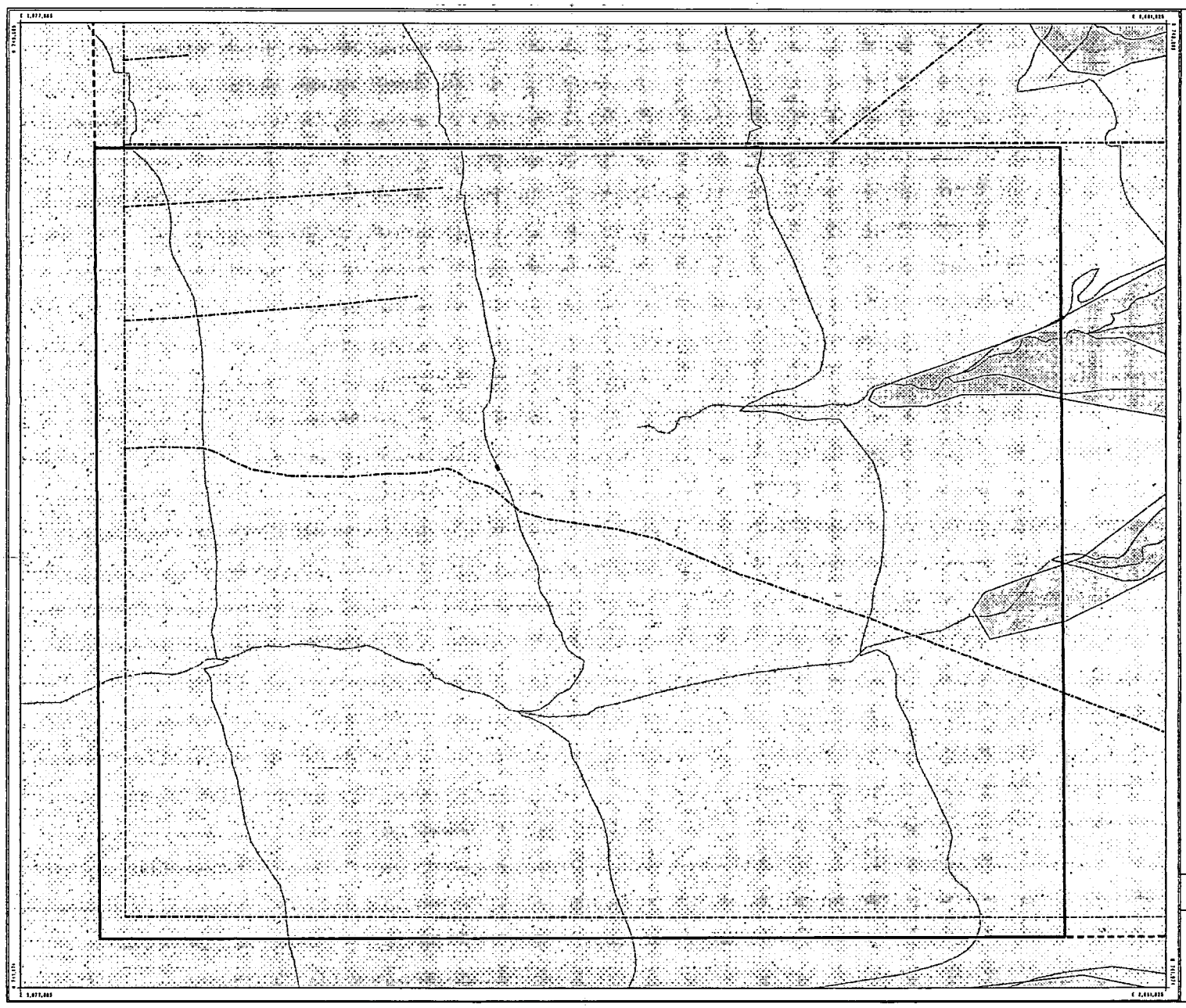


SW3 Soils Map

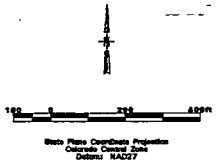
From Soil Conservation Service
August 20, 1995

(See Soils Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Argiustolls
- Paleustolls
- Haplargids
- Mollisol/Rock Outcrop complex
- Torrifluvents
- Haplustolls
- Torriorthents
- Camborthids
- Haplustolls
- Cryofluvents
- Haplaquolls
- Natrargids
- Argiborolls
- Gravel and Clay Pit
- Rock Outcrop
- DAM
- WATER

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads



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MAP ID: SW3

August 17, 1995

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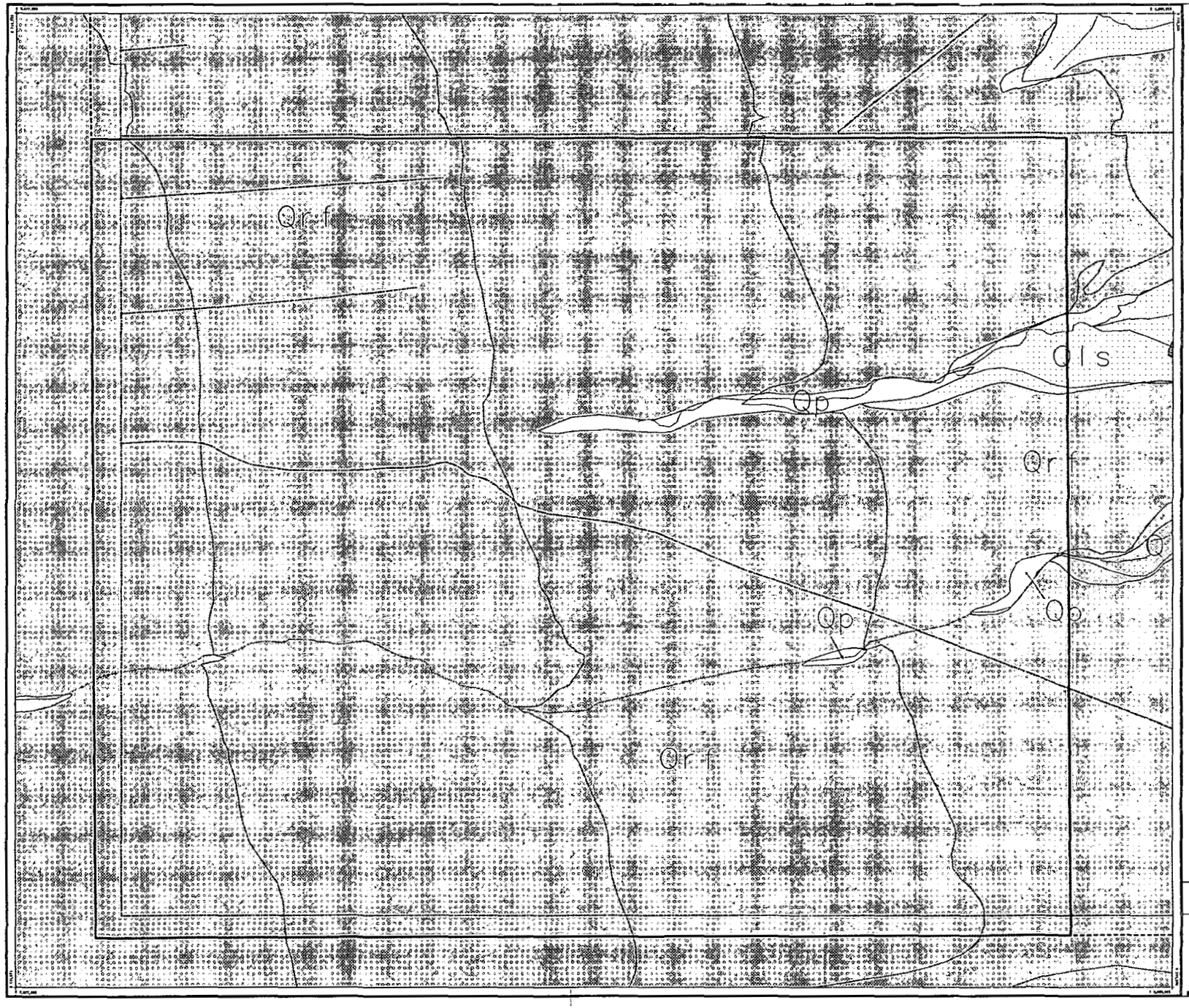
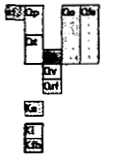


SW3 Geologic Units

August 20, 1995
(See Geologic Units Basemap)
(for Data Source)

EXPLANATION



Geologic Map Units

- af - Artificial fill
- Qp - Post-Piney Creek and Piney Creek Alluvium
- Qt - Terrace Alluvium
- Qc - Colluvium
- Qls - Landslide deposits
- Qs - Slocum Alluvium
- Qv - Verdos Alluvium
- Qrf - Rocky Flats Alluvium
- Ka - Arapahoe Formation
- Kl - Laramie Formation
- Kfh - Fox Hills Sandstone

- Shallow closed depression
- Scarp of young landslide
- Areas of vegetation at and near springs
- Boundary of gravel and clay pit
- Spring
- Strike and dip of beds
- Clast identification site
- Capitol Mine (abandoned)
- Geologic Units boundaries
- Buffer Zone Quadrants
- Buildings or other structures
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
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August 20, 1995

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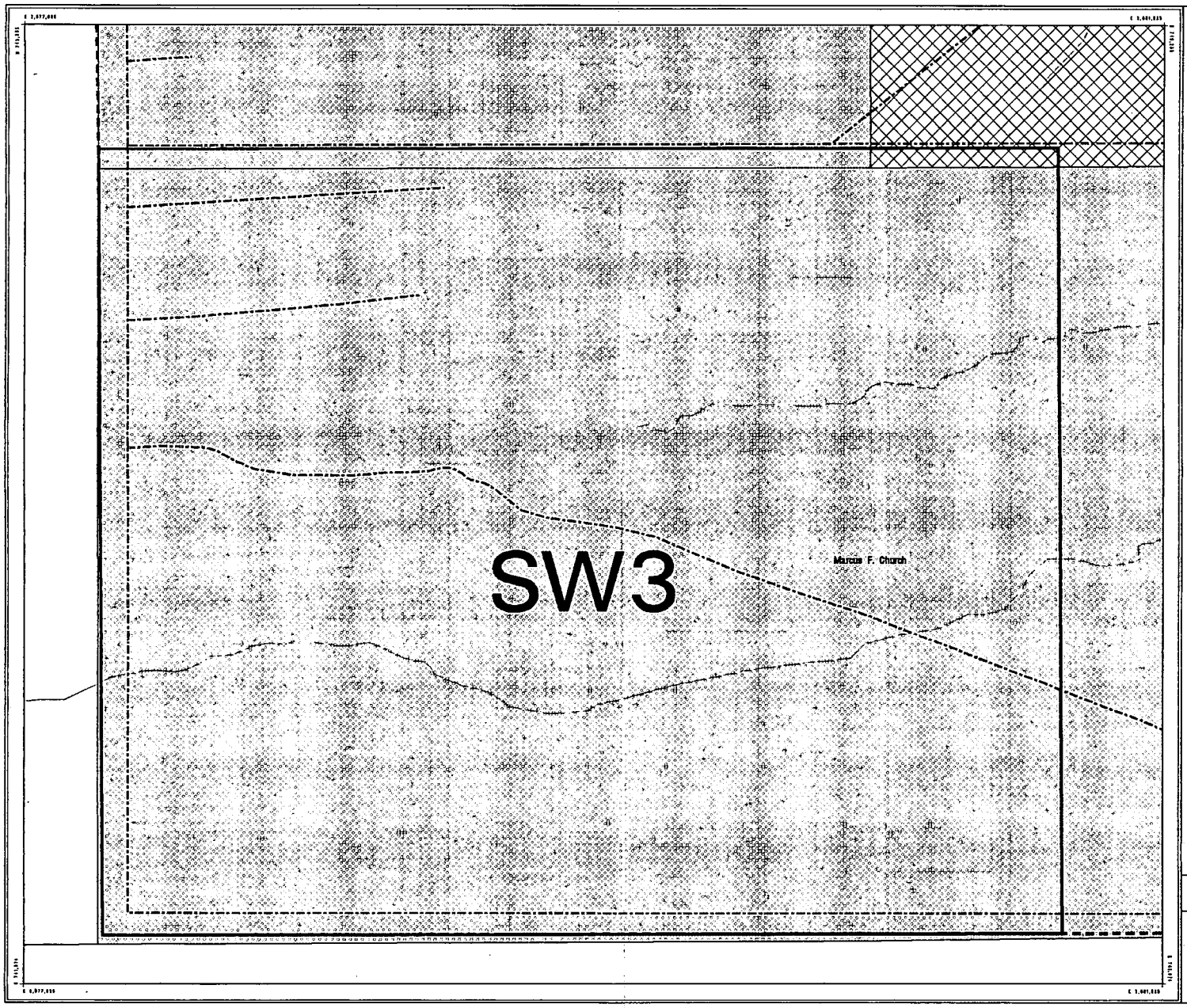

SW3 Mineral Rights at Rocky Flats Environmental Technology Site

August 20, 1995
(See Mineral Rights Basemap for Data Source)

EXPLANATION

- Private
- Government
- Both Government and Private
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

100 0 200 400ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
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Geographic Information Systems Group
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MAP ID: SW3

August 17, 1995

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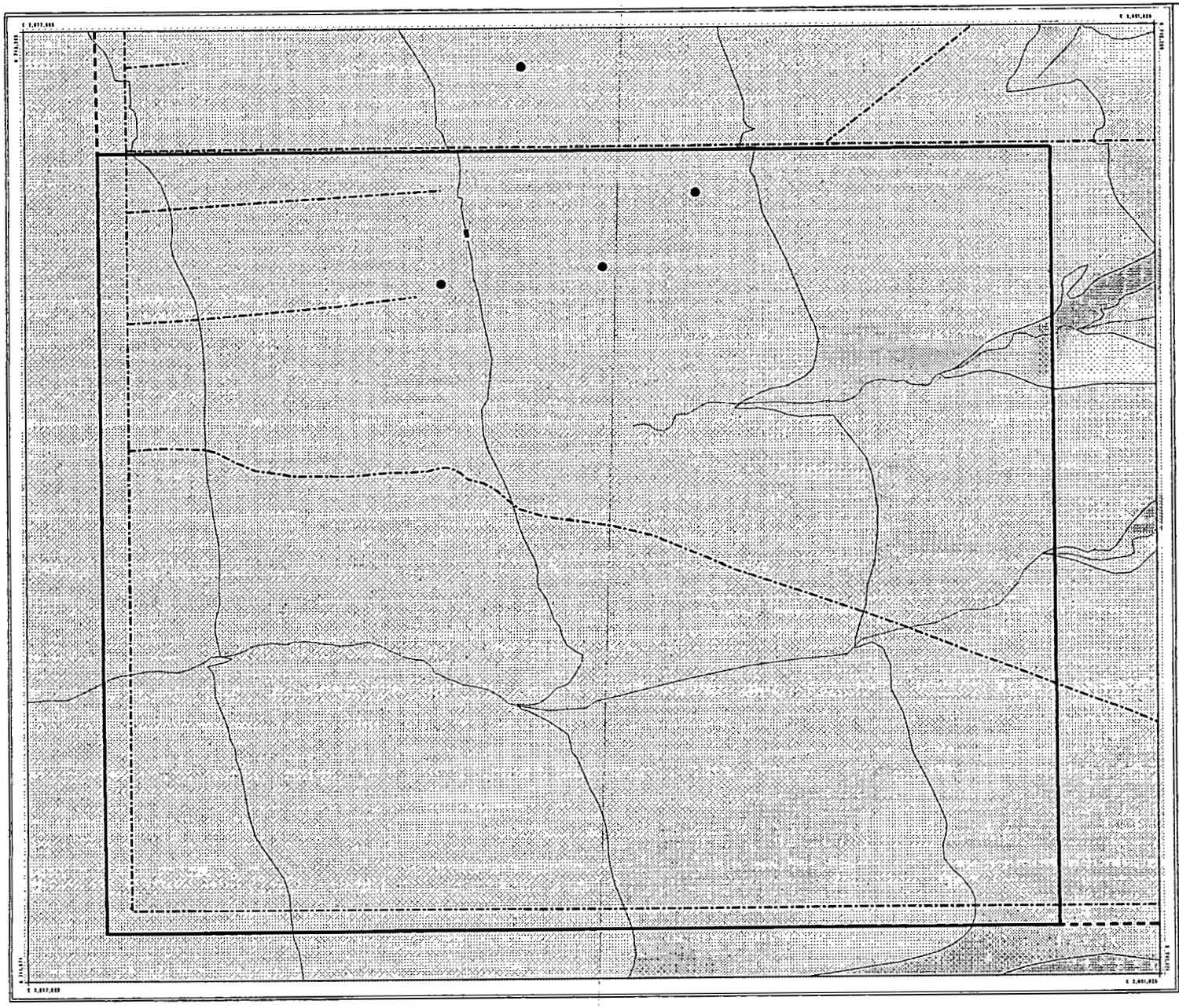

SW3 Borehole Sampling Locations

August 20, 1995

(See Borehole Basemap for Data Source)

EXPLANATION

- Borehole locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

100 0 200 400ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Engineered by:

RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
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Golden, CO 80402-0464

MAP ID: SW3

August 17, 1995

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SW3 SEDIMENT SAMPLING LOCATIONS

August 20, 1995

(See Sediment Basemap for Data Source)

EXPLANATION

- Sediment Sample Locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

100 0 200 400ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
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MAP ID: SW3

August 17, 1995

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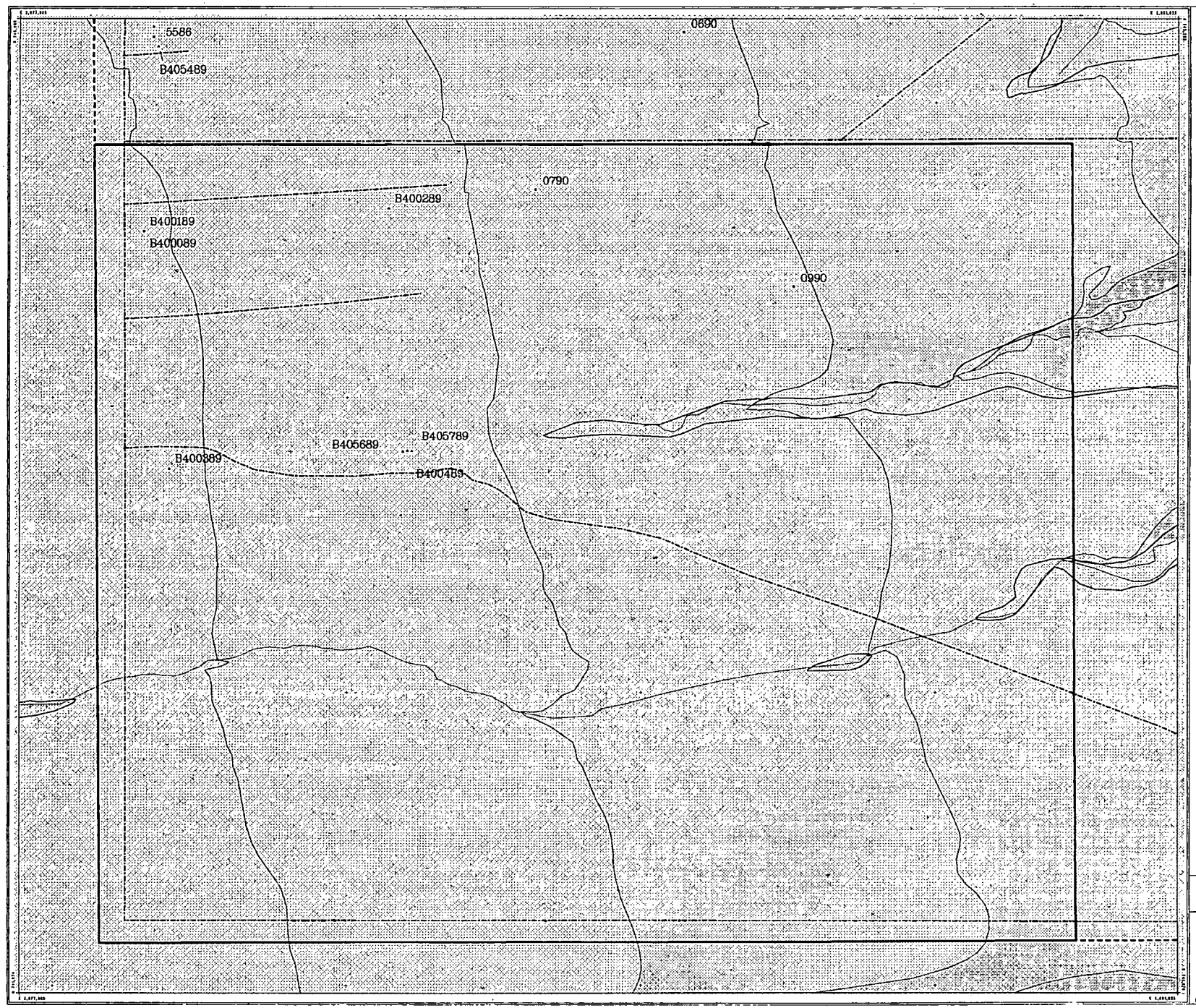

SW3 Groundwater Monitoring Well Location Map

(See Groundwater Basemap for Data Source)

WELL TYPES

- Boundary Wells
- CERCLA Characterization Wells
- RCRA Regulatory
- RCRA Characterization Wells
- Special Purpose Wells

Groundwater Monitoring Program Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock

Inactive Groundwater Monitoring Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock
- Abandoned Groundwater Monitoring Wells

Other

- Buildings and other structures
- Ponds & Lakes
- Buffer Zone Quadrants
- Individual Hazardous Substance Sites
- Extent of Rocky Flats Alluvium
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

100 0 200 400ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
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Golden, CO 80402-0464

MAP ID: SW3

August 10, 1995

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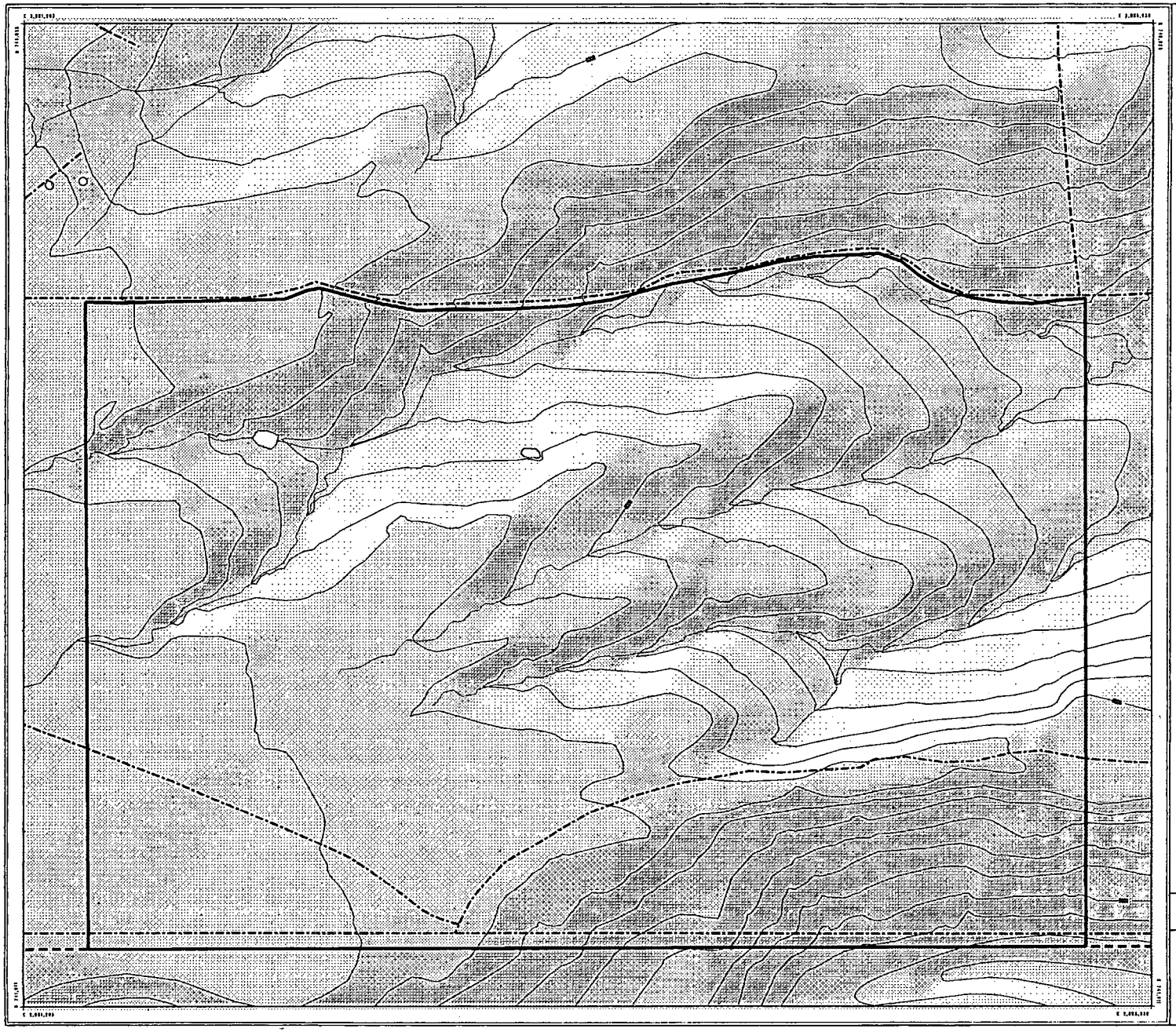

SW4 Surface Water Sampling Locations

August 20, 1995
(See Surface Water Basemap for Data Source)

EXPLANATION

- Surface water stations
- Routine operational sites
- NPDES/FFCA permit monitoring sites
- Gaging stations
- NPDES storm water permit sampling sites
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800 ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
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MAP ID: SW4

August 17, 1995

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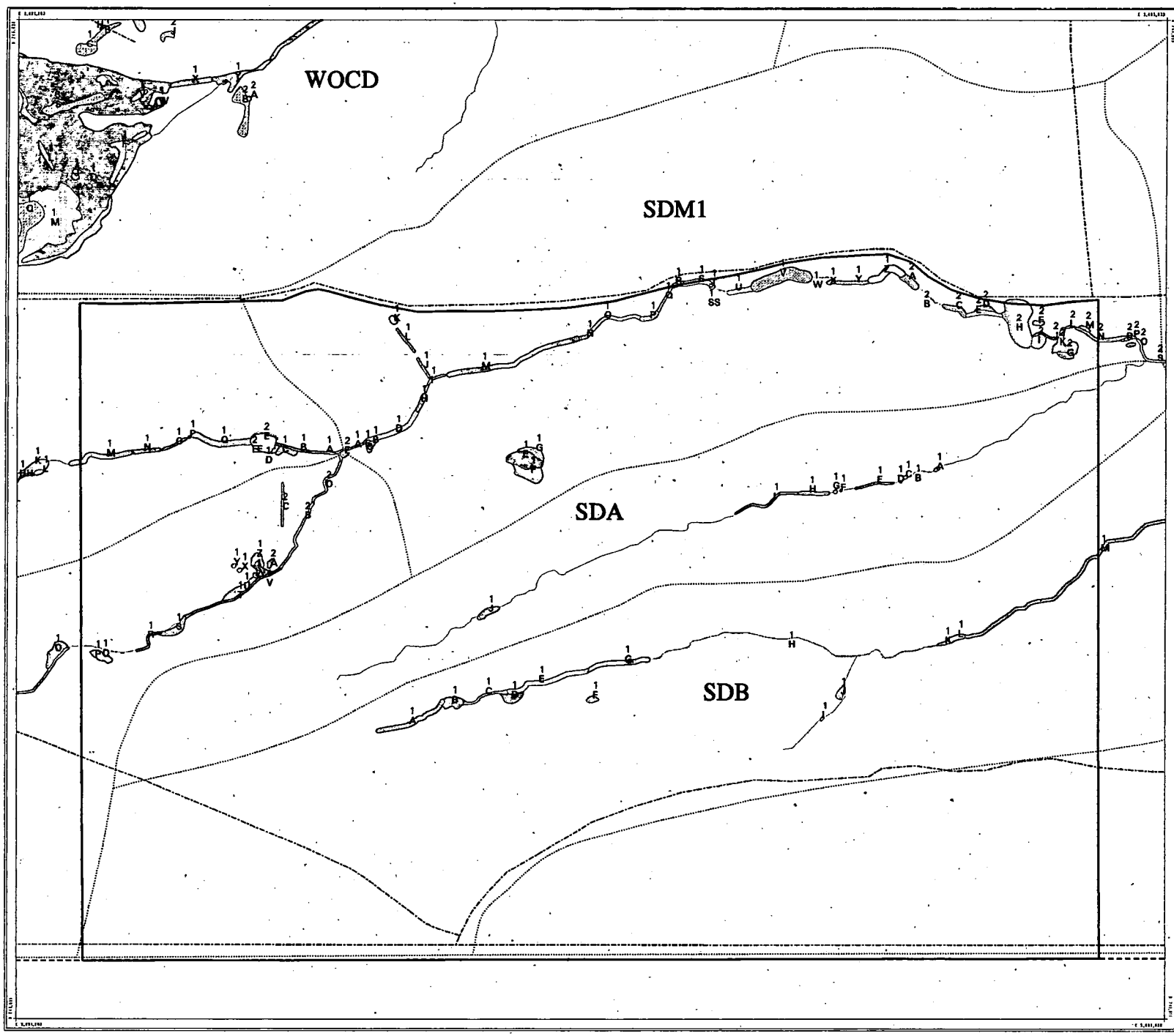

SW4 WETLANDS

August 20, 1995

(See wetlands base map for data source and notes)

Explanation

Buffer Zone Quadrants

Cowardin Wetlands Codes

- L1UBH
- PABH
- PEMA
- PEMB
- PEMC
- PEMF
- PFOA
- PFOC
- PSSA
- PSSC
- PUBF
- PUBH
- PUSC
- R4SBC
- R4SBG
- R4SBH
- R4SBJ

Non-Wetland Features

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Streams, ditches, or other drainage features
- Tributary Boundaries (e.g., WCB = watershed drainage)
- Fences
- Rocky Flats boundary
- Paved roads
- Dirt roads

N

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
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MAP ID: SW4 August 17, 1995

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SW4 Soils Map

From Soil Conservation Service
August 20, 1995

(See Soils Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Argiustolls
- Paleustolls
- Haplargids
- Mollisol/Rock Outcrop complex
- Torrifluvents
- Haplustolls
- Torriorthents
- Camborthids
- Haplustolls
- Cryofluvents
- Haplaquolls
- Natrargids
- Argiborolls
- Gravel and Clay Pit
- Rock Outcrop
- DAM
- WATER

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

100 0 200 400ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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MAP ID: SW4

August 17, 1995

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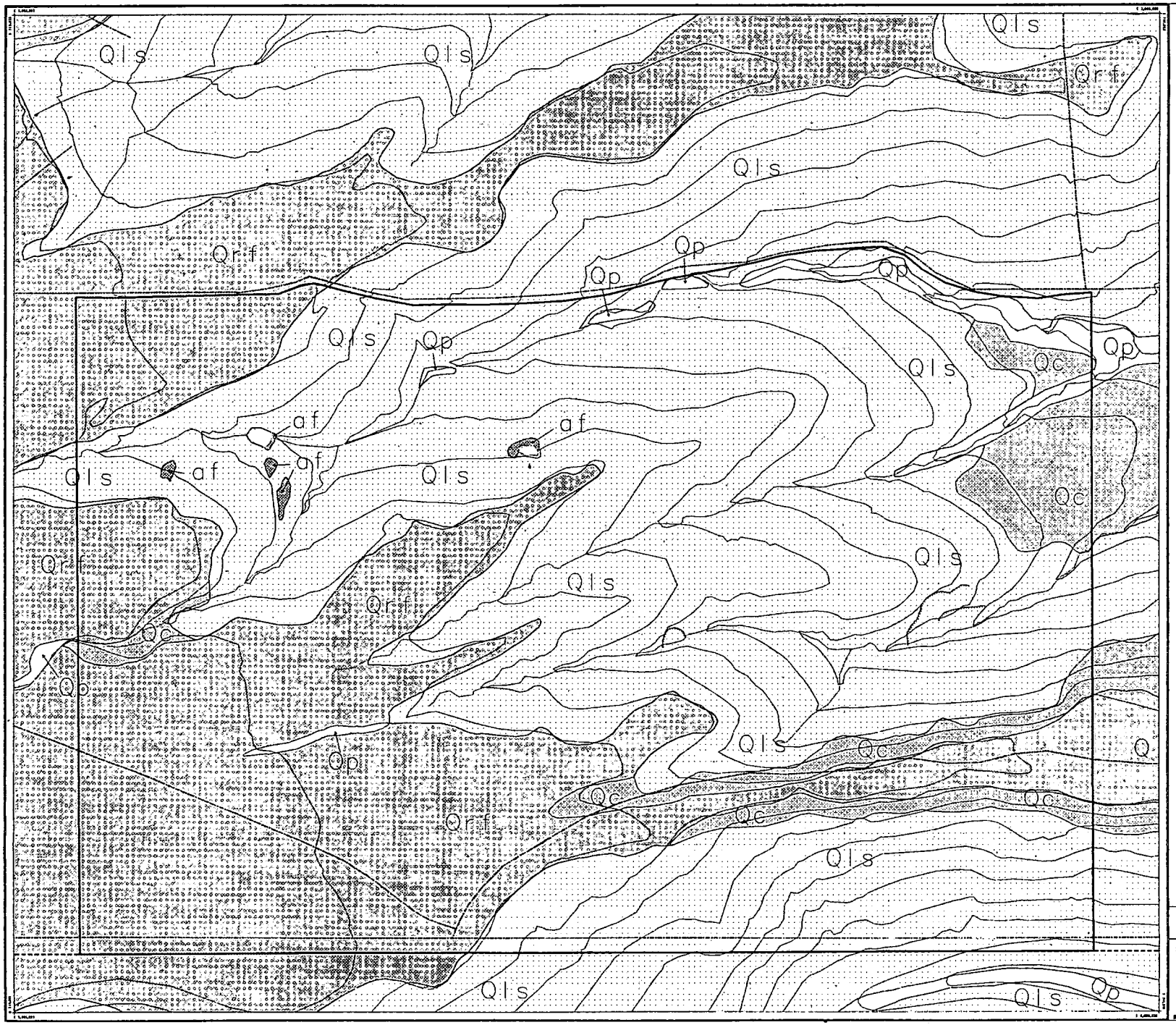
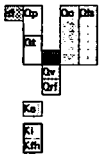


SW4 Geologic Units

August 20, 1995
(See Geologic Units Basemap)
(for Data Source)

EXPLANATION



Geologic Map Units

af - Artificial fill
Qp - Post-Piney Creek and Piney Creek Alluvium
Qt - Terrace Alluvium
Qc - Colluvium
Qls - Landslide deposits
Qs - Slocum Alluvium
Qv - Verdos Alluvium
Qrf - Rocky Flats Alluvium
Ka - Arapahoe Formation
Kl - Laramie Formation
Kfh - Fox Hills Sandstone

Shallow closed depression
Scarp of young landslide
Areas of vegetation at and near springs
Boundary of gravel and clay pit
Spring
Strike and dip of beds
Clast identification site
Capitol Mine (abandoned)
Geologic Units boundaries
Buffer Zone Quadrants
Buildings or other structures
Lakes and ponds
Streams, ditches, or other drainage features
Fences
Contours (20' Intervals)
Rocky Flats boundary
Paved roads
Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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Rocky Flats Environmental Technology Site

Prepared by:
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MAP ID: SW4

August 20, 1995

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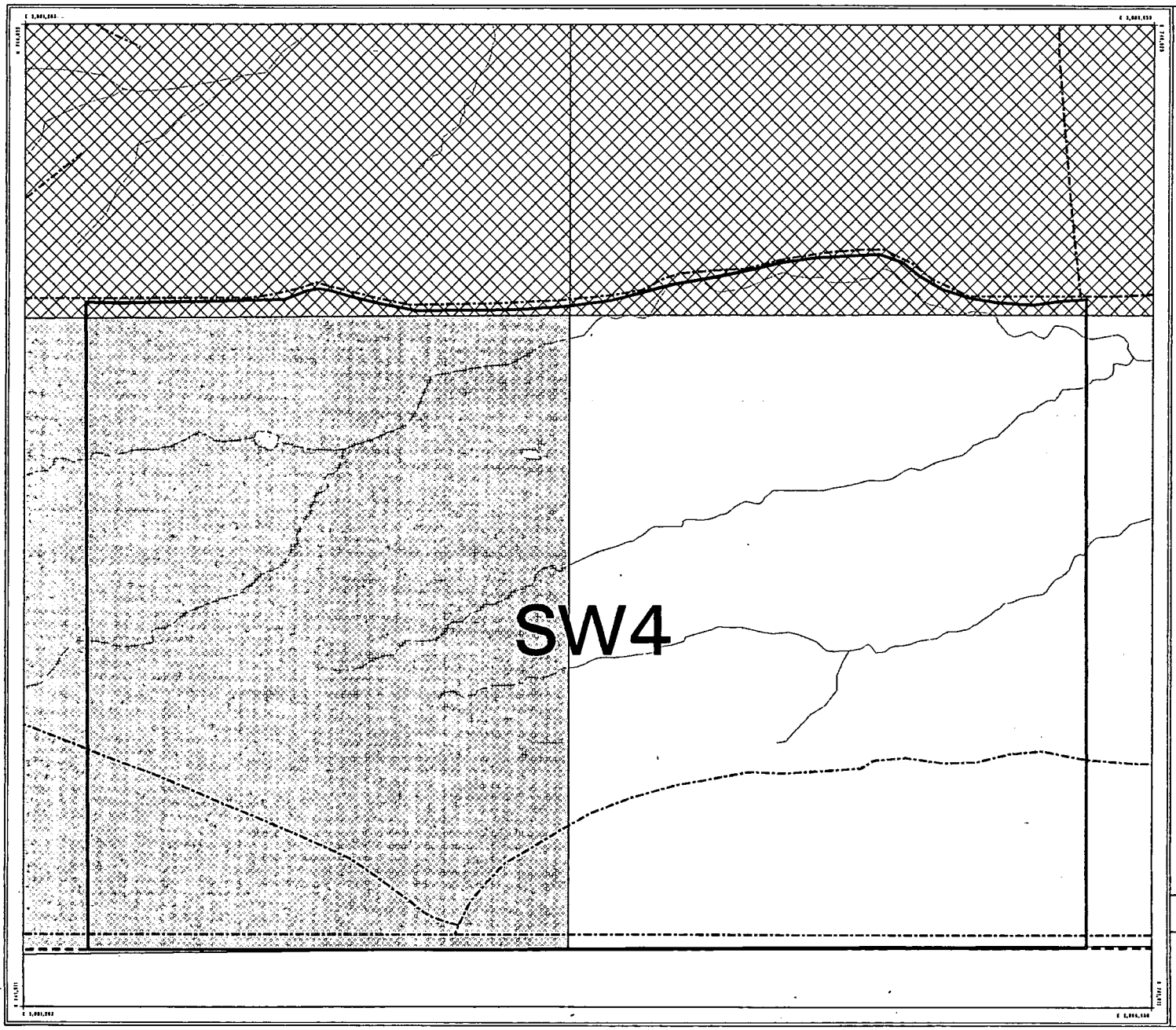

SW4 Mineral Rights at Rocky Flats Environmental Technology Site

August 20, 1995
(See Mineral Rights Basemap for Data Source)

EXPLANATION

- Private
- Government
- Both Government and Private
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

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Golden, CO 80402-0464

MAP ID: SW4

August 17, 1995

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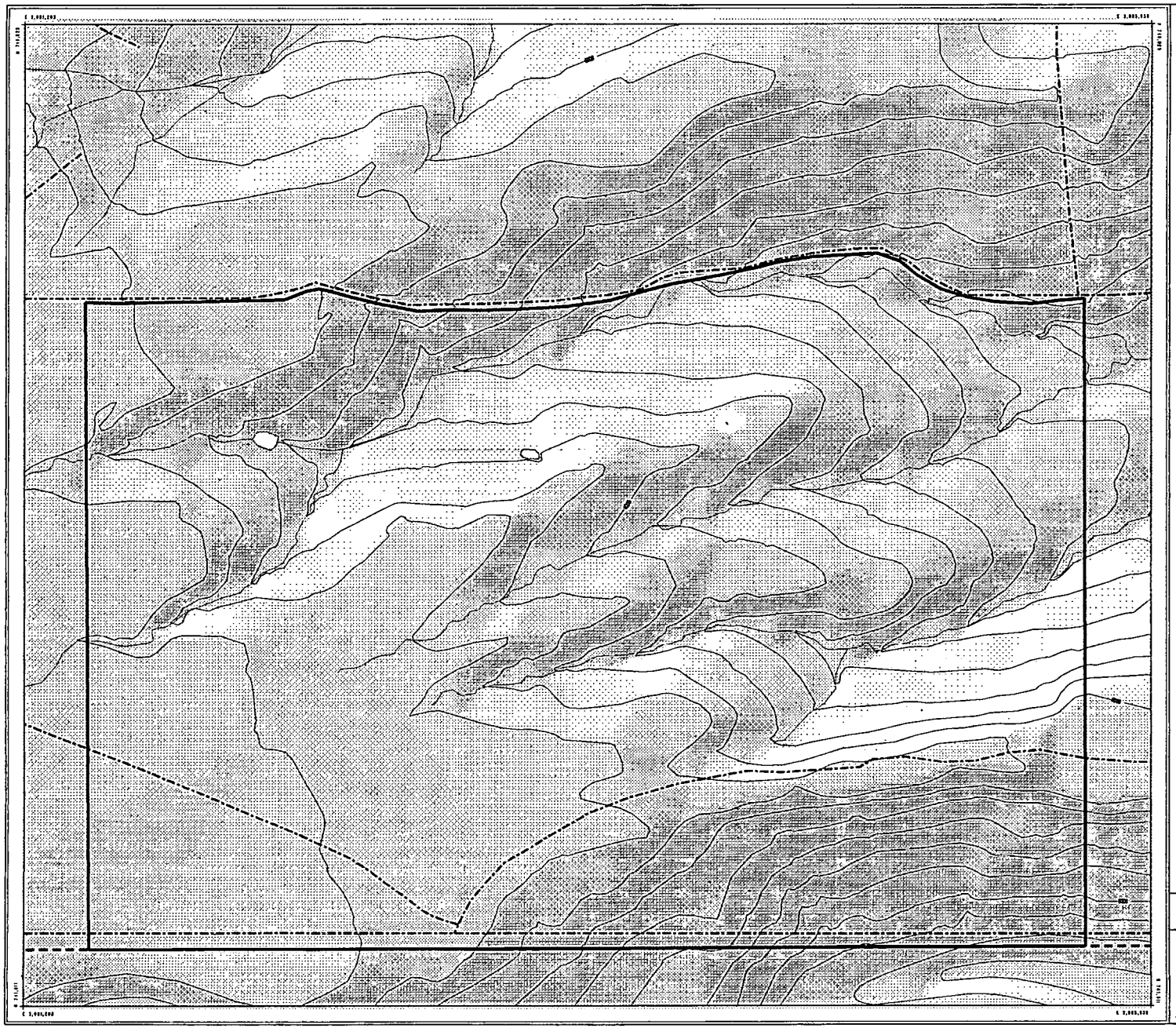

SW4 Borehole Sampling Locations

August 20, 1995

(See Borehole Basemap for Data Source)

EXPLANATION

- Borehole locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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MAP ID: SW4

August 17, 1995

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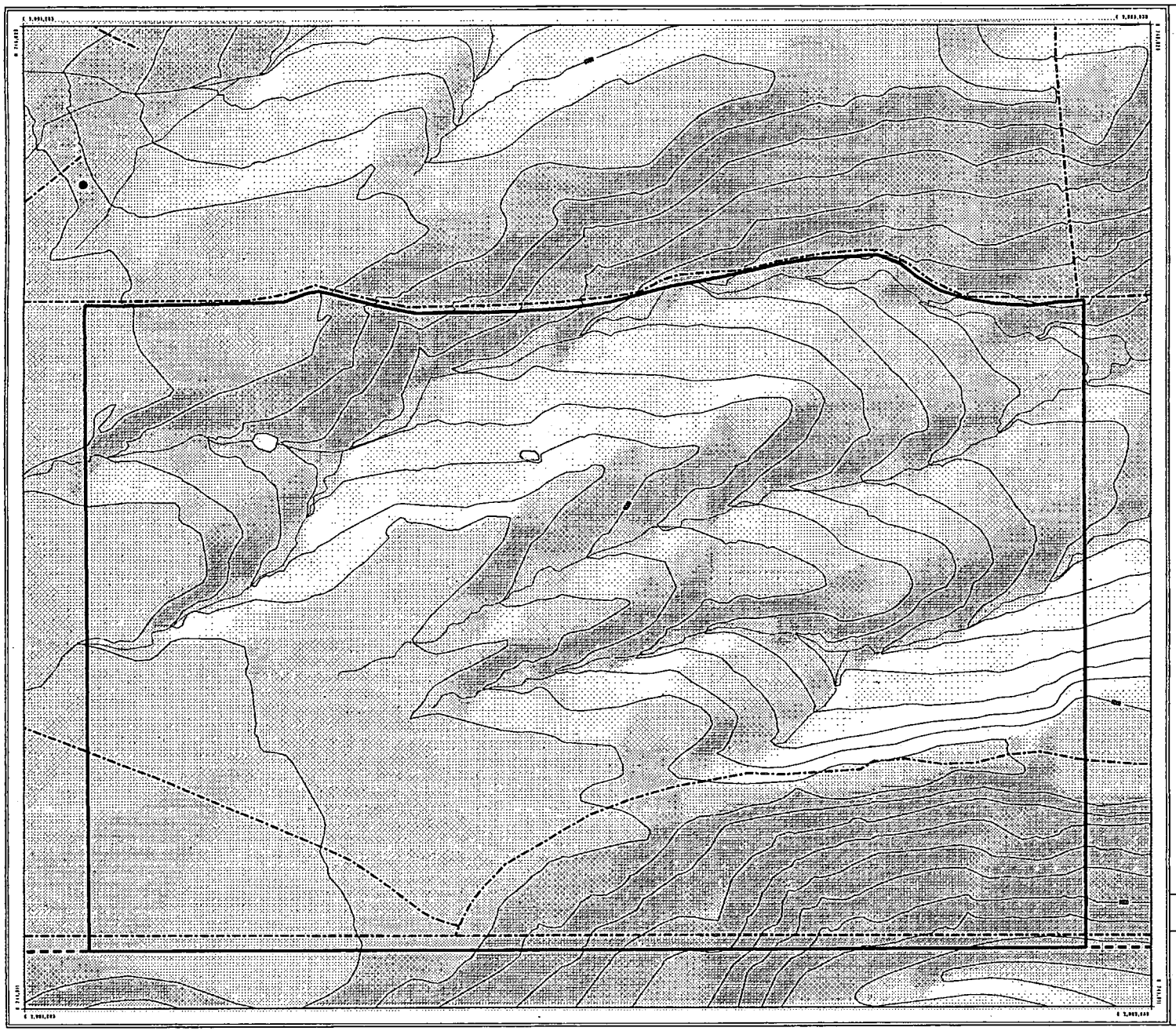

SW4 SEDIMENT SAMPLING LOCATIONS

August 20, 1995

(See Sediment Basemap for Data Source)

EXPLANATION

- Sediment Sample Locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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MAP ID: SW4

August 17, 1995

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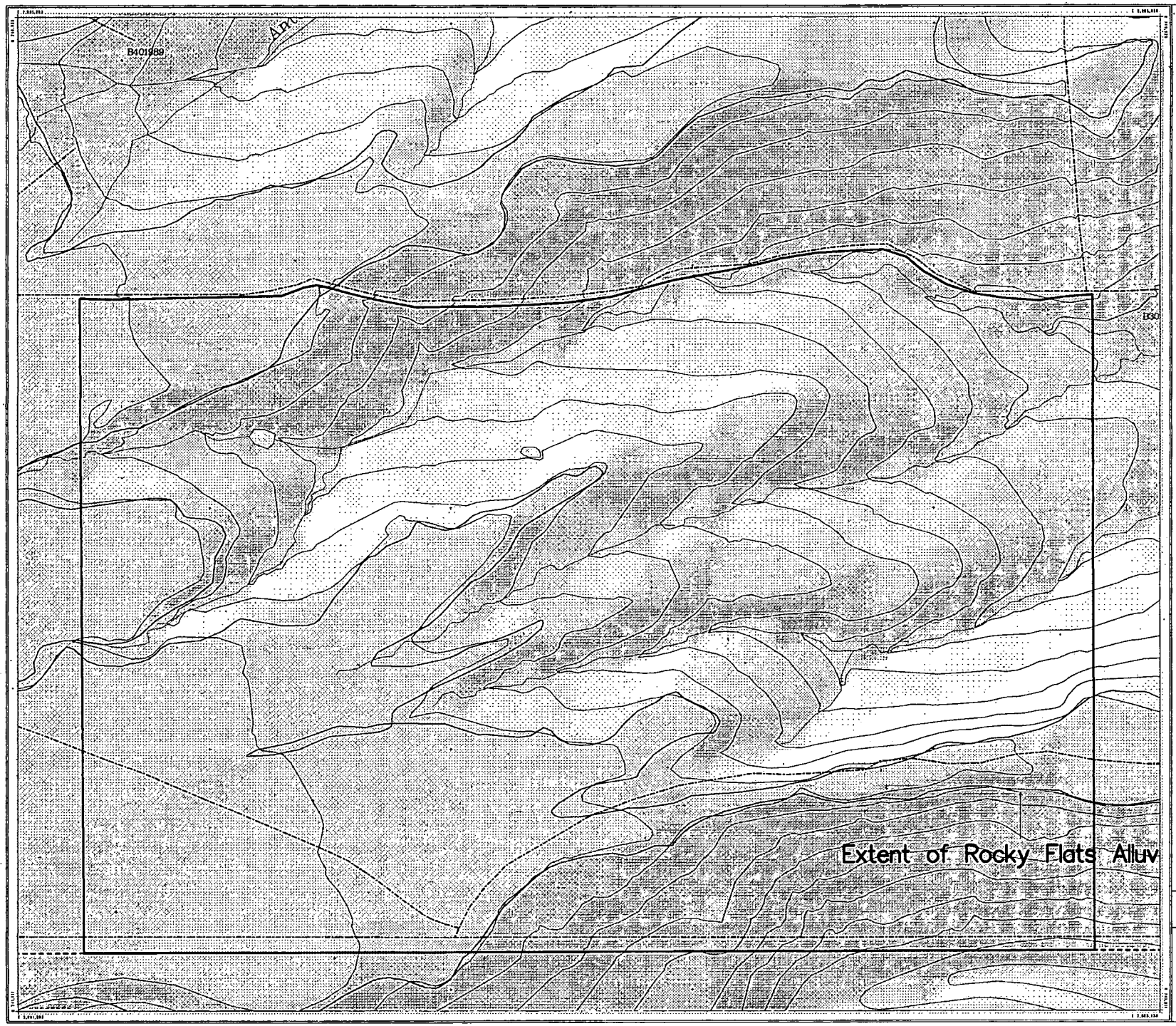

SW4 Groundwater Monitoring Well Location Map

(See Groundwater Basemap for Data Source)

WELL TYPES

- Boundary Wells
- CERCLA Characterization Wells
- RCRA Regulatory
- RCRA Characterization Wells
- Special Purpose Wells

Groundwater Monitoring Program Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock

Inactive Groundwater Monitoring Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock
- Abandoned Groundwater Monitoring Wells

Other

- Buildings and other structures
- Ponds & Lakes
- Buffer Zone Quadrants
- Individual Hazardous Substance Sites
- Extent of Rocky Flats Alluvium
- Fences
- Contours (20' Interval)
- Rocky Flats boundary
- Paved roads
- Dirt roads

100 0 200 400ft

State Plane Coordinate Projection
- Colorado Central Zone
Datum: NAD27

U.S. Department of Energy

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MAP ID: SW4

August 10, 1998

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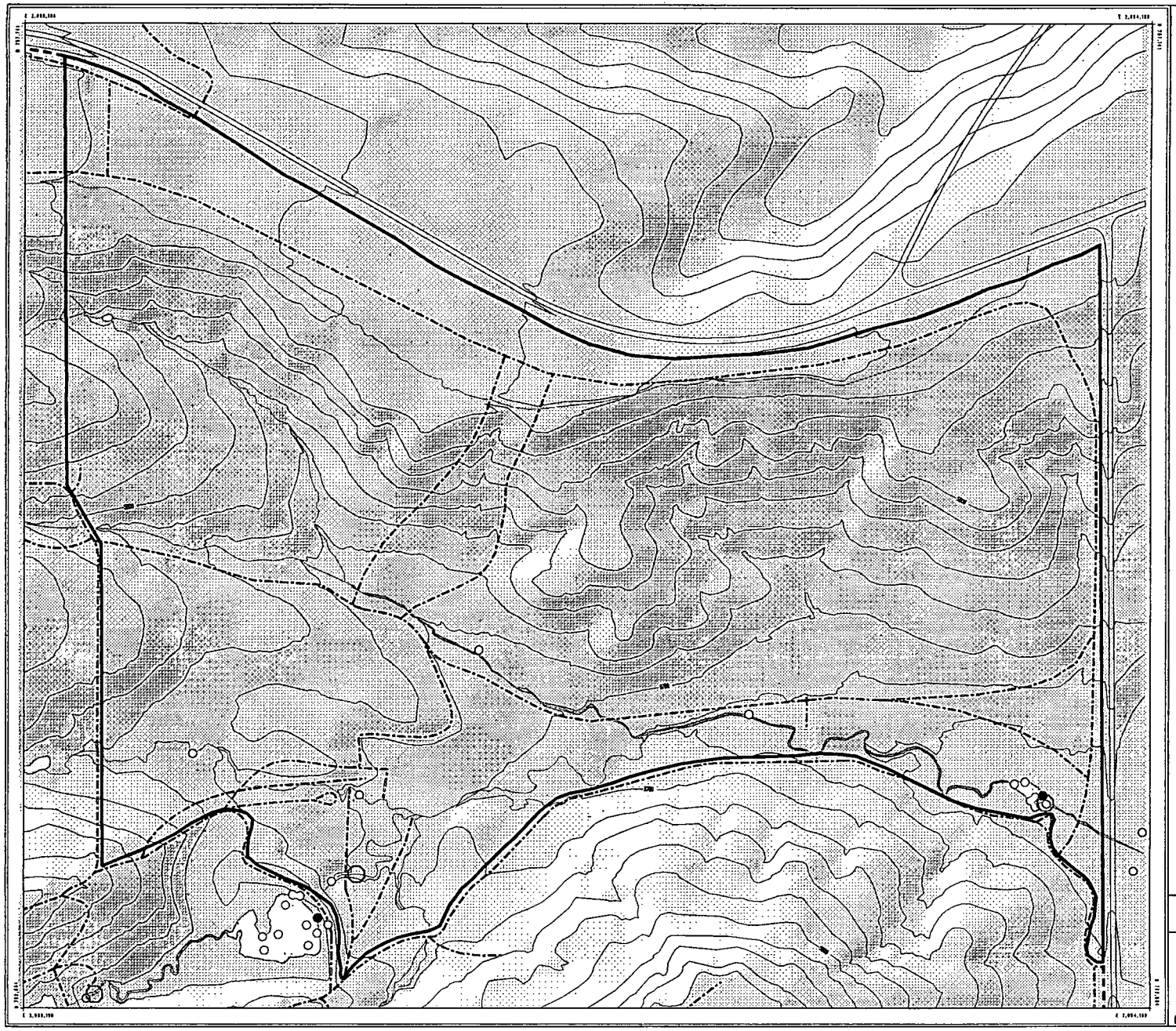

NE1 Surface Water Sampling Locations

August 20, 1995
(See Surface Water Basemap for Data Source)

EXPLANATION

- Surface water stations
- Routine operational sites
- NPDES/FFCA permit monitoring sites
- Gaging stations
- NPDES storm water permit sampling sites
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: NE1

August 17, 1995

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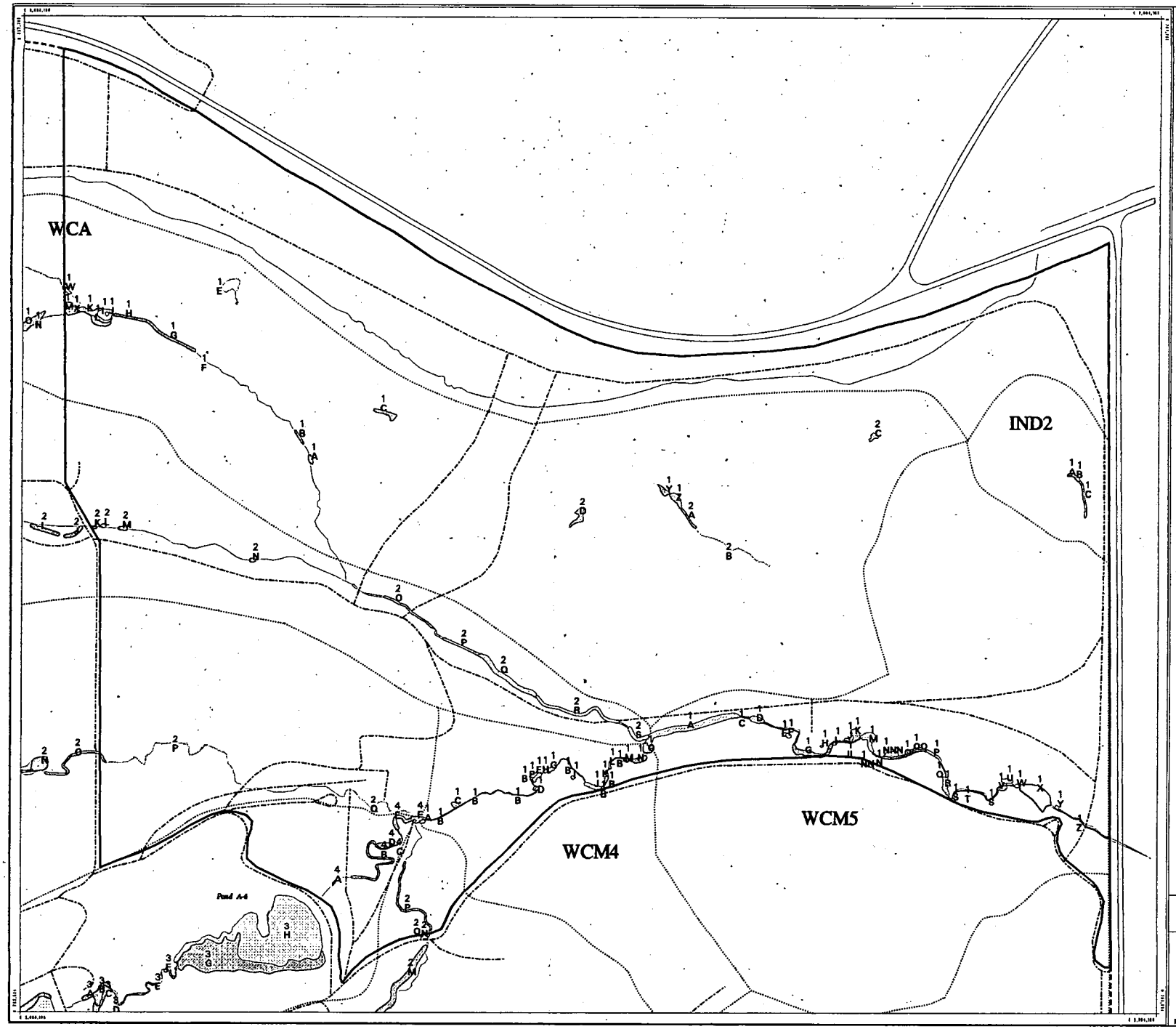

NE1 WETLANDS

August 20, 1995

(See wetlands base map for data source and notes)

Explanation

Buffer Zone Quadrants

Cowardin Wetlands Codes

- L1UBH
- PABH
- PEMA
- PEMB
- PEMC
- PEMF
- PFOA
- PFOC
- PSSA
- PSSC
- PUBF
- PUBH
- PUSC
- R4SBC
- R4SBG
- R4SBH
- R4SBJ

Non-Wetland Features

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Streams, ditches, or other drainage features
- Tributary Boundaries (eg., WCB = watershed drainage)
- Fences
- Rocky Flats boundary
- Paved roads
- Dirt roads

N

100 0 200 400ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
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Golden, CO 80402-0464

MAP ID: NE1 August 17, 1995

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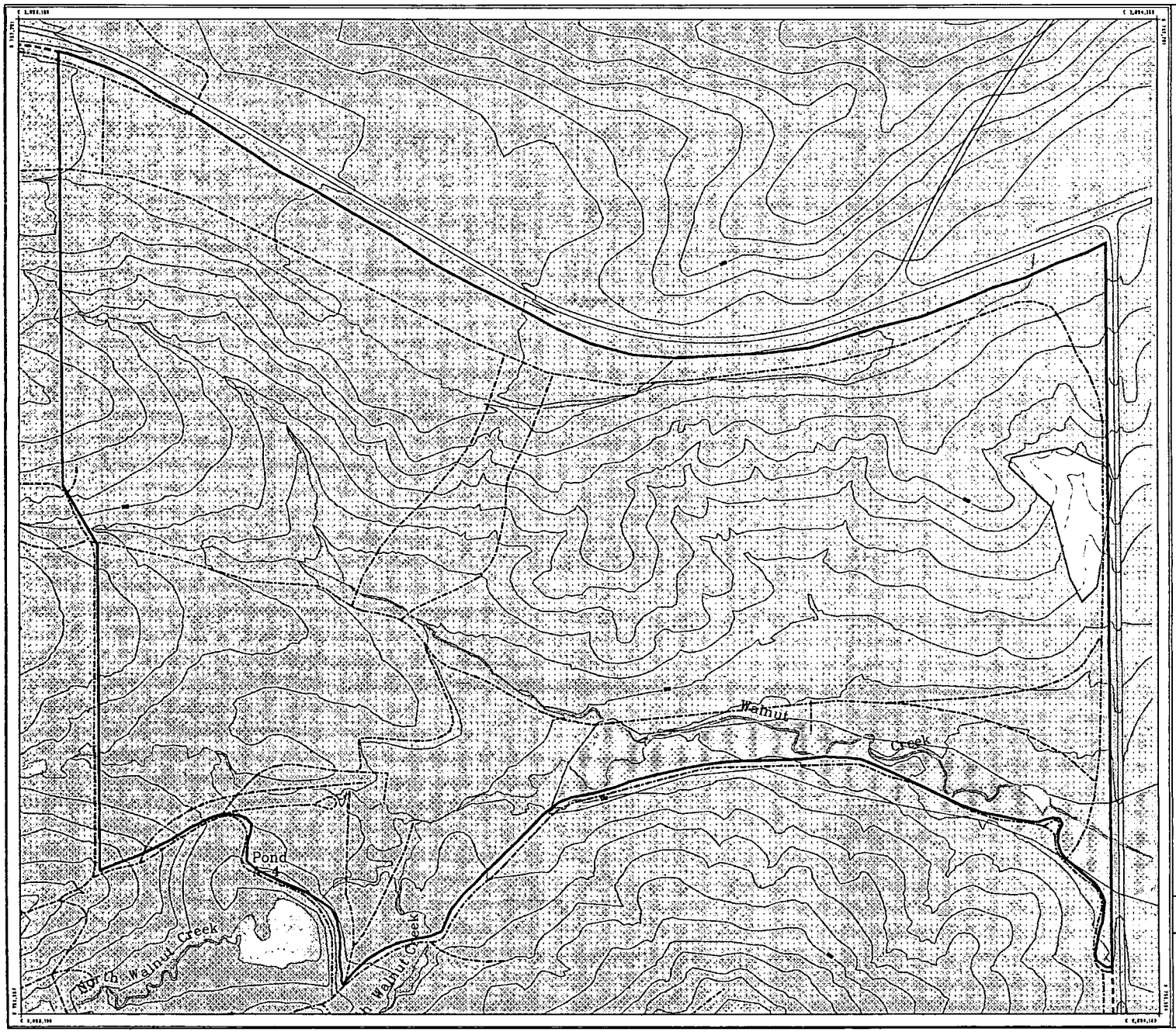


NE1 Soils Map

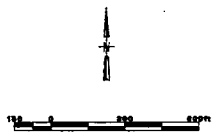
From Soil Conservation Service
August 20, 1995

(See Soils Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Argiustolls
- Paleustolls
- Haplargids
- Mollisol/Rock Outcrop complex
- Torrifluvents
- Haplustolls
- Torriorthents
- Camborthids
- Haplustolls
- Cryofluvents
- Haplaquolls
- Natrargids
- Argiborolls
- Gravel and Clay Pit
- Rock Outcrop
- DAM
- WATER

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads



U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: NE1

August 17, 1995

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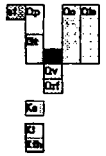
NE1 Geologic Units

August 20, 1995
(See Geologic Units Basemap)
(for Data Source)

EXPLANATION



Geologic Map Units

- af - Artificial fill
- Qp - Post-Piney Creek and Piney Creek Alluvium
- Qt - Terrace Alluvium
- Qc - Colluvium
- Qls - Landslide deposits
- Qs - Slocum Alluvium
- Qv - Verdos Alluvium
- Qrf - Rocky Flats Alluvium
- Ka - Arapahoe Formation
- Kl - Laramie Formation
- Kfh - Fox Hills Sandstone

- Shallow closed depression
- Scarp of young landslide
- Areas of vegetation at and near springs
- Boundary of gravel and clay pit
- Spring
- Strike and dip of beds
- Clast identification site
- Capitol Mine (abandoned)
- Geologic Units boundaries
- Buffer Zone Quadrants
- Buildings or other structures
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: NE1 August 20, 1995

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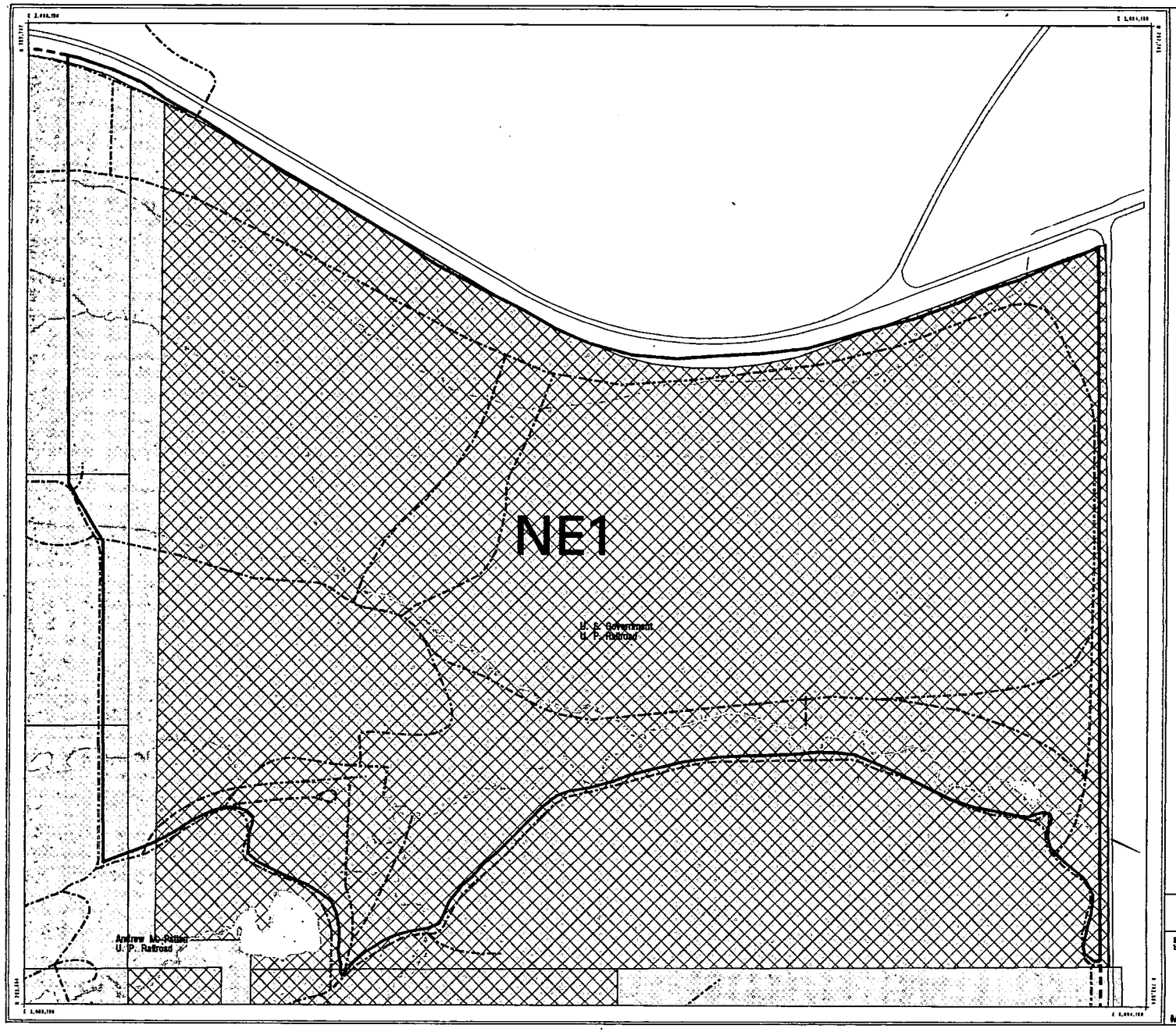

NE1 Mineral Rights at Rocky Flats Environmental Technology Site

August 20, 1995
(See Mineral Rights Basemap for Data Source)

EXPLANATION

- Private
- Government
- Both Government and Private
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991
Hydrology provided by USGS - (date unknown)

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: NE1

August 17, 1995

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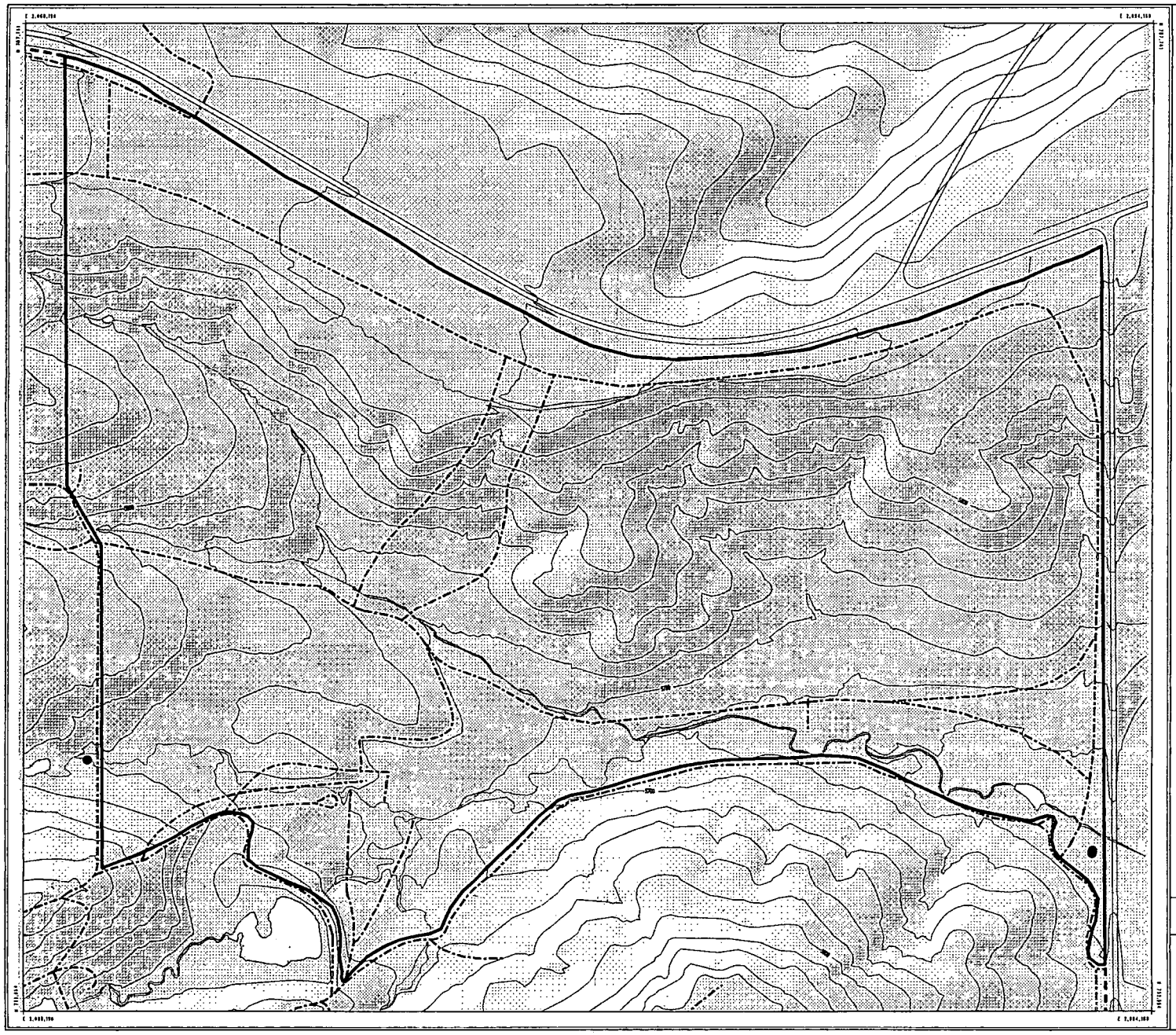

NE1 Borehole Sampling Locations

August 20, 1995

(See Borehole Basemap for Data Source)

EXPLANATION

- Borehole locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
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Golden, CO 80402-0464

MAP ID: NE1

August 17, 1995

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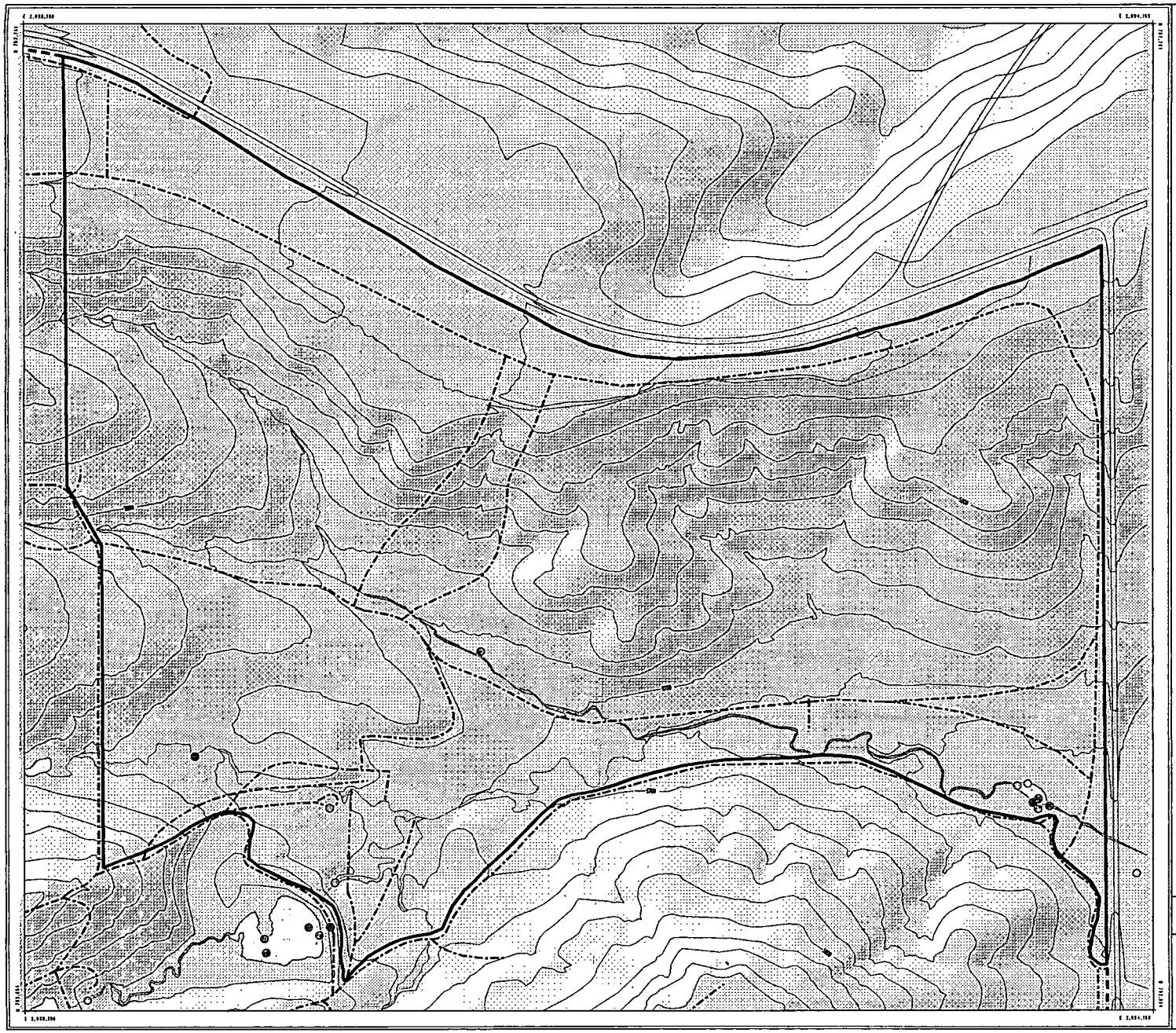

NE1 SEDIMENT SAMPLING LOCATIONS

August 20, 1995

(See Sediment Basemap for Data Source)

EXPLANATION

- Sediment Sample Locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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Rocky Flats Environmental Technology Site

Prepared by:

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Golden, CO 80402-0464

MAP ID: NE1

August 17, 1995

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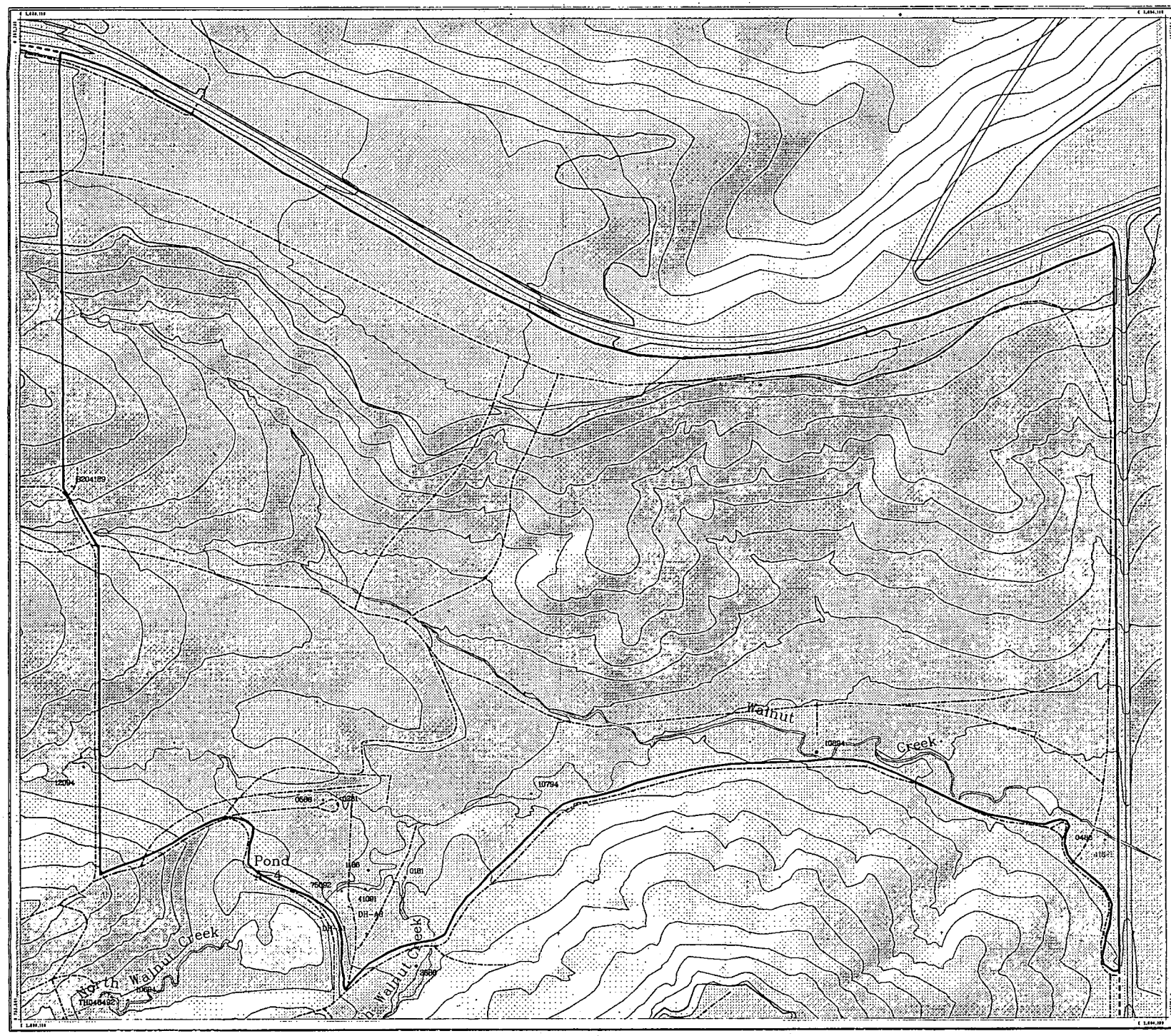

NE1 Groundwater Monitoring Well Location Map

(See Groundwater Basemap for Data Source)

WELL TYPES

- Boundary Wells
- CERCLA Characterization Wells
- RCRA Regulatory
- RCRA Characterization Wells
- Special Purpose Wells

Groundwater Monitoring Program Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock

Inactive Groundwater Monitoring Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock
- Abandoned Groundwater Monitoring Wells

Other

- Buildings and other structures
- Ponds & Lakes
- Buffer Zone Quadrants
- Individual Hazardous Substance Sites
- Extent of Rocky Flats Alluvium
- Fences
- Contours (20' Interval)
- Rocky Flats boundary
- Paved roads
- Dirt roads

N

125 0 250 500

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: NE1

August 21, 1996

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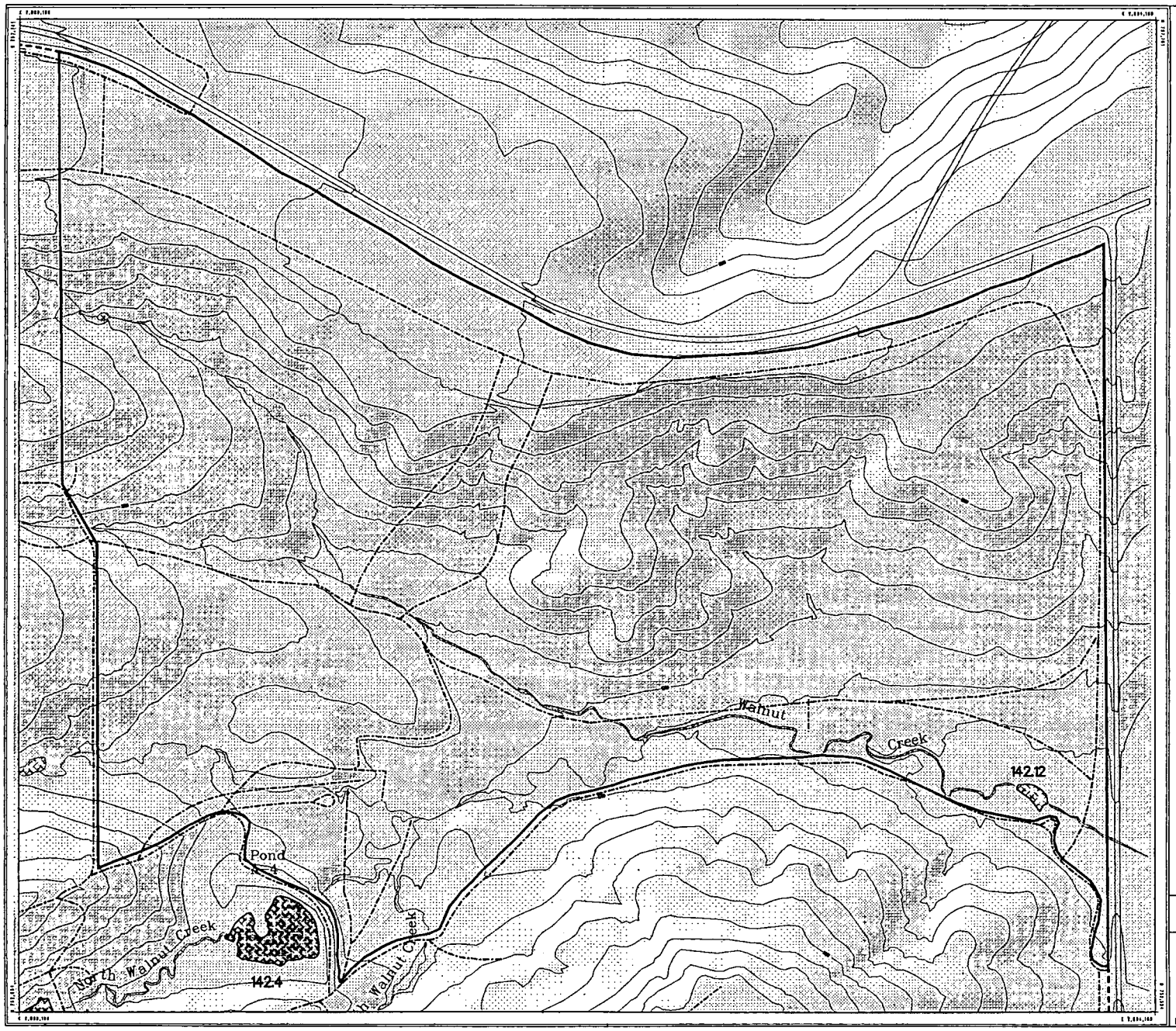

NE1 IHSS

(See IHSS Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Operable Unit 1
- Operable Unit 2
- Operable Unit 4
- Operable Unit 5
- Operable Unit 6
- Operable Unit 7
- Operable Unit 8
- Operable Unit 9
- Operable Unit 10
- Operable Unit 11
- Operable Unit 12
- Operable Unit 13
- Operable Unit 14
- Operable Unit 15
- Operable Unit 16

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: NE1

August 18, 1995

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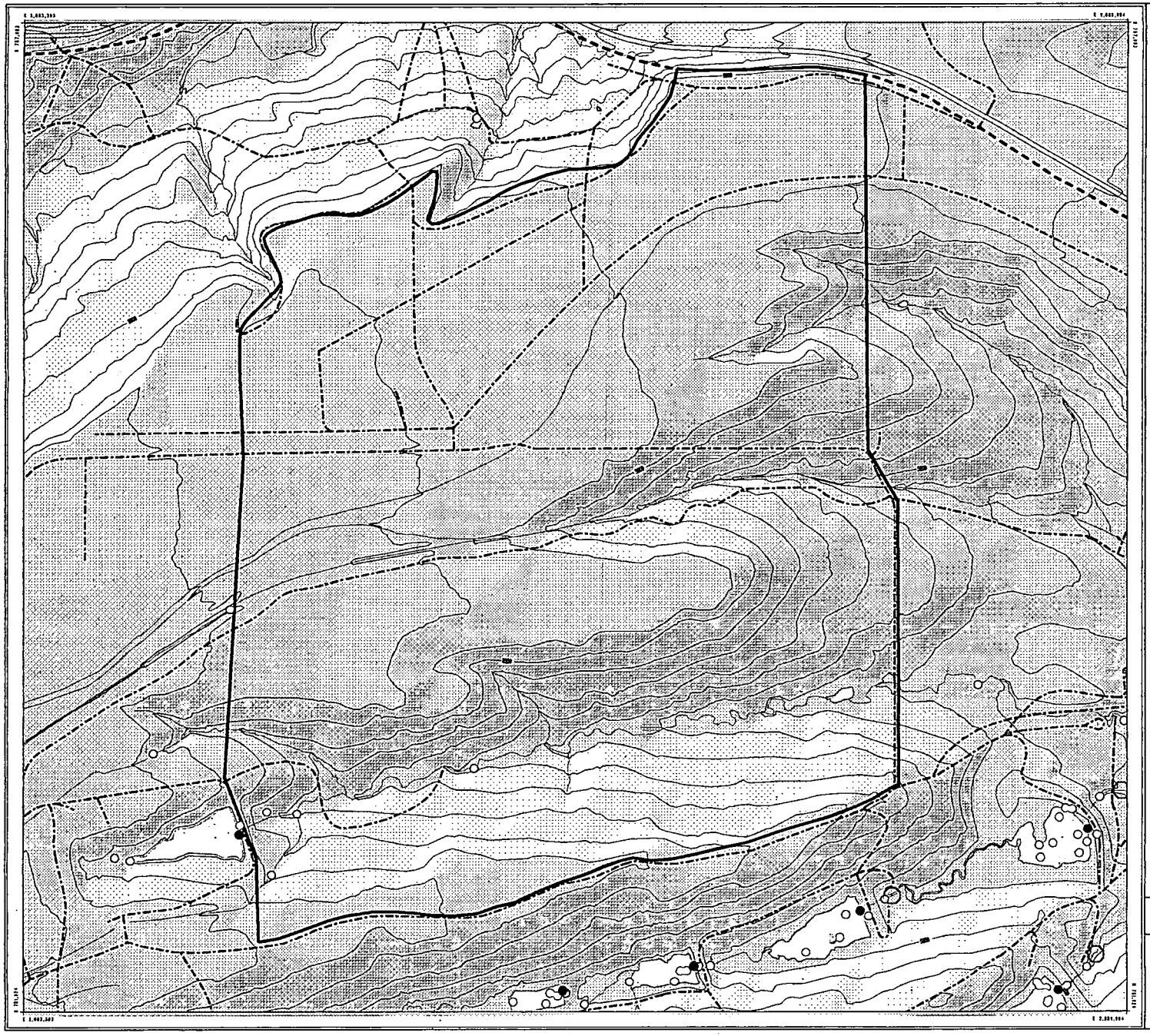

NE2 Surface Water Sampling Locations

August 20, 1995
(See Surface Water Basemap for Data Source)

EXPLANATION

- Surface water stations
- Routine operational sites
- NPDES/FFCA permit monitoring sites
- Gaging stations
- NPDES storm water permit sampling sites
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 - 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: NE2

August 17, 1995

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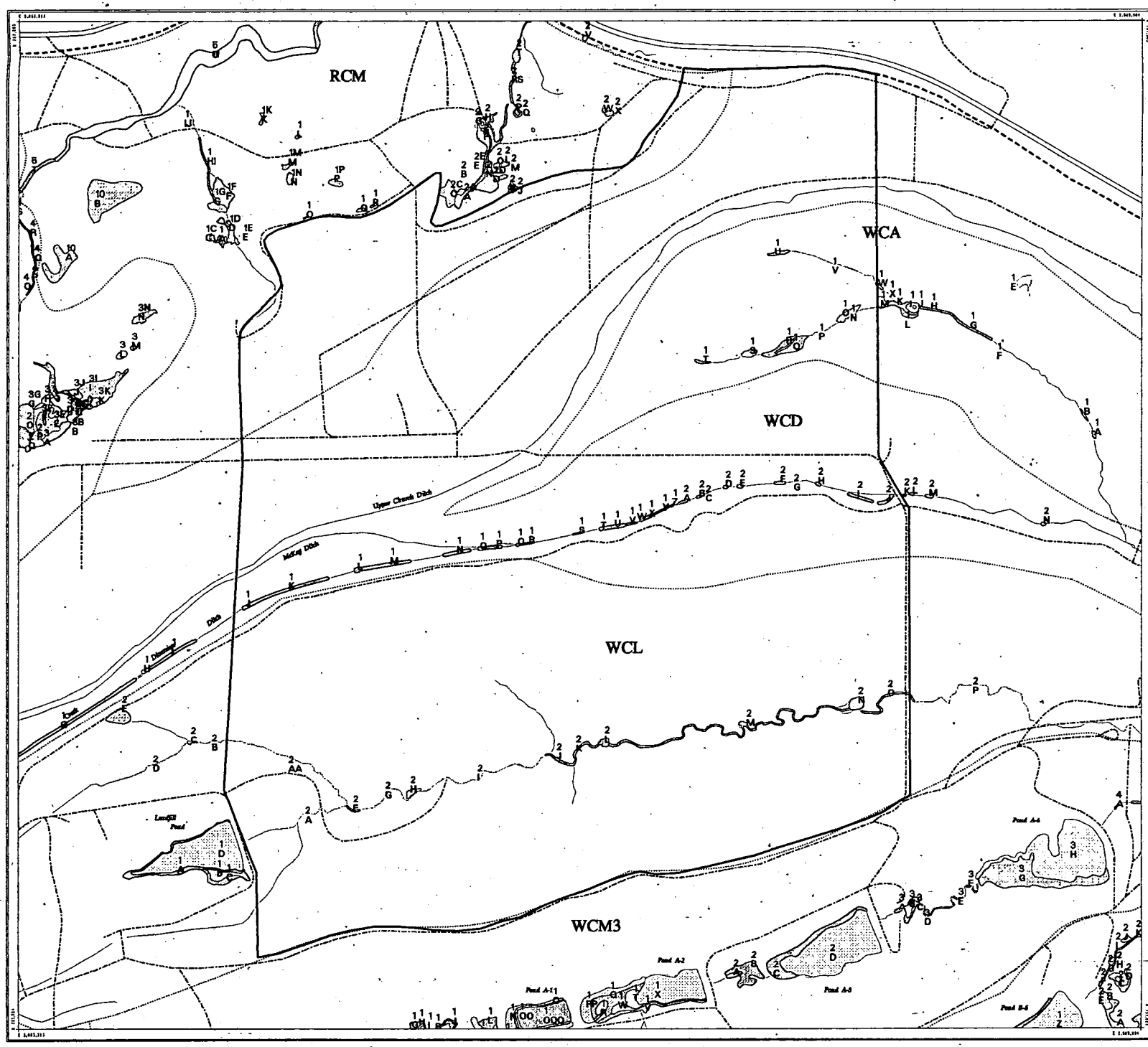

NE2 WETLANDS

August 20, 1995

(See wetlands base map for data source and notes)

Explanation

Buffer Zone Quadrants

Cowardin Wetlands Codes

- L1UBH
- PABH
- PEMA
- PEMB
- PEMC
- PEMF
- PFOA
- PFOC
- PSSA
- PSSC
- PUBF
- PUBH
- PUSC
- R4SBC
- R4SBG
- R4SBH
- R4SBJ

Non-Wetland Features

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Streams, ditches, or other drainage features
- Tributary Boundaries (eg., WCB = watershed drainage)
- Fences
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: NE2

August 17, 1995

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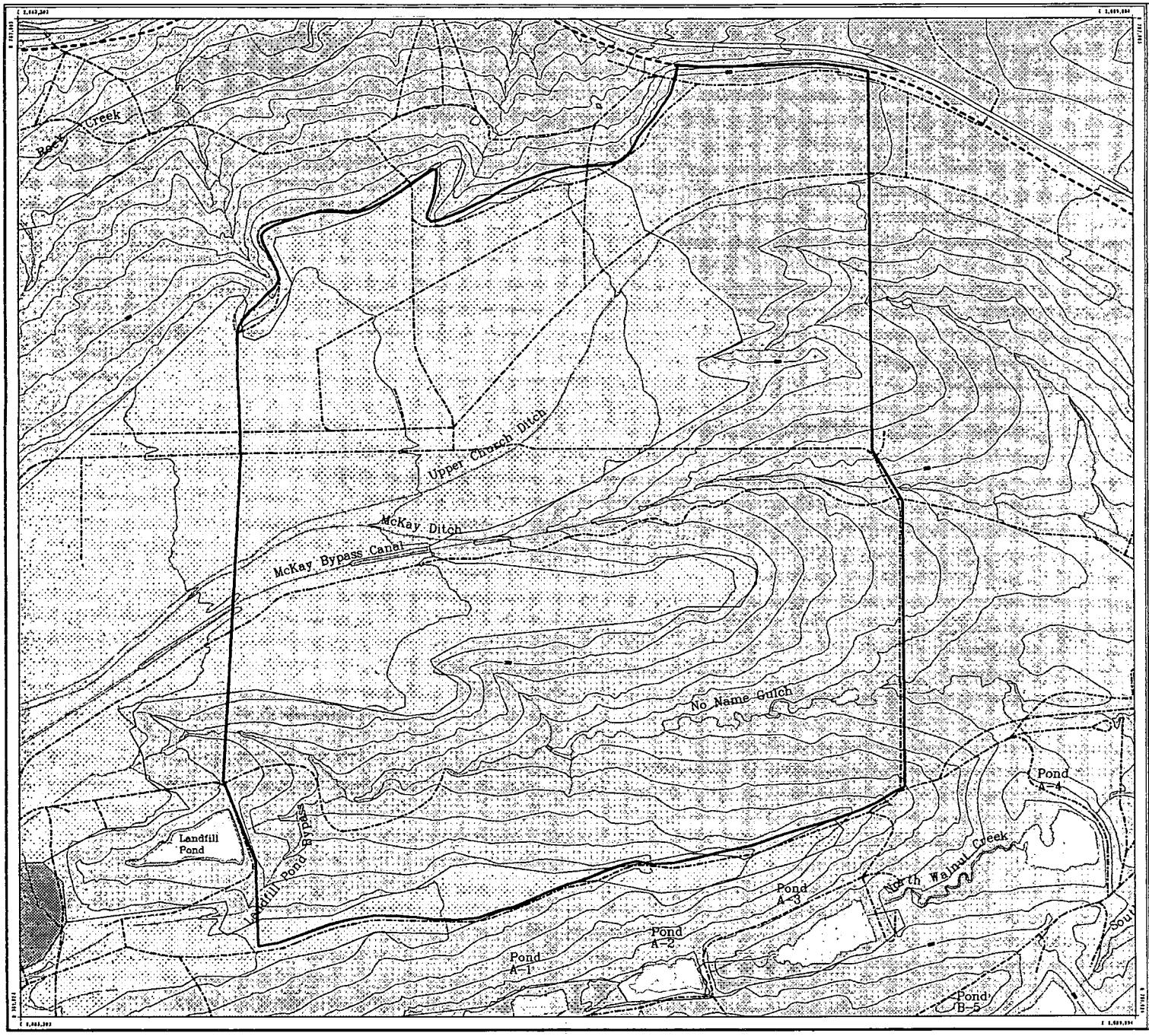

NE2 Soils Map

From Soil Conservation Service August 20, 1995

(See Soils Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Argiustolls
- Paleustolls
- Haplargids
- Mollisol/Rock Outcrop complex
- Torrifluvents
- Haplustolls
- Torriorthents
- Camborthids
- Haplustolls
- Cryofluvents
- Haplaquolls
- Natrargids
- Argiborolls
- Gravel and Clay Pit
- Rock Outcrop
- DAM
- WATER
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: NE2

August 17, 1995

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NE2 Geologic Units

August 20, 1995
(See Geologic Units Basemap)
(for Data Source)

EXPLANATION

Geologic Map Units

af - Artificial fill
Qp - Post-Piney Creek and Piney Creek Alluvium
Qt - Terrace Alluvium
Qc - Colluvium
Qls - Landslide deposits
Qa - Slocum Alluvium
Qv - Verdos Alluvium
Qrf - Rocky Flats Alluvium
Ka - Arapahoe Formation
Kl - Laramie Formation
Kfh - Fox Hills Sandstone

Shallow closed depression
Scarp of young landslide
Areas of vegetation at and near springs
Boundary of gravel and clay pit
Spring
Strike and dip of beds
Clast identification site
Capitol Mine (abandoned)
Geologic Units boundaries
Buffer Zone Quadrants

Buildings or other structures
Lakes and ponds
Streams, ditches, or other drainage features
Fences
Contours (20' Intervals)
Rocky Flats boundary
Paved roads
Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: NE2
August 20, 1995

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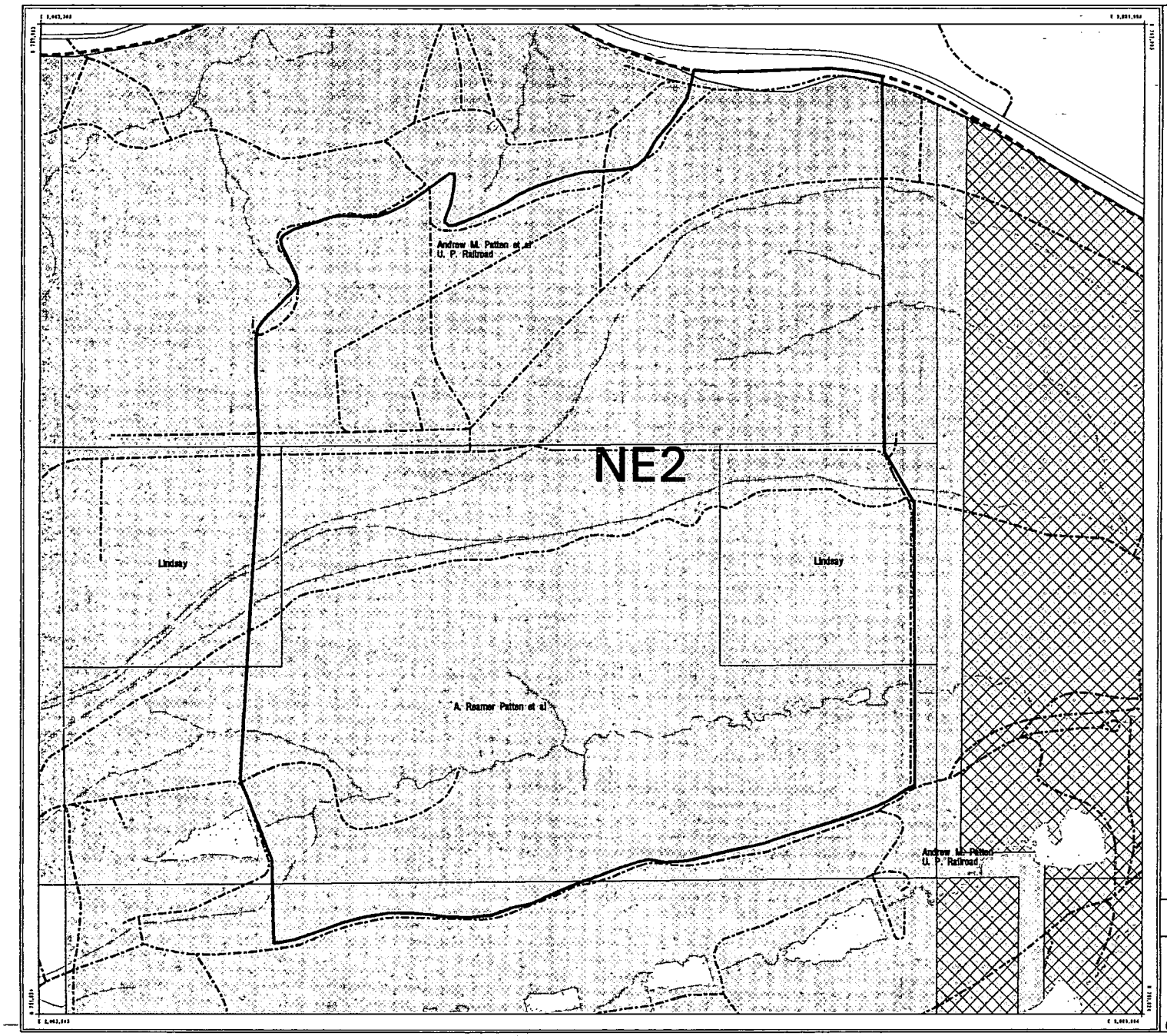

NE2 Mineral Rights at Rocky Flats Environmental Technology Site

August 20, 1995
(See Mineral Rights Basemap for Data Source)

EXPLANATION

- Private
- Government
- Both Government and Private
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: NE2 August 17, 1995

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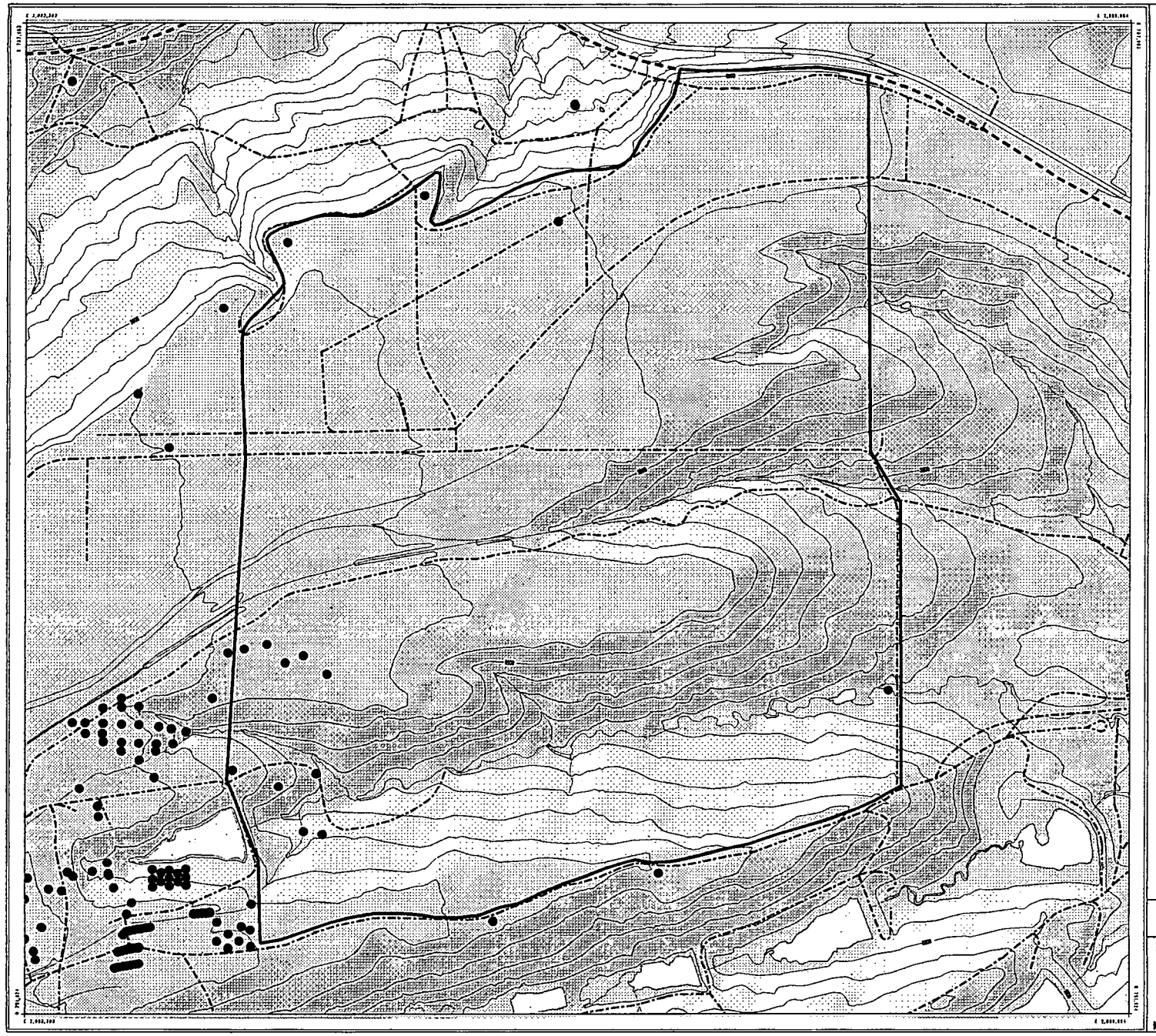

NE2 Borehole Sampling Locations
August 20, 1995

(See Borehole Basemap for Data Source)

EXPLANATION

- Borehole locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 500 1000 ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: NE2

August 17, 1995

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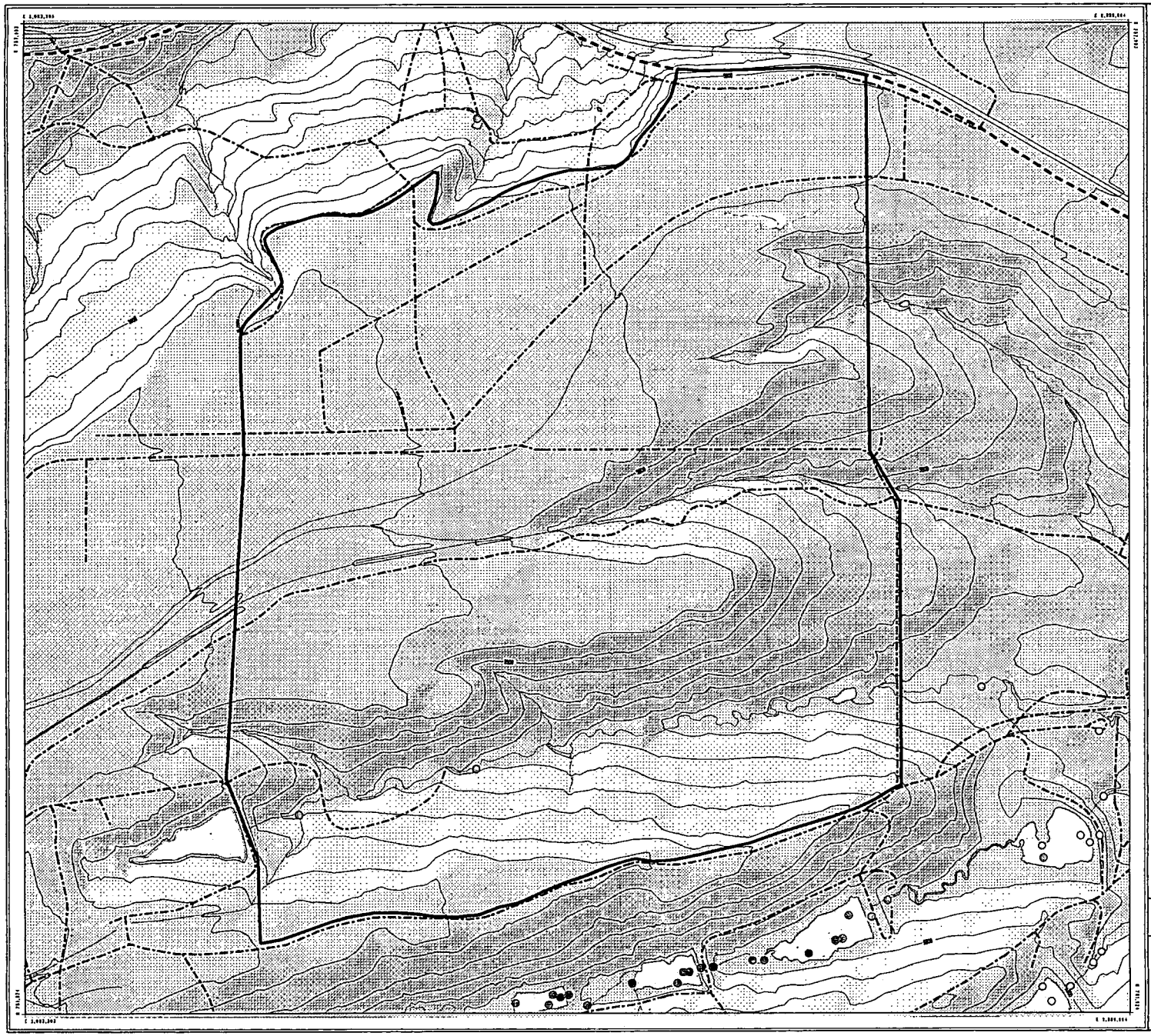

NE2 SEDIMENT SAMPLING LOCATIONS

August 20, 1995

(See Sediment Basemap for Data Source)

EXPLANATION

- Sediment Sample Locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

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Geographic Information Systems Group
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: NE2

August 17, 1996

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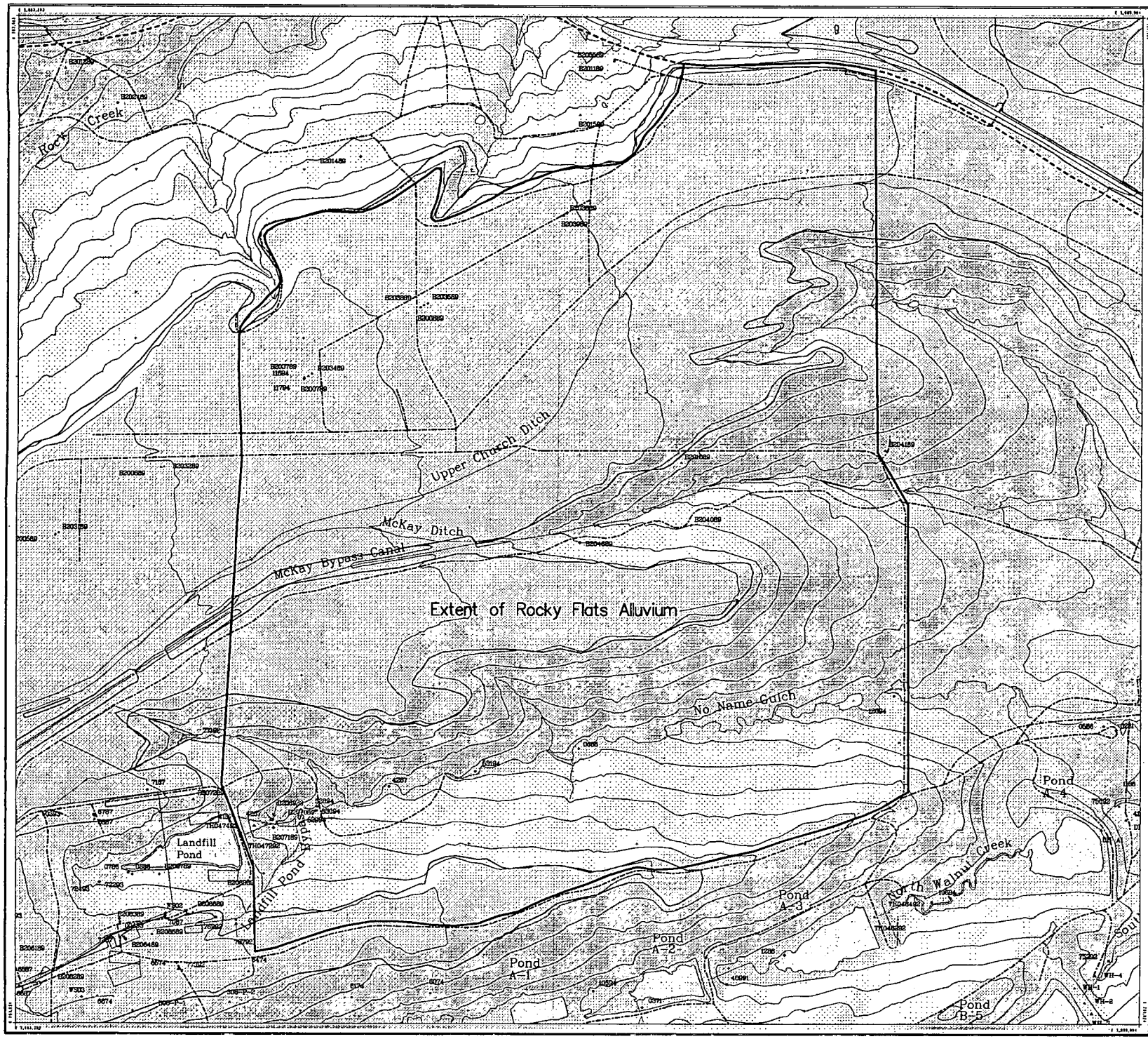

NE2 Groundwater Monitoring Well Location Map

(See Groundwater Basemap for Data Source)

WELL TYPES

- Boundary Wells
- CERCLA Characterization Wells
- RCRA Regulatory
- RCRA Characterization Wells
- Special Purpose Wells

Groundwater Monitoring Program Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock

Inactive Groundwater Monitoring Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock
- Abandoned Groundwater Monitoring Wells

Other

- Buildings and other structures
- Ponds & Lakes
- Buffer Zone Quadrants
- Individual Hazardous Substance Sites
- Extent of Rocky Flats Alluvium
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: NE2

August 10, 1995

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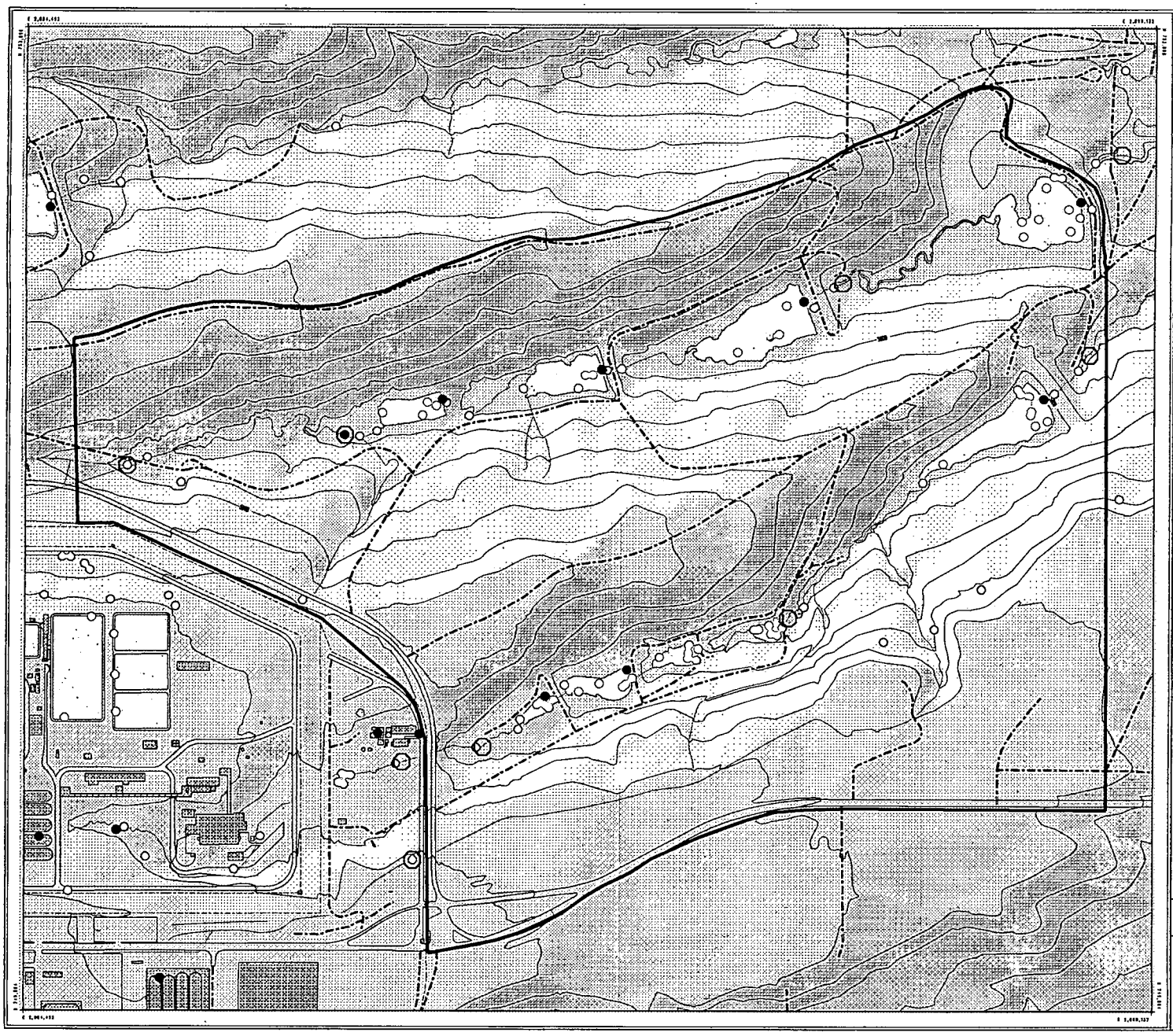

NE3 Surface Water Sampling Locations

August 20, 1995
(See Surface Water Basemap for Data Source)

EXPLANATION

- Surface water stations
- Routine operational sites
- NPDES/FFCA permit monitoring sites
- Gaging stations
- NPDES storm water permit sampling sites
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: NE8

August 17, 1995

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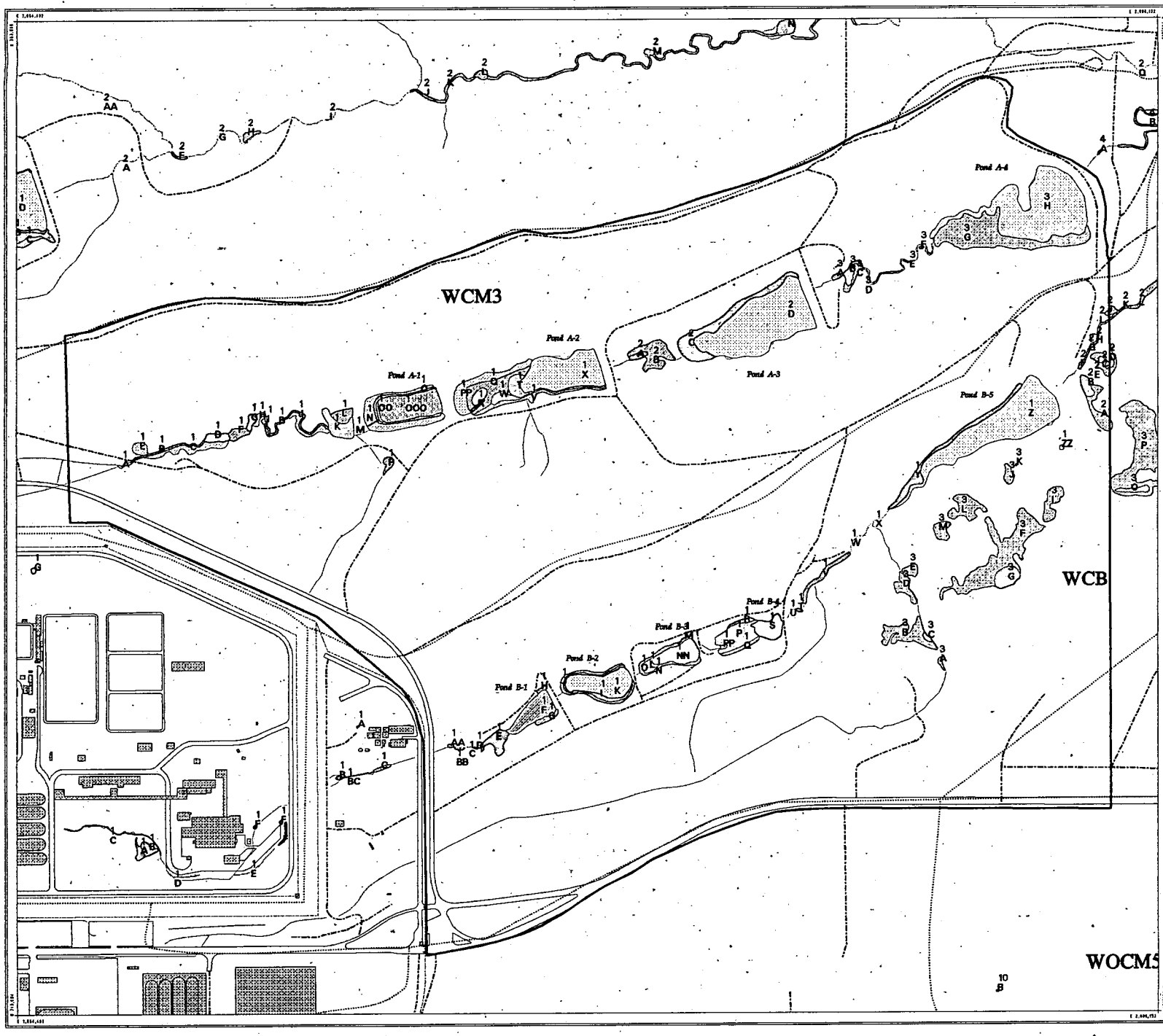

NE3 WETLANDS

August 20, 1995

(See wetlands base map for data source and notes)

Explanation

Buffer Zone Quadrants

Cowardin Wetlands Codes

- L1UBH
- PABH
- PEMA
- PEMB
- PEMC
- PEMF
- PFOA
- PFOC
- PSSA
- PSSC
- PUBF
- PUBH
- PUSC
- R4SBC
- R4SBG
- R4SBH
- R4SBJ

Non-Wetland Features

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Streams, ditches, or other drainage features
- Tributary Boundaries (eg., WCB = watershed drainage)
- Fences
- Rocky Flats boundary
- Paved roads
- Dirt roads

100 0 200 400ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: NE3

August 17, 1995

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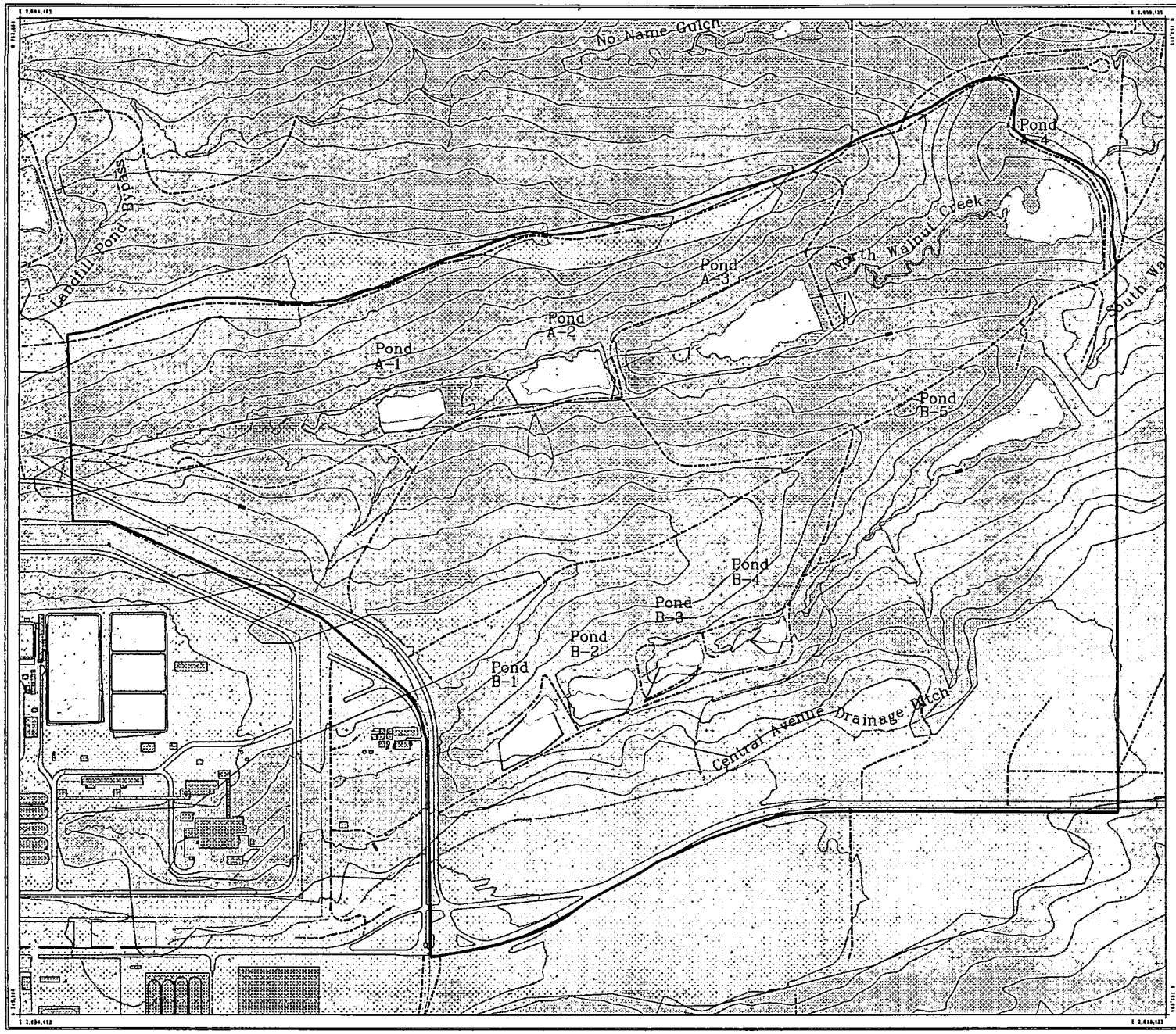

NE3 Soils Map

From Soil Conservation Service August 20, 1995

(See Soils Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Argiustolls
- Paleustolls
- Haplargids
- Mollisol/Rock Outcrop complex
- Torrifluvents
- Haplustolls
- Torriorthents
- Camborthids
- Haplustolls
- Cryofluvents
- Haplaquolls
- Natrargids
- Argiborolls
- Gravel and Clay Pit
- Rock Outcrop
- DAM
- WATER

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

100 0 200 400 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
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MAP ID: NE3

August 17, 1995

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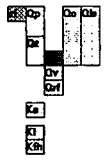
NE3 Geologic Units

August 20, 1995
(See Geologic Units Basemap)
(for Data Source)

EXPLANATION



Geologic Map Units

- af - Artificial fill
- Qp - Post-Piney Creek and Piney Creek Alluvium
- Qt - Terrace Alluvium
- Qc - Colluvium
- Qls - Landslide deposits
- Qs - Slocum Alluvium
- Qv - Verdos Alluvium
- Qrf - Rocky Flats Alluvium
- Ka - Arapahoe Formation
- Kl - Laramie Formation
- Kfh - Fox Hills Sandstone

- Shallow closed depression
- Scarp of young landslide
- Areas of vegetation at and near springs
- Boundary of gravel and clay pit
- Spring
- Strike and dip of beds
- Clast identification site
- Capitol Mine (abandoned)
- Geologic Units boundaries
- Buffer Zone Quadrants
- Buildings or other structures
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
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MAP ID: NE3

August 20, 1995

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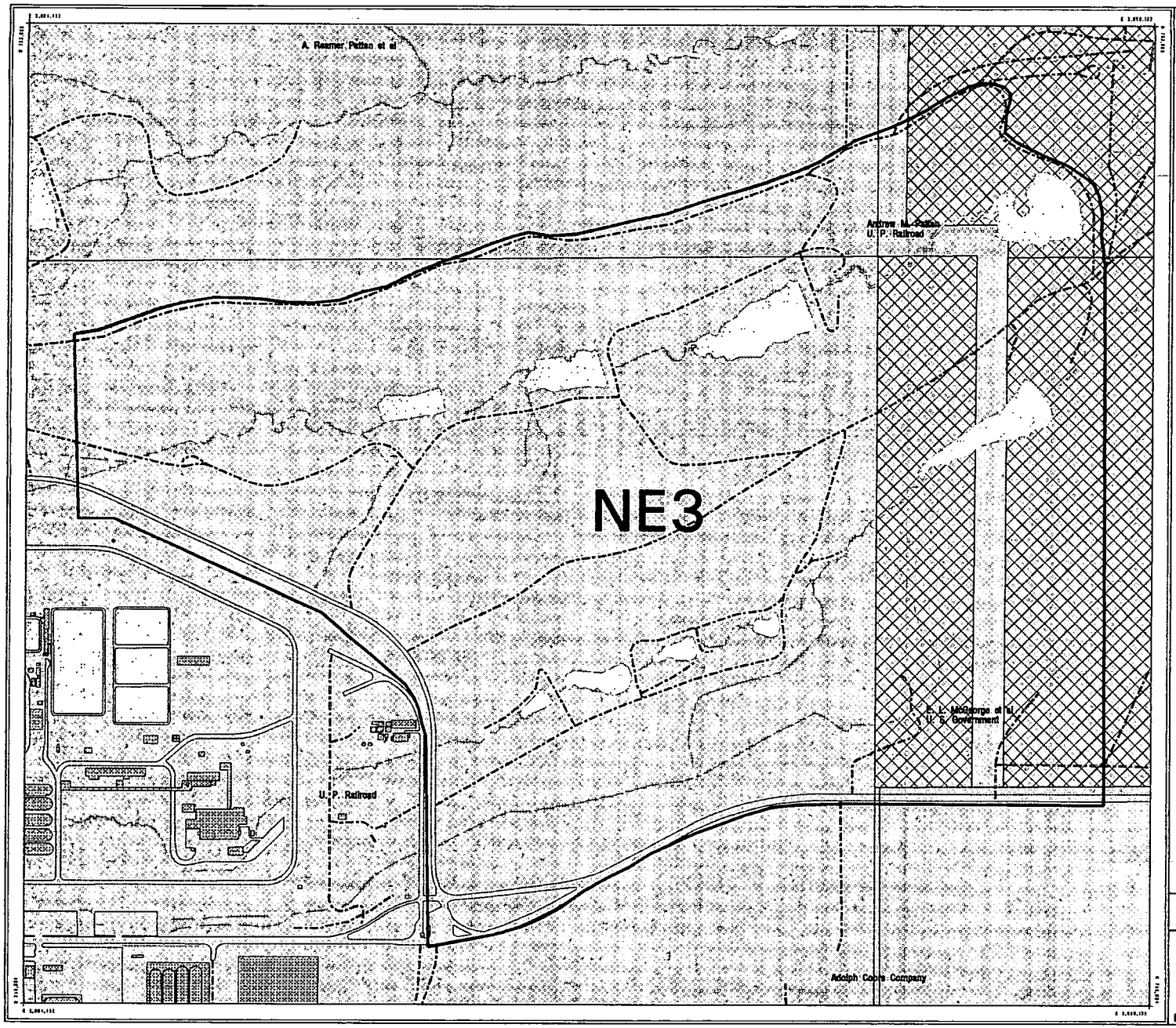

NE3 Mineral Rights at Rocky Flats Environmental Technology Site

August 20, 1995
(See Mineral Rights Basemap for Data Source)

EXPLANATION

- Private
- Government
- Both Government and Private
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
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Golden, CO 80402-0464

MAP ID: NE3 August 17, 1995

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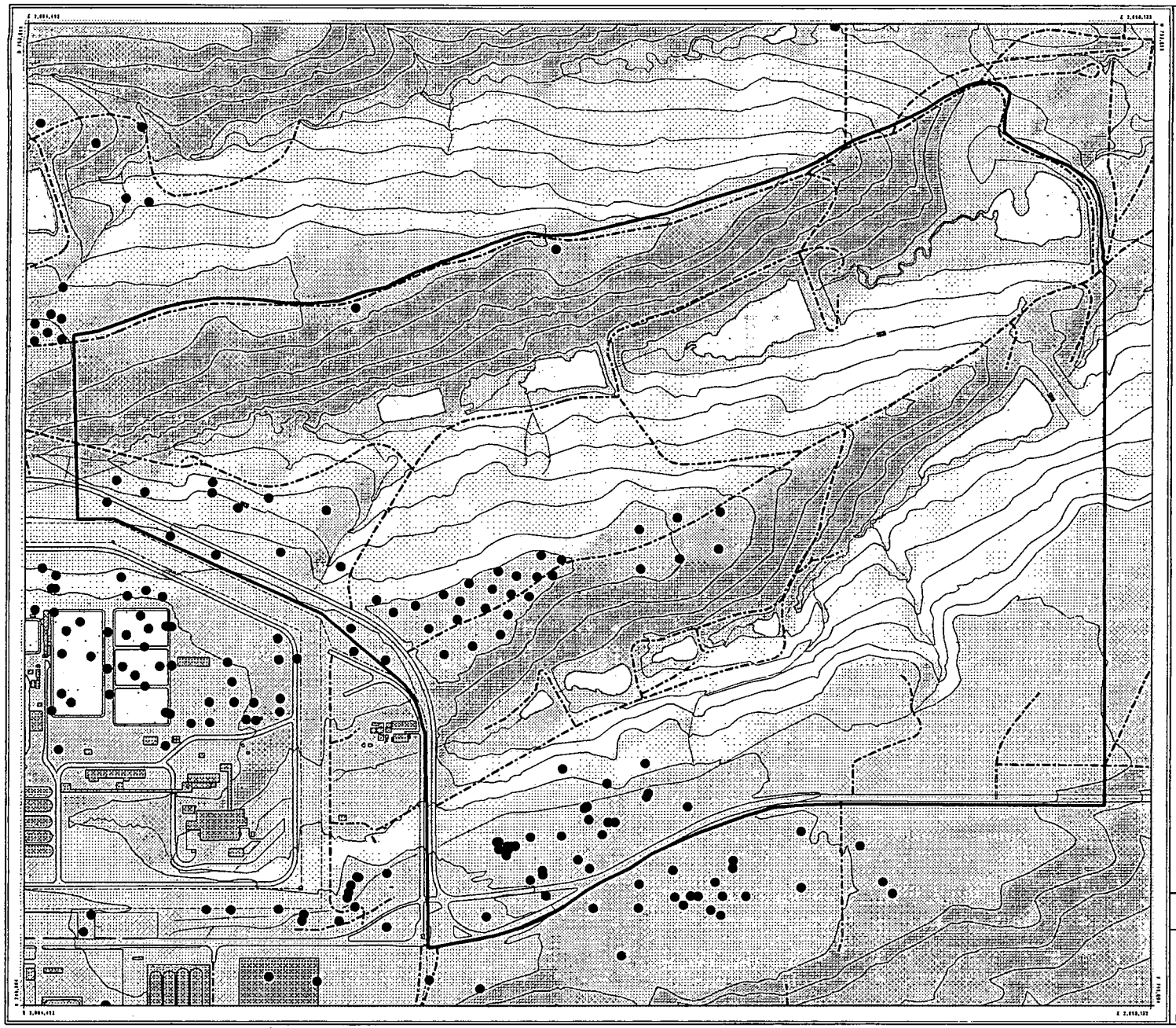

NE3 Borehole Sampling Locations

August 20, 1995

(See Borehole Basemap for Data Source)

EXPLANATION

- Borehole locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

* State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

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MAP ID: NE3

August 17, 1995

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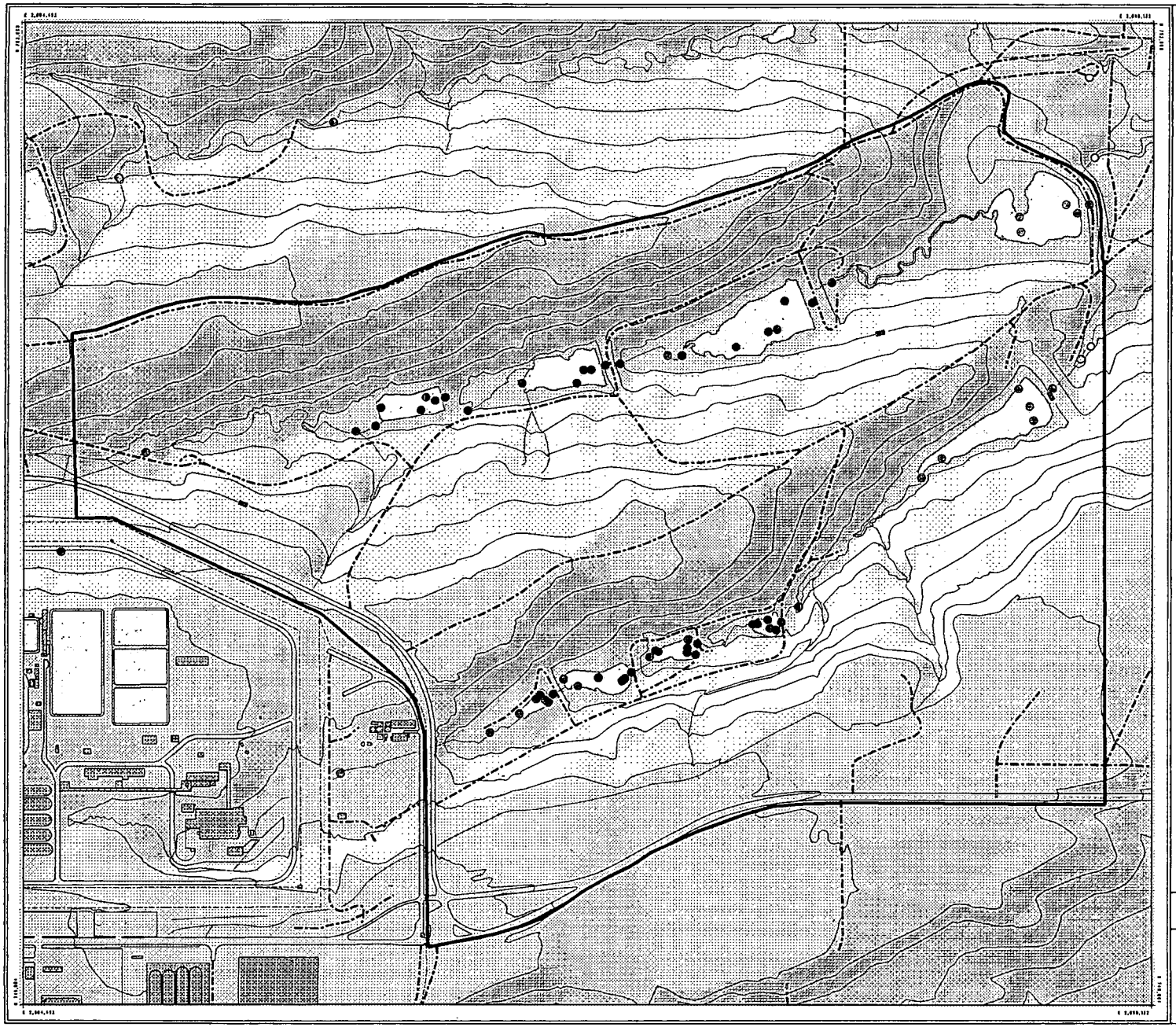

NE3 SEDIMENT SAMPLING LOCATIONS

August 20, 1995

(See Sediment Basemap for Data Source)

EXPLANATION

- Sediment Sample Locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

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MAP ID: NE3

August 17, 1995

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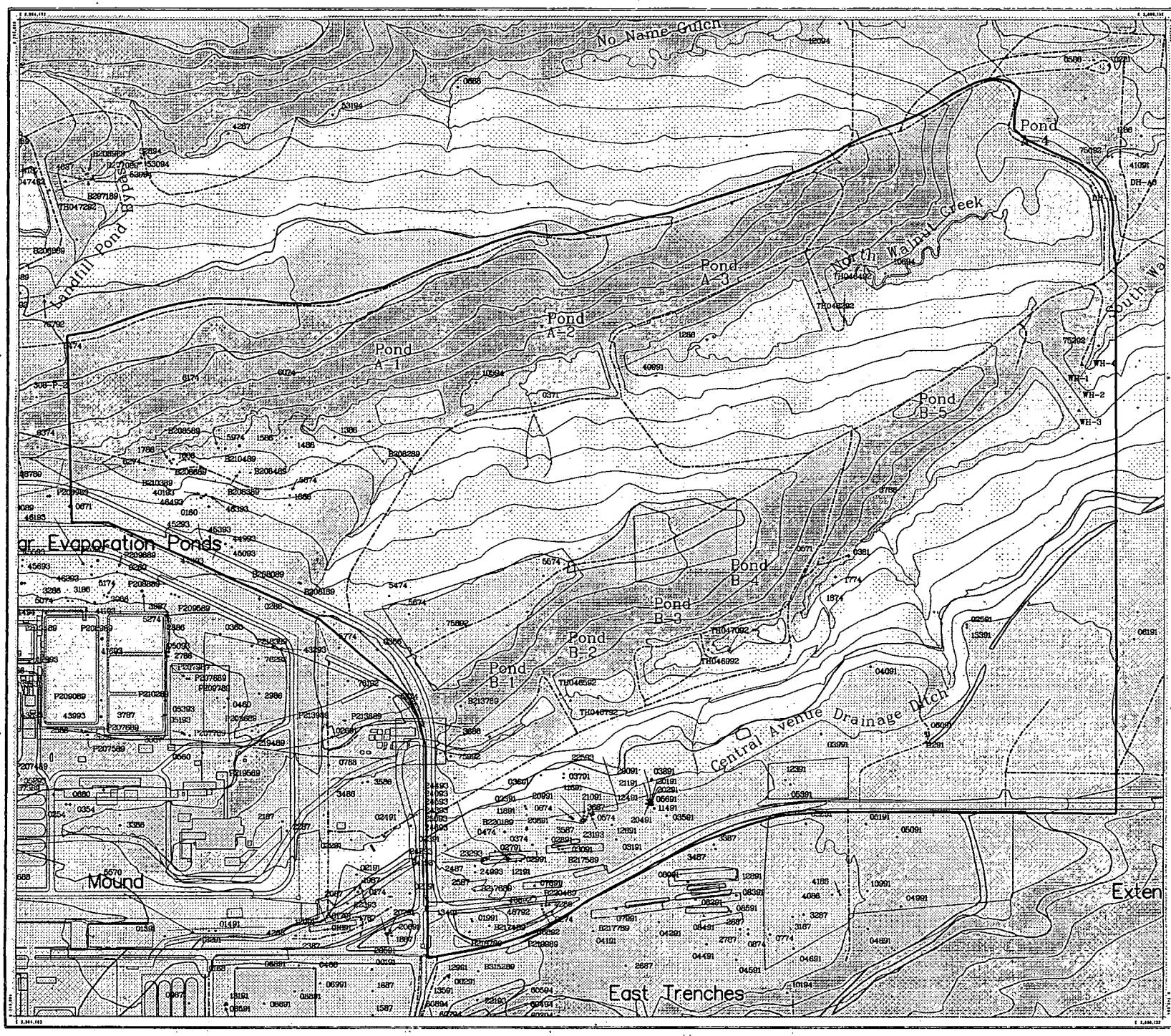

NE3 Groundwater Monitoring Well Location Map

(See Groundwater Basemap for Data Source)

WELL TYPES

- Boundary Wells
- CERCLA Characterization Wells
- RCRA Regulatory
- RCRA Characterization Wells
- Special Purpose Wells

Groundwater Monitoring Program Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock

Inactive Groundwater Monitoring Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock
- Abandoned Groundwater Monitoring Wells

Other

- Buildings and other structures
- Ponds & Lakes
- Buffer Zone Quadrants
- Individual Hazardous Substance Sites
- Extent of Rocky Flats Alluvium
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
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MAP ID: NE3

August 10, 1995

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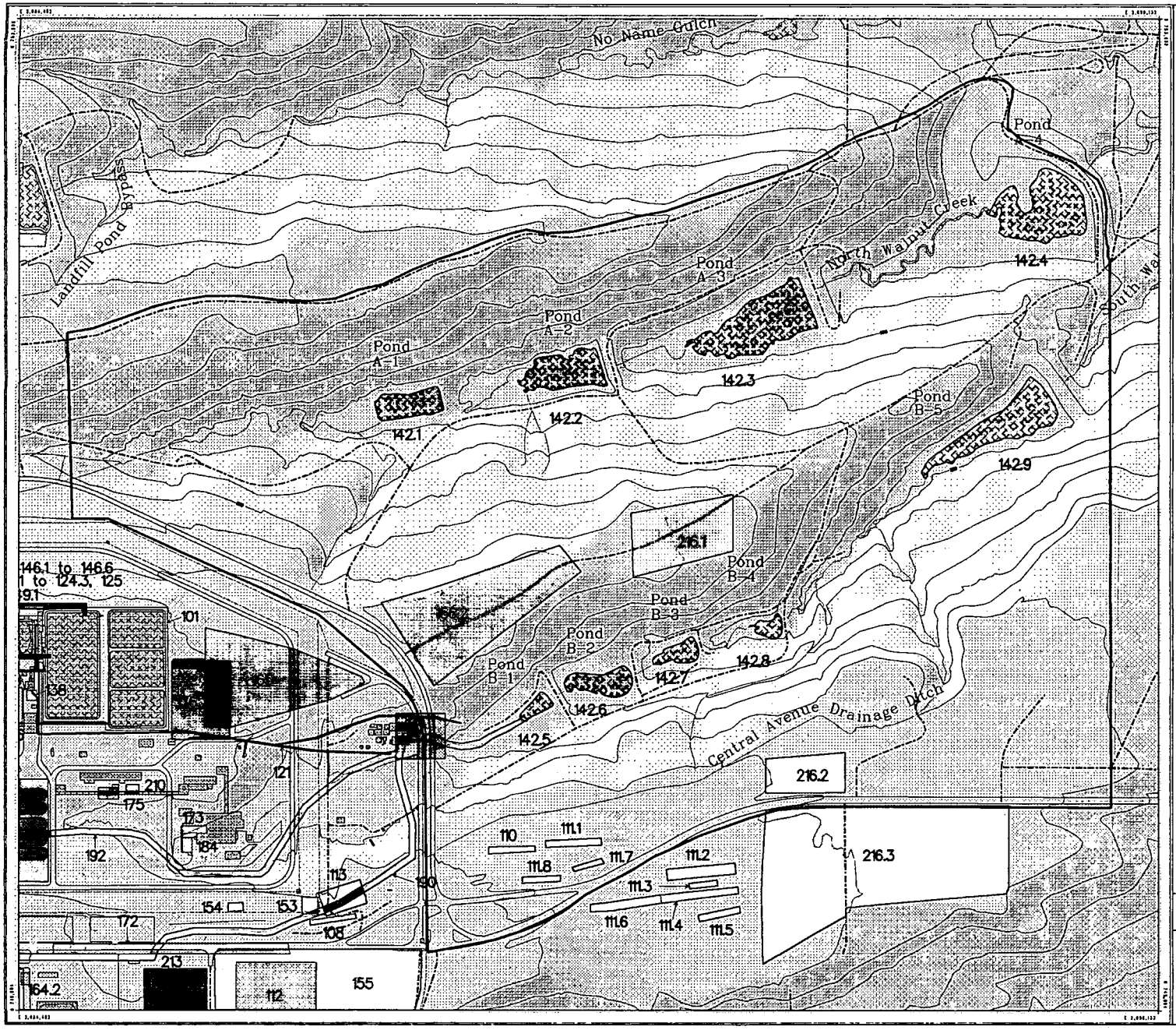

NE3 IHSS

(See IHSS Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Operable Unit 1
- Operable Unit 2
- Operable Unit 4
- Operable Unit 5
- Operable Unit 6
- Operable Unit 7
- Operable Unit 8
- Operable Unit 9
- Operable Unit 10
- Operable Unit 11
- Operable Unit 12
- Operable Unit 13
- Operable Unit 14
- Operable Unit 15
- Operable Unit 16

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
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Golden, CO 80402-0464

MAP ID: NE6

August 18, 1995

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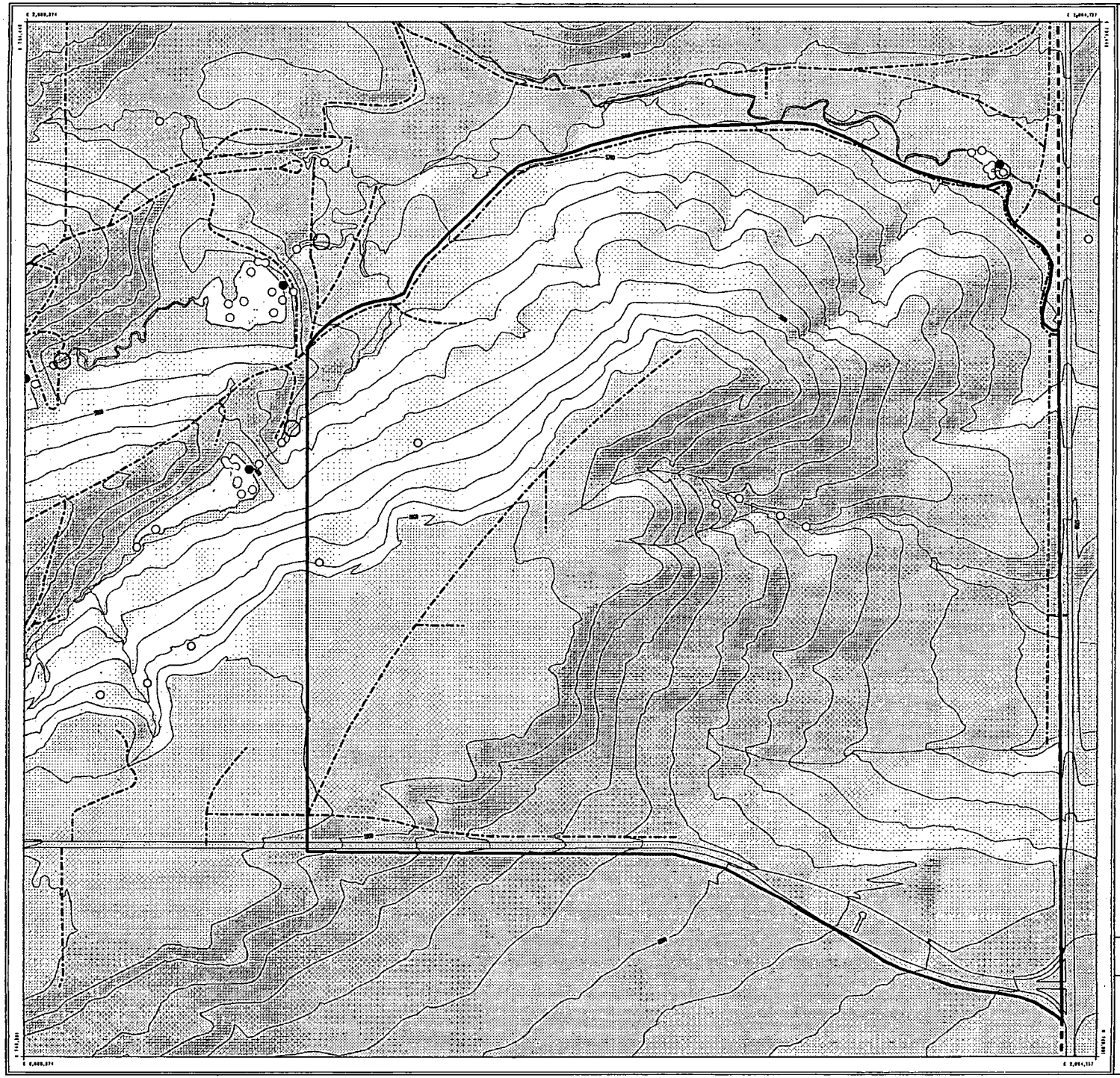

NE4 Surface Water Sampling Locations

August 20, 1995
(See Surface Water Basemap for Data Source)

EXPLANATION

- Surface water stations
- Routine operational sites
- NPDES/FFCA permit monitoring sites
- Gaging stations
- NPDES storm water permit sampling sites
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: NE4

August 17, 1995

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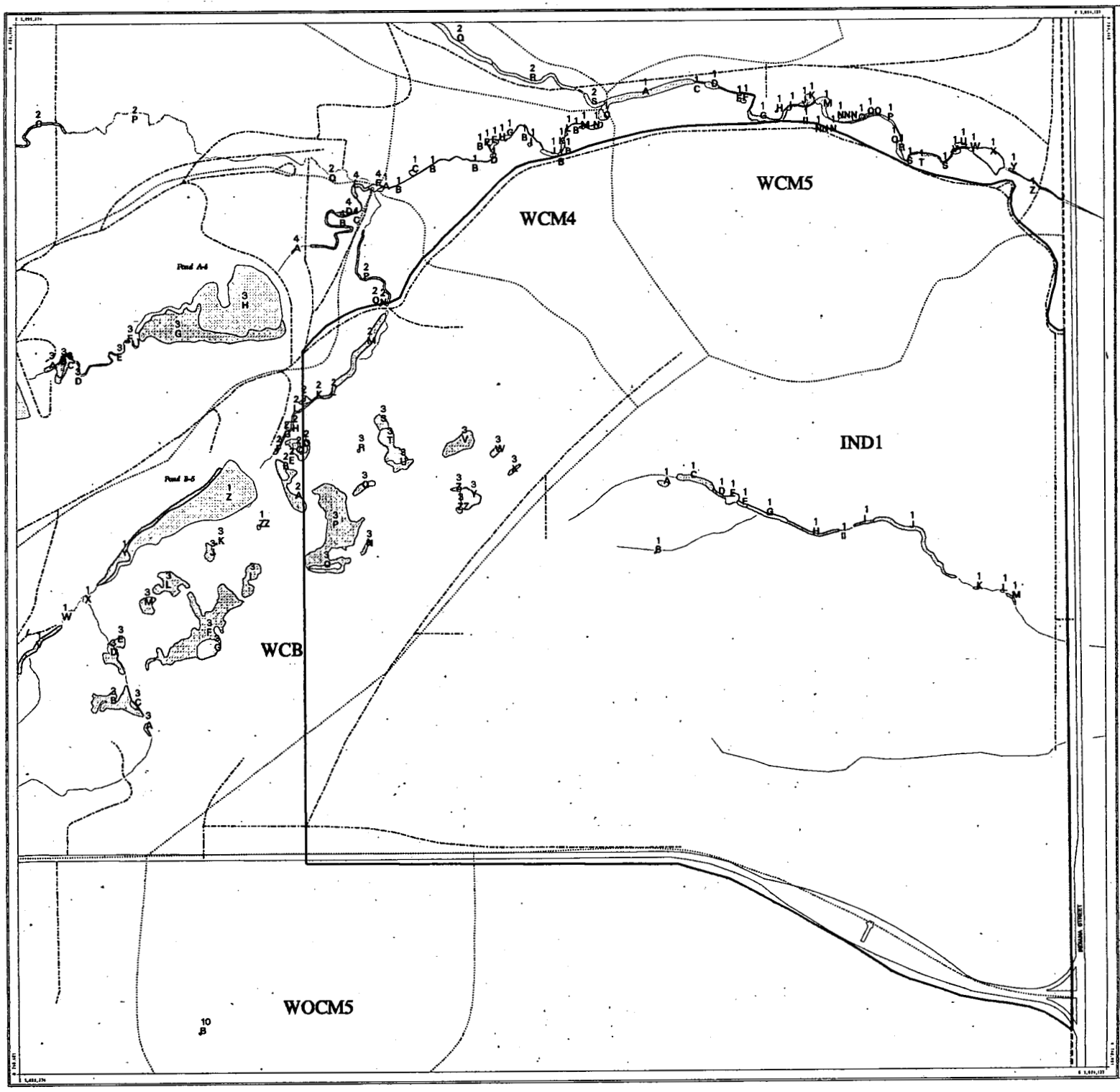

NE4 WETLANDS

August 20, 1995

(See wetlands base map for data source and notes)

Explanation

Buffer Zone Quadrants

Cowardin Wetlands Codes

- L1UBH
- PABH
- PEMA
- PEMB
- PEMC
- PEMF
- PFOA
- PFOC
- PSSA
- PSSC
- PUBF
- PUBH
- PUSC
- R4SBC
- R4SBG
- R4SBH
- R4SBJ

Non-Wetland Features

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Streams, ditches, or other drainage features
- Tributary Boundaries (e.g., WCB = watershed drainage)
- Fences
- Rocky Flats boundary
- Paved roads
- Dirt roads

N

100 0 200 400ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS
Rocky Mountain Remediation Services, L.L.C.
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: NE4

August 17, 1995

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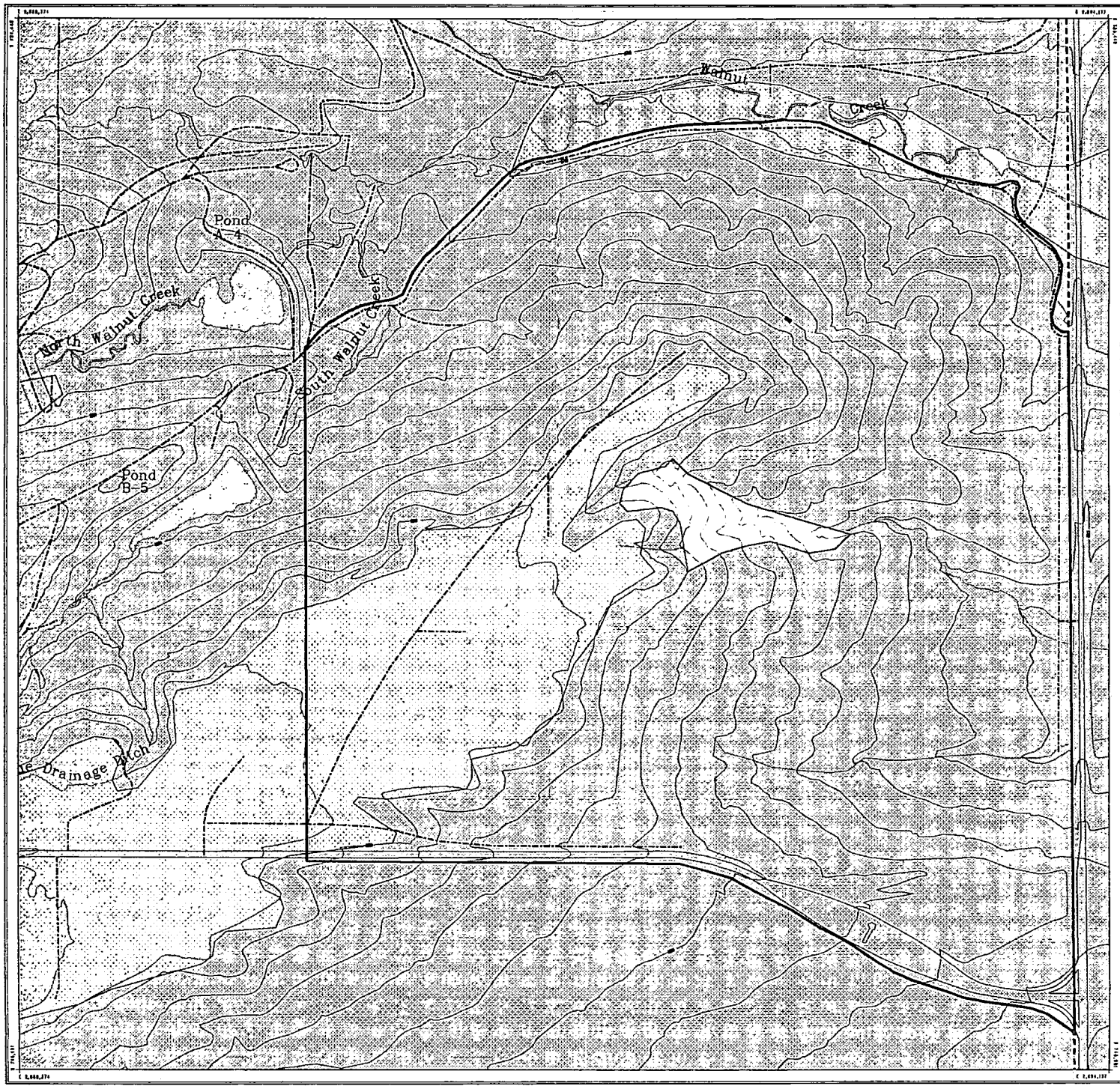

NE4 Soils Map

From Soil Conservation Service
August 20, 1995

(See Soils Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Argiustolls
- Paleustolls
- Haplargids
- Mollisol/Rock Outcrop complex
- Torrifluvents
- Haplustolls
- Torriorthents
- Camborthids
- Haplustolls
- Cryofluvents
- Haplaquolls
- Natrargids
- Argiborolls
- Gravel and Clay Pit
- Rock Outcrop
- DAM
- WATER
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: NE4 August 17, 1995

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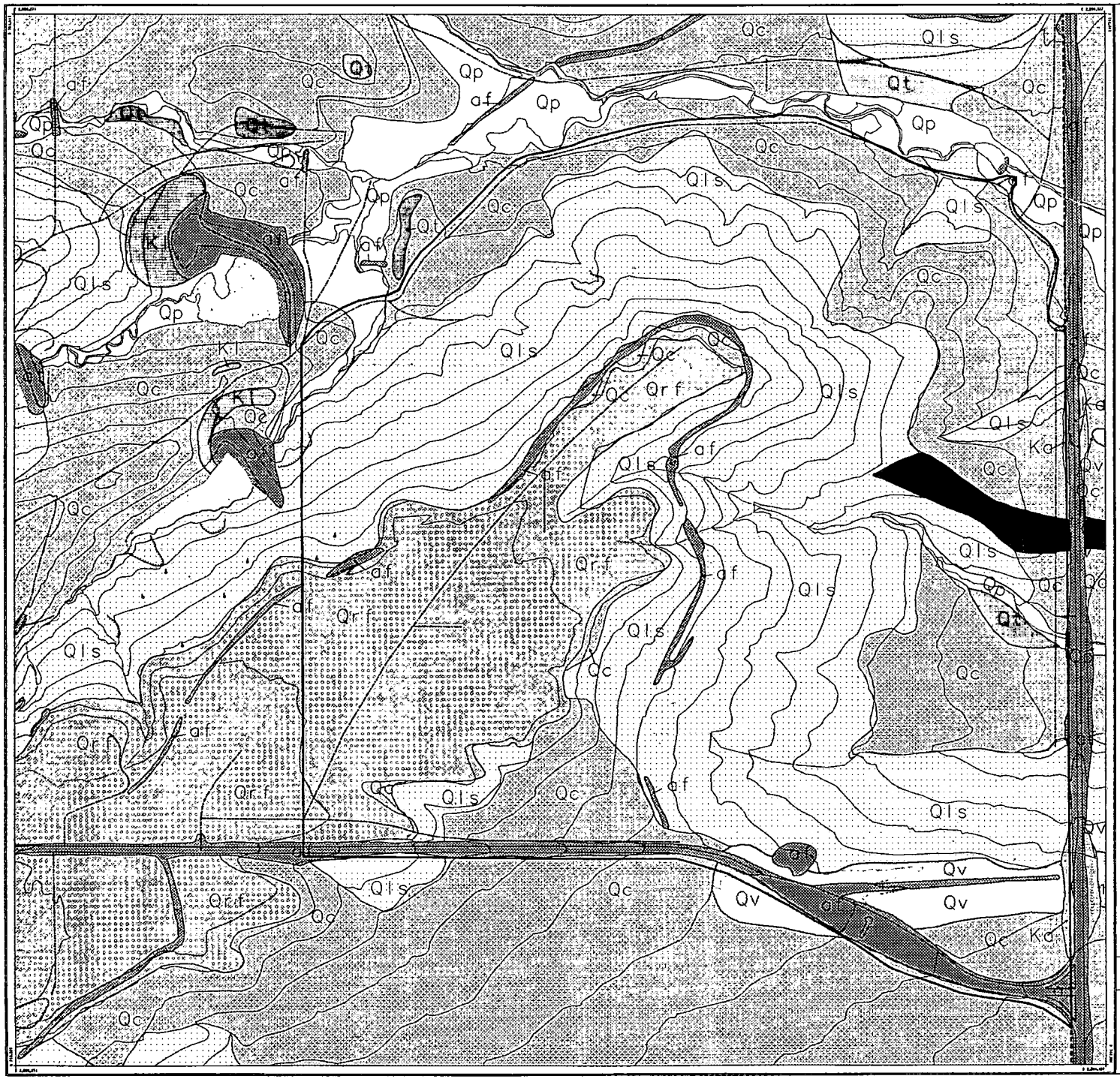

NE4 Geologic Units

August 20, 1995
(See Geologic Units Basemap)
(for Data Source)

EXPLANATION

Geologic Map Units

- af - Artificial fill
- Qp - Post-Piney Creek and Piney Creek Alluvium
- Qt - Terrace Alluvium
- Qc - Colluvium
- Qls - Landslide deposits
- Qs - Slocum Alluvium
- Qv - Verdos Alluvium
- Qrf - Rocky Flats Alluvium
- Ka - Arapahoe Formation
- Kl - Laramie Formation
- Kfh - Fox Hills Sandstone

- Shallow closed depression
- Scarp of young landslide
- Areas of vegetation at and near springs
- Boundary of gravel and clay pit
- Spring
- Strike and dip of beds
- Clast identification site
- Capitol Mine (abandoned)
- Geologic Units boundaries
- Buffer Zone Quadrants
- Buildings or other structures
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy

Rocky Flats Environmental Technology Site

Prepared by:
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: NE4

August 20, 1995

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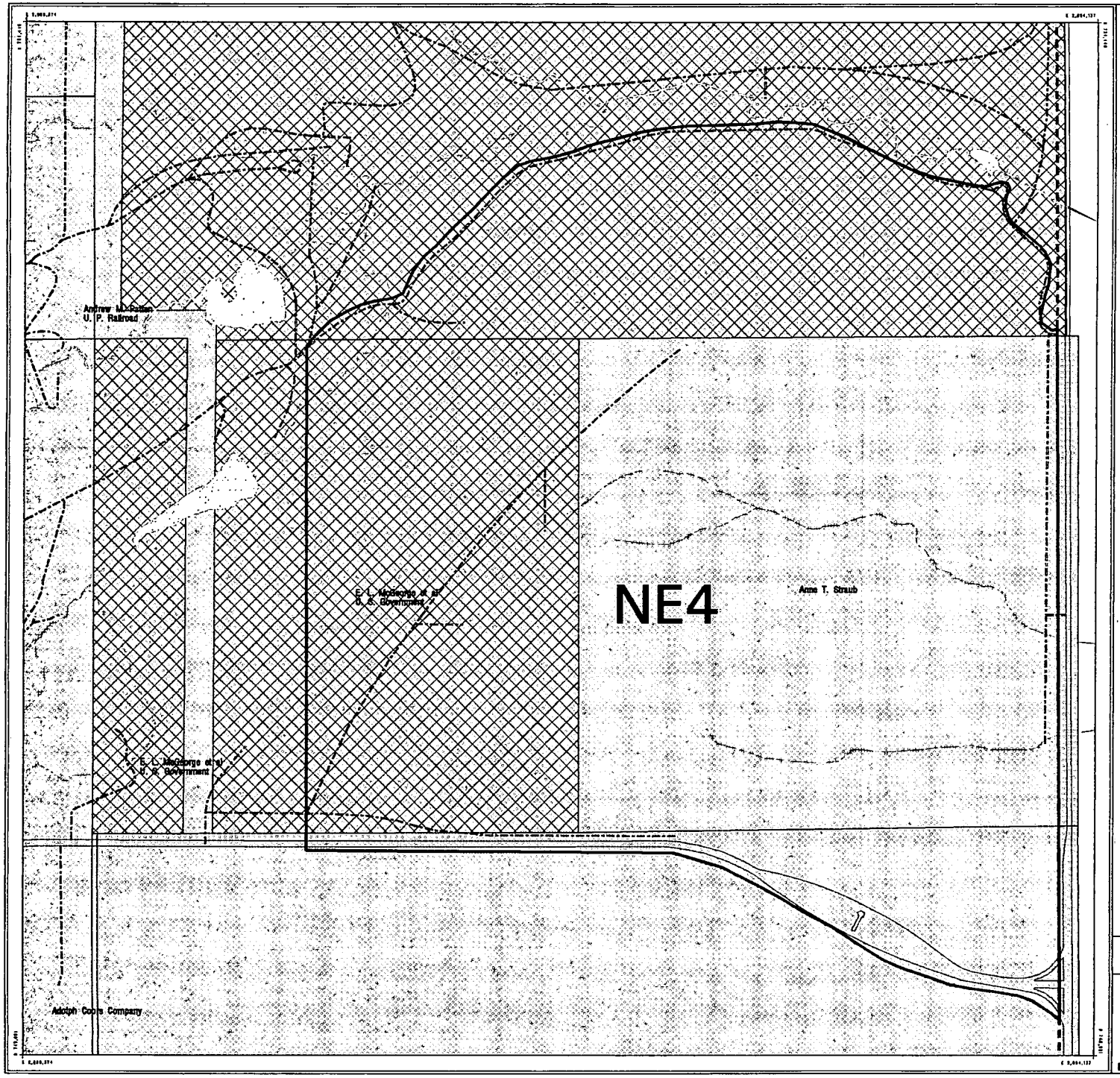

NE4 Mineral Rights at Rocky Flats Environmental Technology Site

August 20, 1995
(See Mineral Rights Basemap for Data Source)

EXPLANATION

- Private
- Government
- Both Government and Private
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: NE4

August 17, 1995

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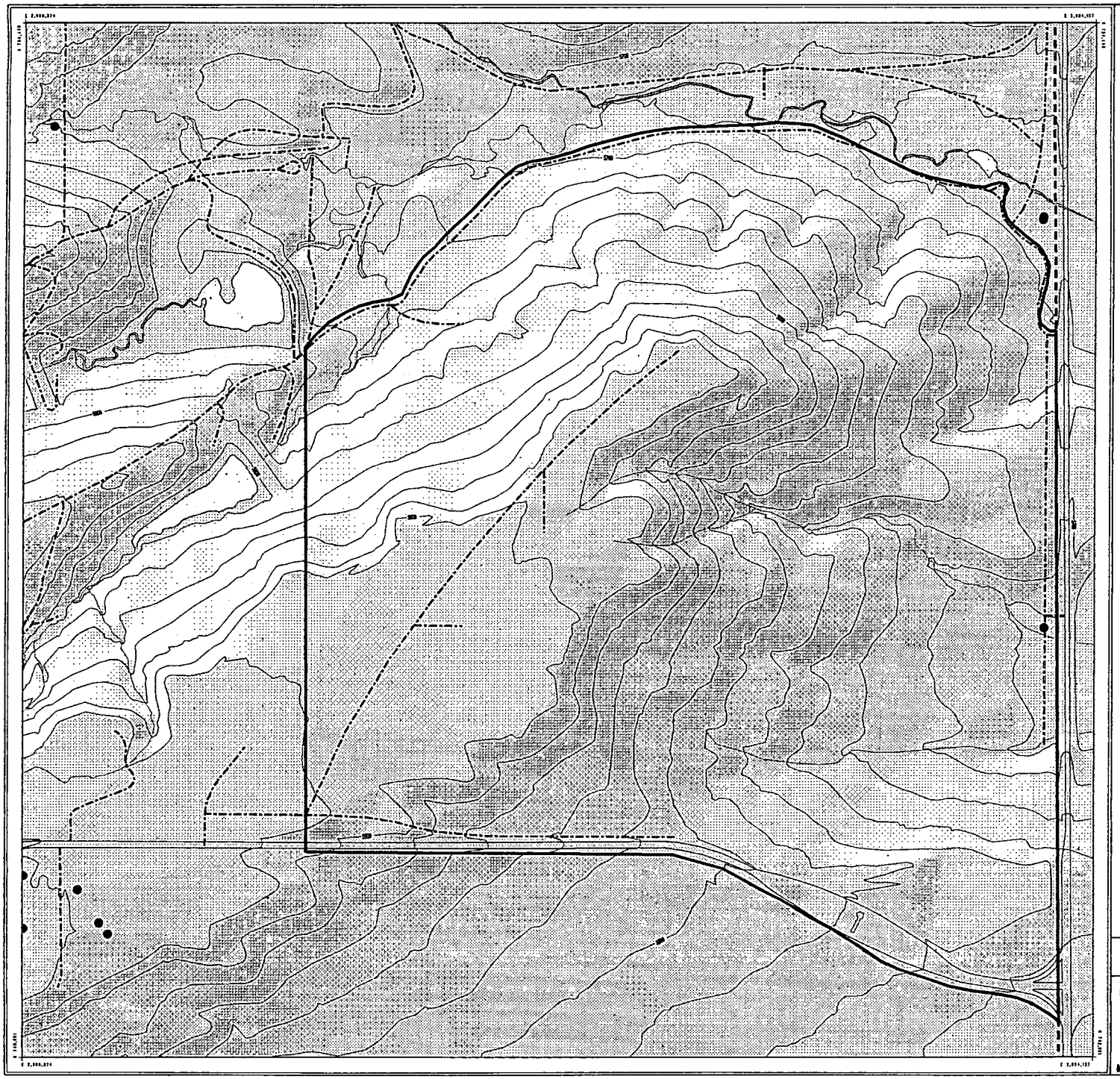

NE4 Borehole Sampling Locations

August 20, 1995

(See Borehole Basemap for Data Source)

EXPLANATION

- Borehole locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
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Golden, CO 80402-0464

MAP ID: NE4

August 17, 1995

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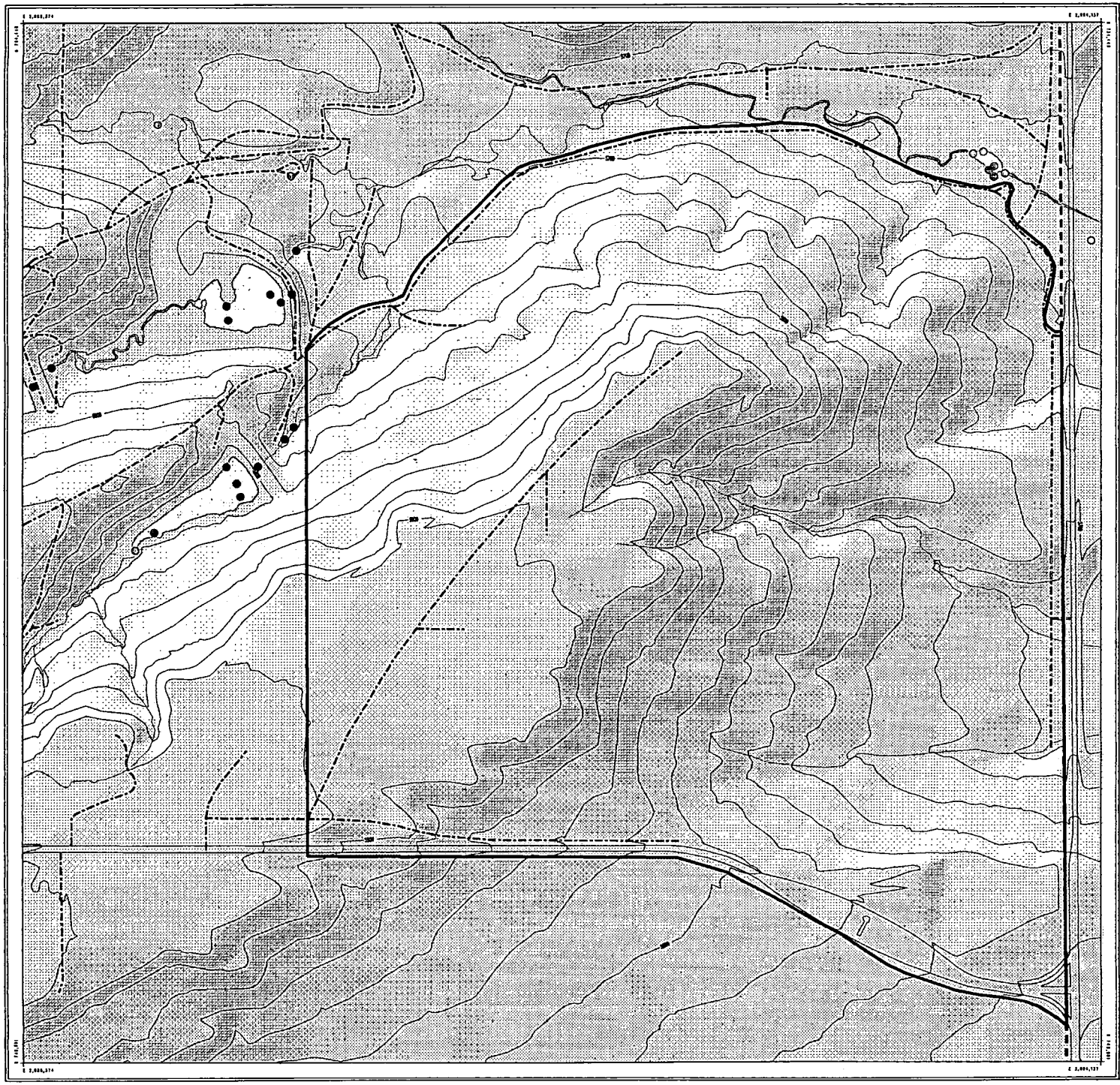

NE4 SEDIMENT SAMPLING LOCATIONS

August 20, 1995

(See Sediment Basemap for Data Source)

EXPLANATION

- Sediment Sample Locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
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Prepared by:

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Golden, CO 80402-0464

MAP ID: NE4

August 17, 1995

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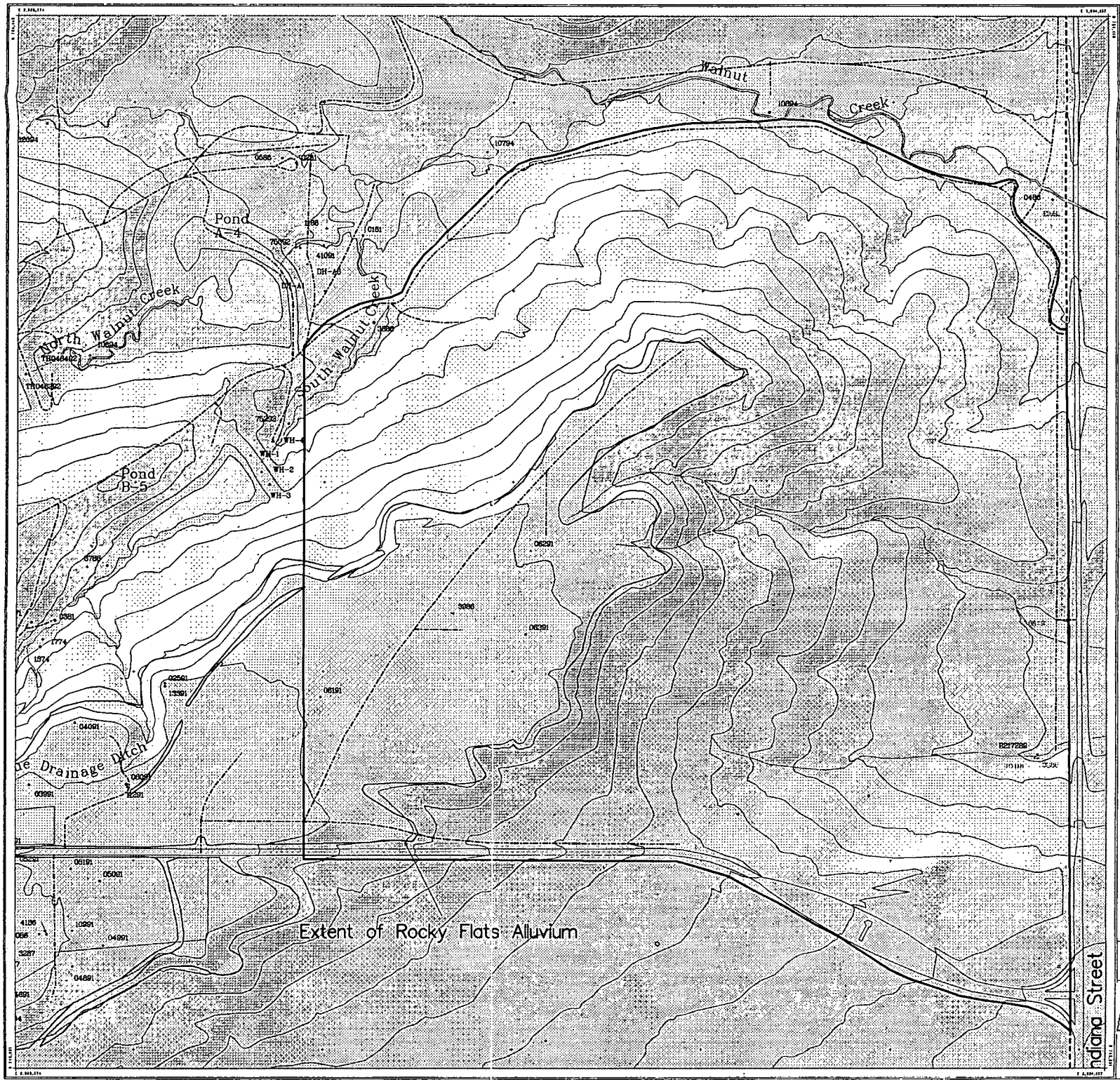

NE4 Groundwater Monitoring Well Location Map

(See Groundwater Basemap for Data Source)

WELL TYPES

- Boundary Wells
- CERCLA Characterization Wells
- RCRA Regulatory
- RCRA Characterization Wells
- Special Purpose Wells

Groundwater Monitoring Program Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock

Inactive Groundwater Monitoring Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock
- Abandoned Groundwater Monitoring Wells

Other

- Buildings and other structures
- Ponds & Lakes
- Buffer Zone Quadrants
- Individual Hazardous Substance Sites
- Extent of Rocky Flats Alluvium
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

N

100 0 200 400ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy

Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
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P.O. Box 464
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MAP ID: NE4

August 10, 1995

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NW1 Surface Water Sampling Locations

August 20, 1995
(See Surface Water Basemap for Data Source)

EXPLANATION

- Surface water stations
- Routine operational sites
- NPDES/FFCA permit monitoring sites
- Gaging stations
- NPDES storm water permit sampling sites
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

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MAP ID: NW1

August 17, 1995

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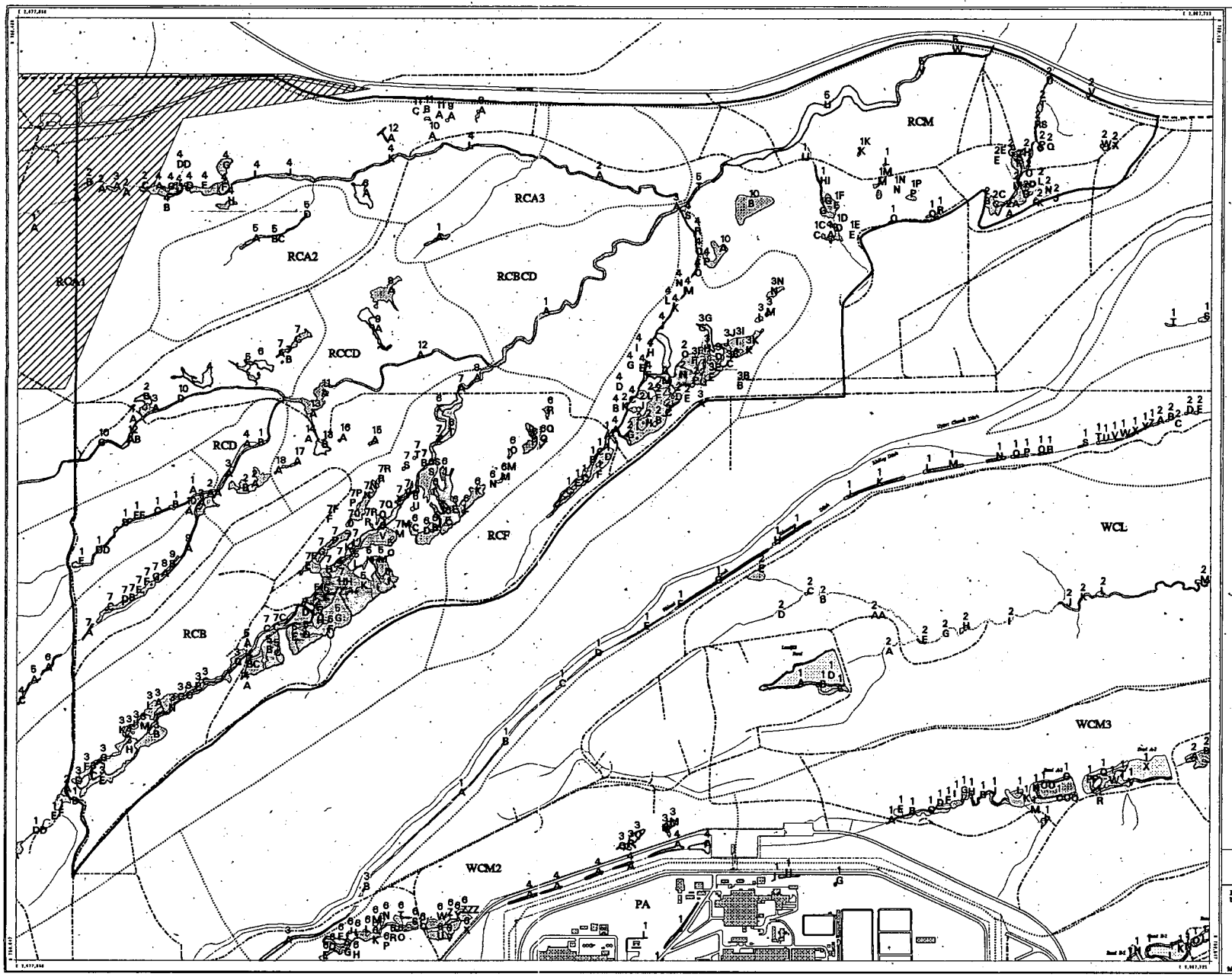

NW1 WETLANDS

August 20, 1995

(See wetlands base map for data source and notes)

Explanation

Buffer Zone Quadrants

Cowardin Wetlands Codes

- L1UBH
- PABH
- PEMA
- PEMB
- PEMC
- PEMF
- PFOA
- PFOC
- PSSA
- PSSC
- PUBF
- PUBH
- PUSC
- R4SBC
- R4SBG
- R4SBH
- R4SBJ

Non-Wetland Features

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Streams, ditches, or other drainage features
- Tributary Boundaries (eg., WCS = watershed drainage)
- Fences
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: NW1

August 17, 1995

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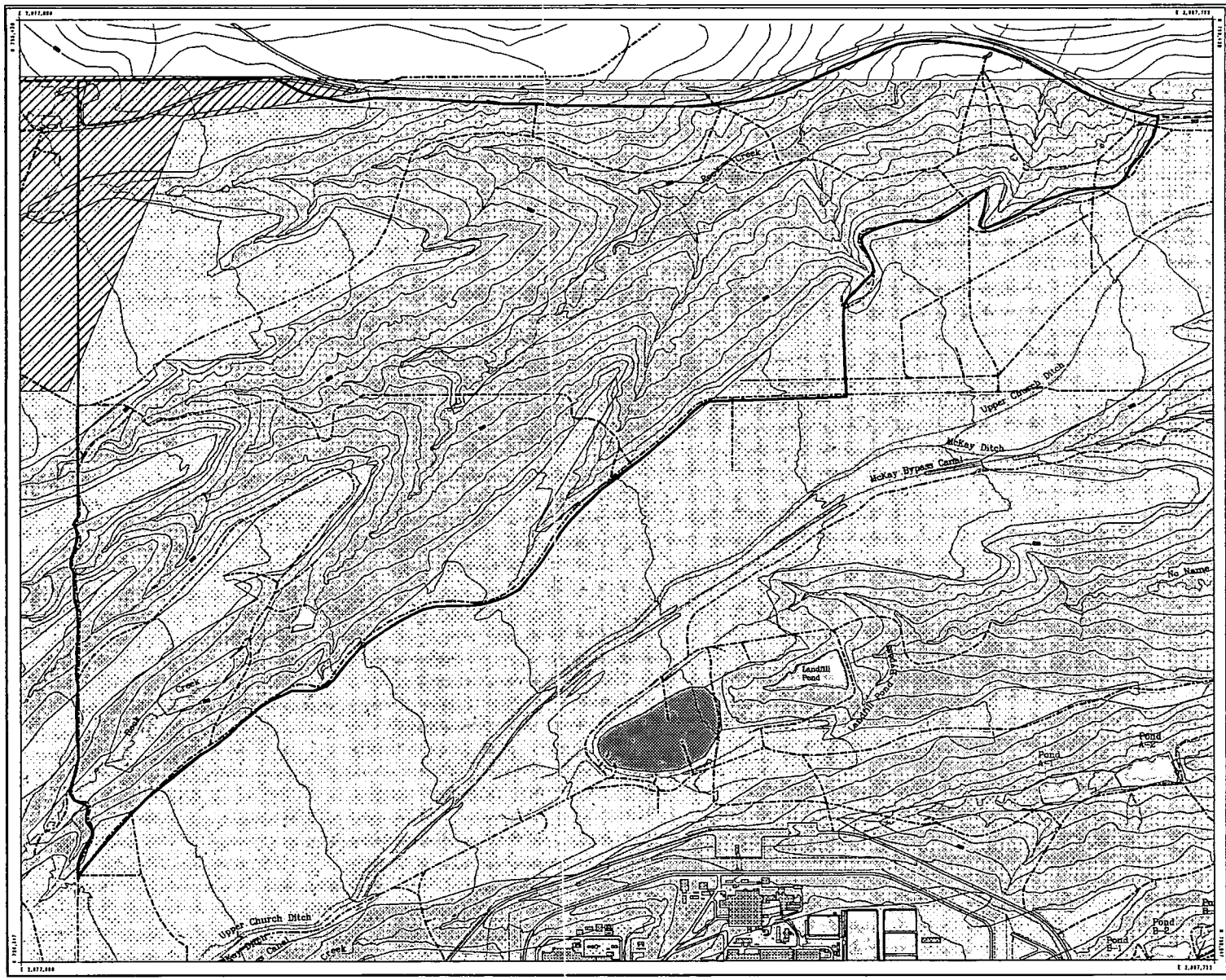

NW1 Soils Map

From Soil Conservation Service
August 20, 1995

(See Soils Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Argiustolls
- Paleustolls
- Haplargids
- Mollisol/Rock Outcrop complex
- Torrifluvents
- Haplustolls
- Torriorthents
- Camborthids
- Haplustolls
- Cryofluvents
- Haplaquolls
- Natrargids
- Argiborolls
- Gravel and Clay Pit
- Rock Outcrop
- DAM
- WATER

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

Data Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
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MAP ID: NW1

August 17, 1995

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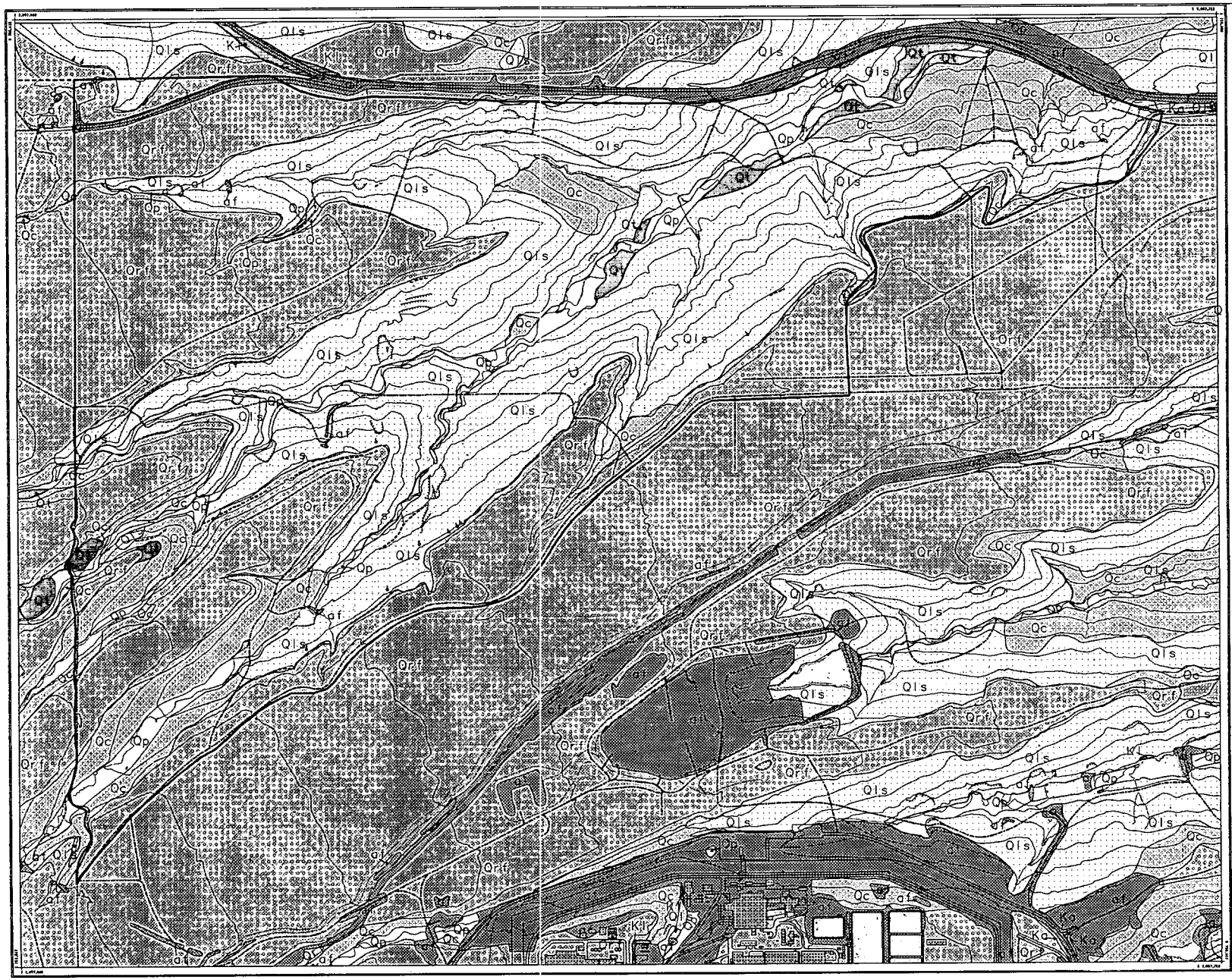
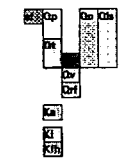


NW1 Geologic Units

August 20, 1995
(See Geologic Units Basemap)
(for Data Source)

EXPLANATION



Geologic Map Units

- af - Artificial fill
- Qp - Post-Piney Creek and Piney Creek Alluvium
- Qt - Terrace Alluvium
- Qc - Colluvium
- Qls - Landslide deposits
- Qs - Slocum Alluvium
- Qv - Verdoe Alluvium
- Qrf - Rocky Flats Alluvium
- Ka - Arapahoe Formation
- Kl - Laramie Formation
- Kfh - Fox Hills Sandstone

- Shallow closed depression
- Scarp of young landslide
- Areas of vegetation at and near springs
- Boundary of gravel and clay pit
- Spring
- Strike and dip of beds
- Clast identification site
- Capitol Mine (abandoned)
- Geologic Units boundaries
- Buffer Zone Quadrants
- Buildings or other structures
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
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Golden, CO 80402-0464

MAP ID: NW1 August 20, 1995

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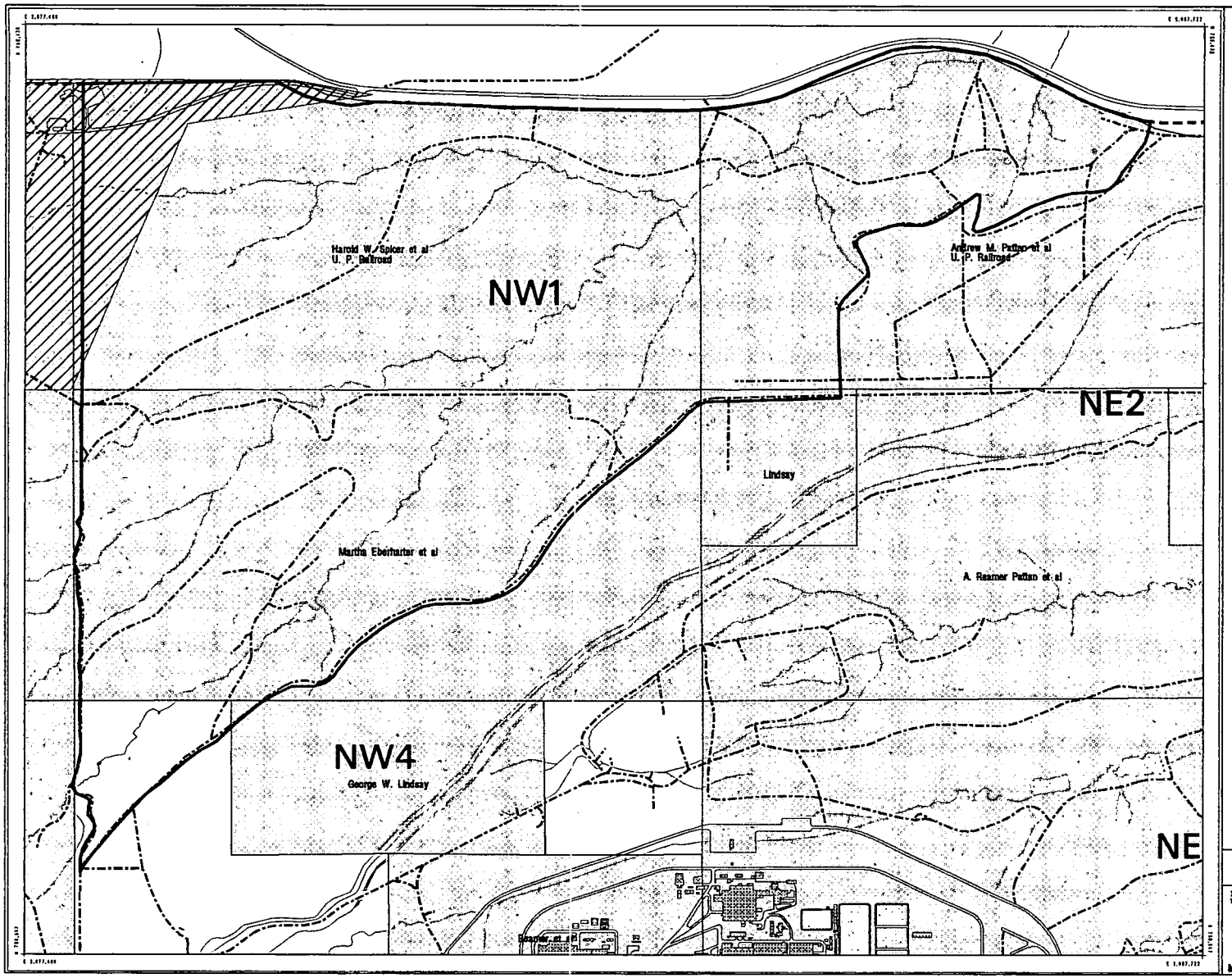

NW1 Mineral Rights at Rocky Flats Environmental Technology Site

August 20, 1995
(See Mineral Rights Basemap for Data Source)

EXPLANATION

- Private
- Government
- Both Government and Private
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (data unknown)

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
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Golden, CO 80402-0464

MAP ID: NW1 August 17, 1995

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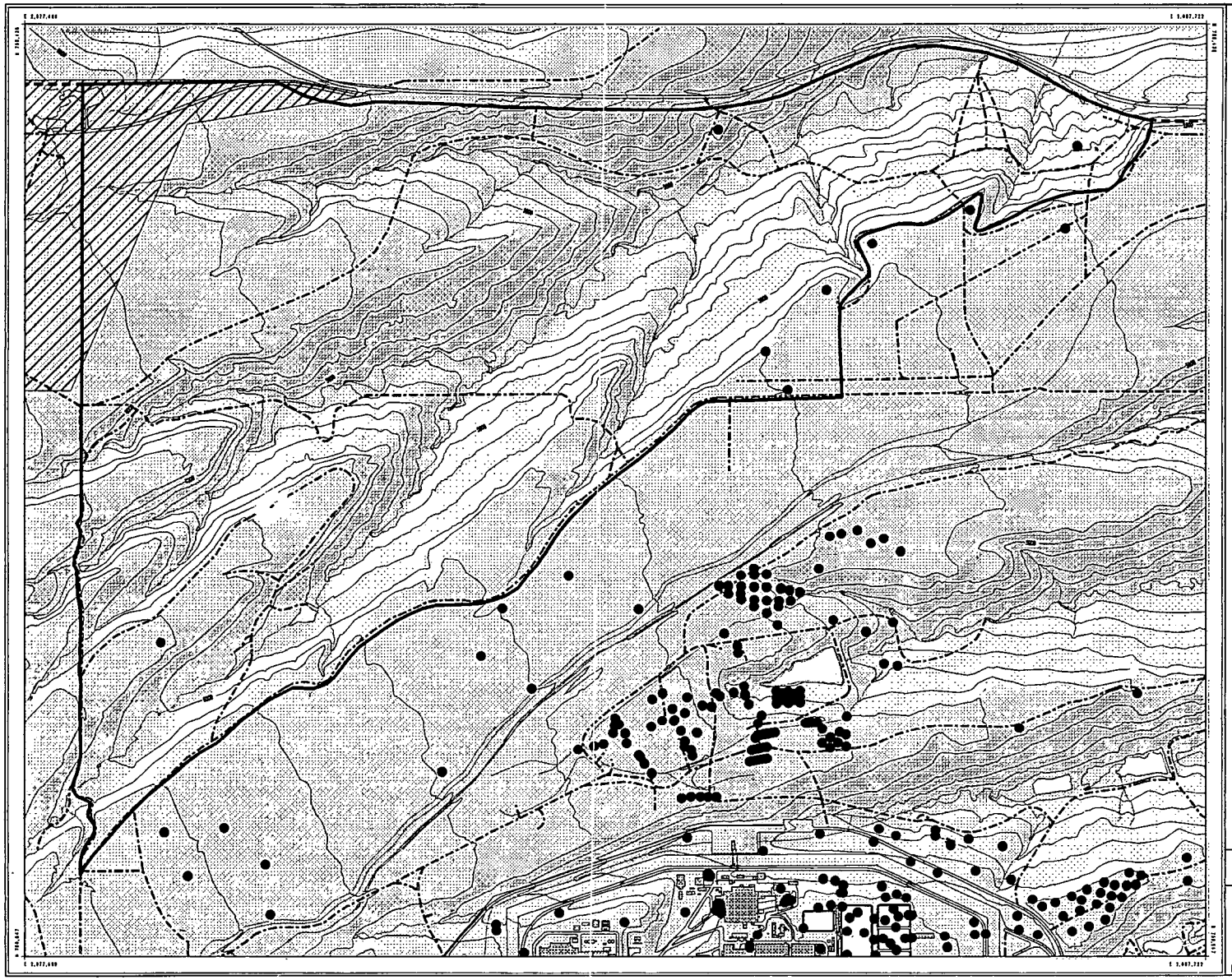

NW1 Borehole Sampling Locations

August 20, 1995

(See Borehole Basemap for Data Source)

EXPLANATION

- Borehole locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

Rocky Mountain Remediation Services, L.L.C.
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: NW1

August 17, 1995

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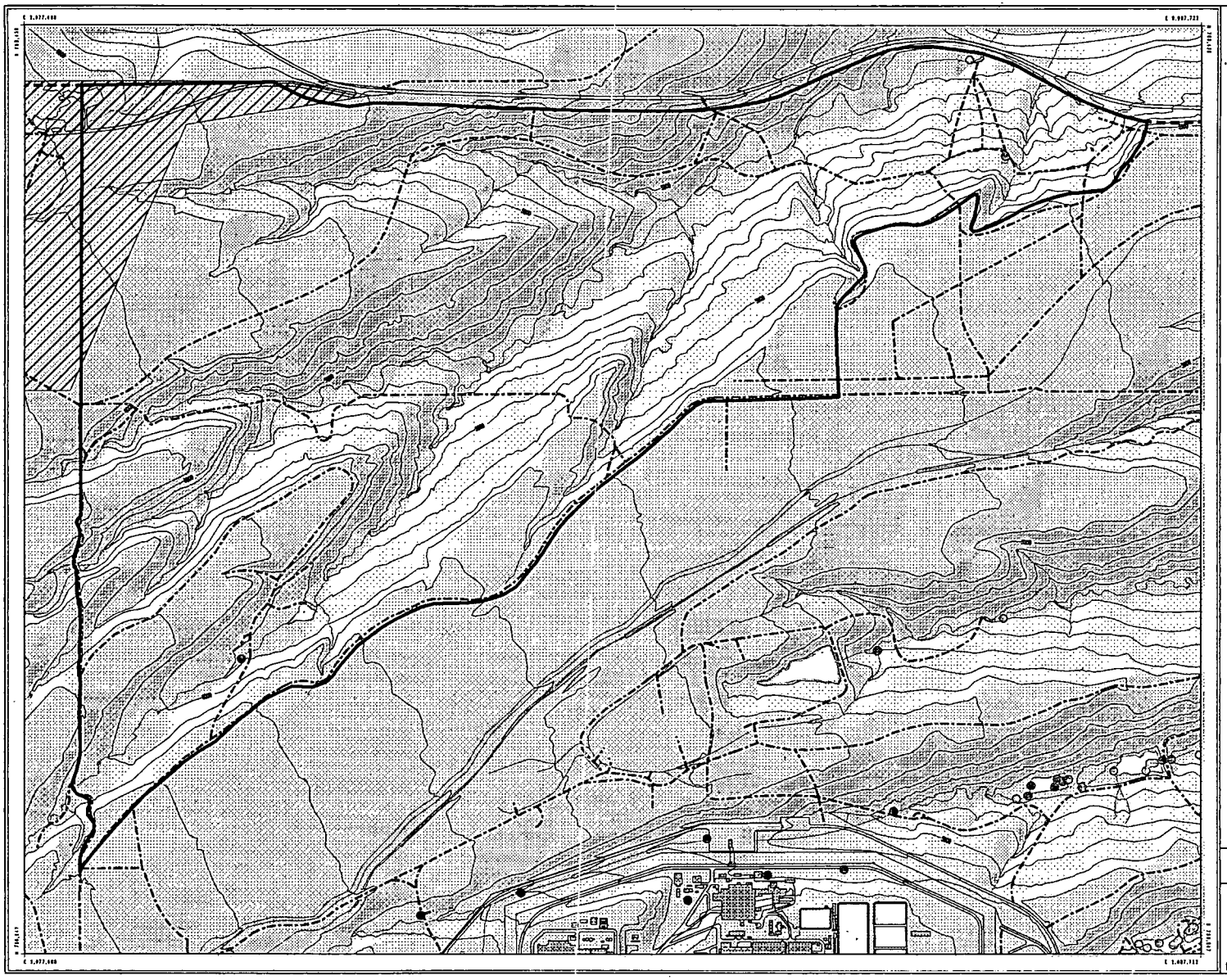

NW1 SEDIMENT SAMPLING LOCATIONS

August 20, 1995

(See Sediment Basemap for Data Source)

EXPLANATION

- Sediment Sample Locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 500 1000ft

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

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MAP ID: NW1

August 17, 1995

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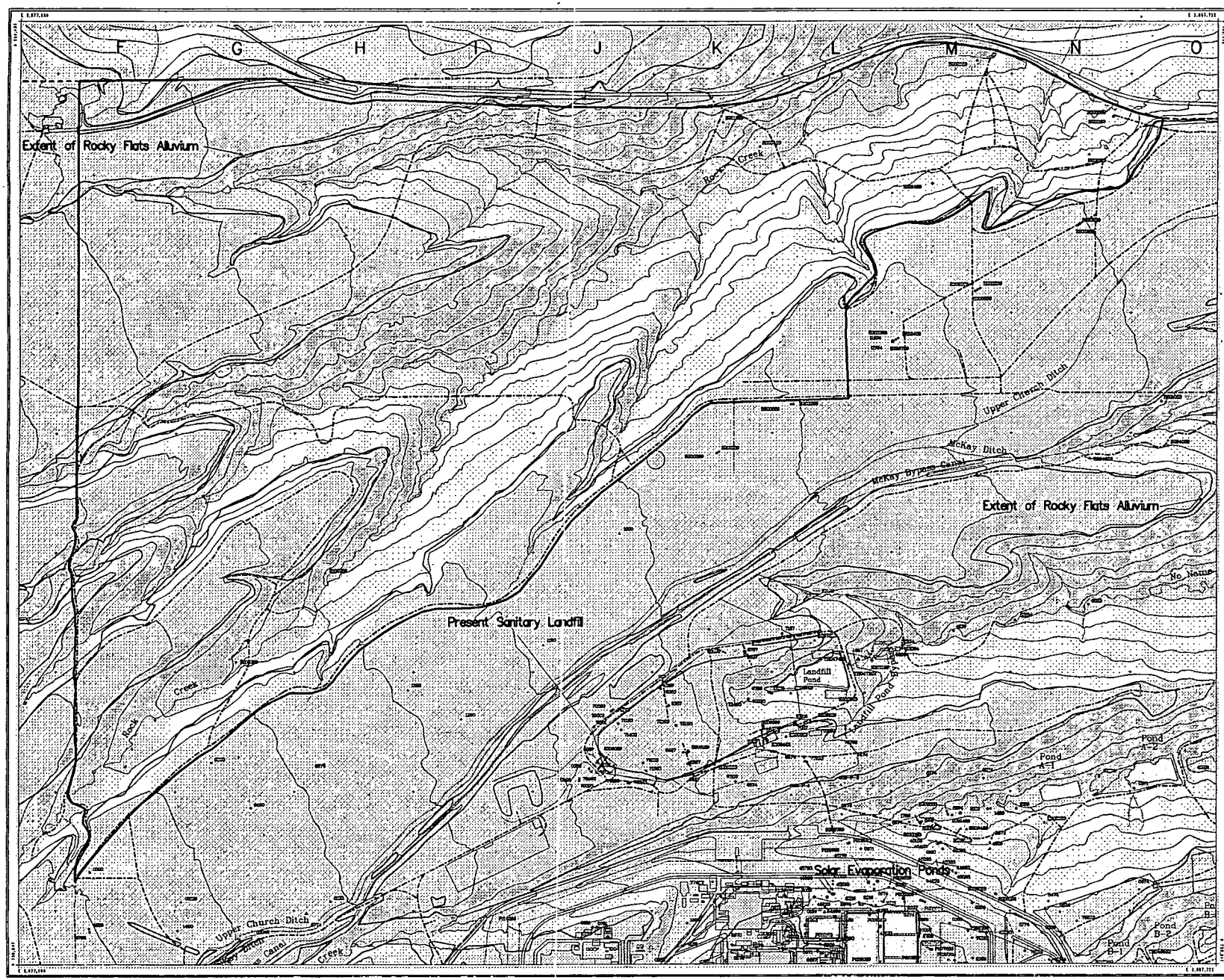

NW1 Groundwater Monitoring Well Location Map

(See Groundwater Basemap for Data Source)

WELL TYPES

- Boundary Wells
- CERCLA Characterization Wells
- RCRA Regulatory
- RCRA Characterization Wells
- Special Purpose Wells

Groundwater Monitoring Program Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock

Inactive Groundwater Monitoring Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock
- Abandoned Groundwater Monitoring Wells

Other

- Buildings and other structures
- Ponds & Lakes
- Buffer Zone Quadrants
- Individual Hazardous Substance Sites
- Extent of Rocky Flats Alluvium
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
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Golden, CO 80402-0464

MAP ID: NW1

August 10, 1998

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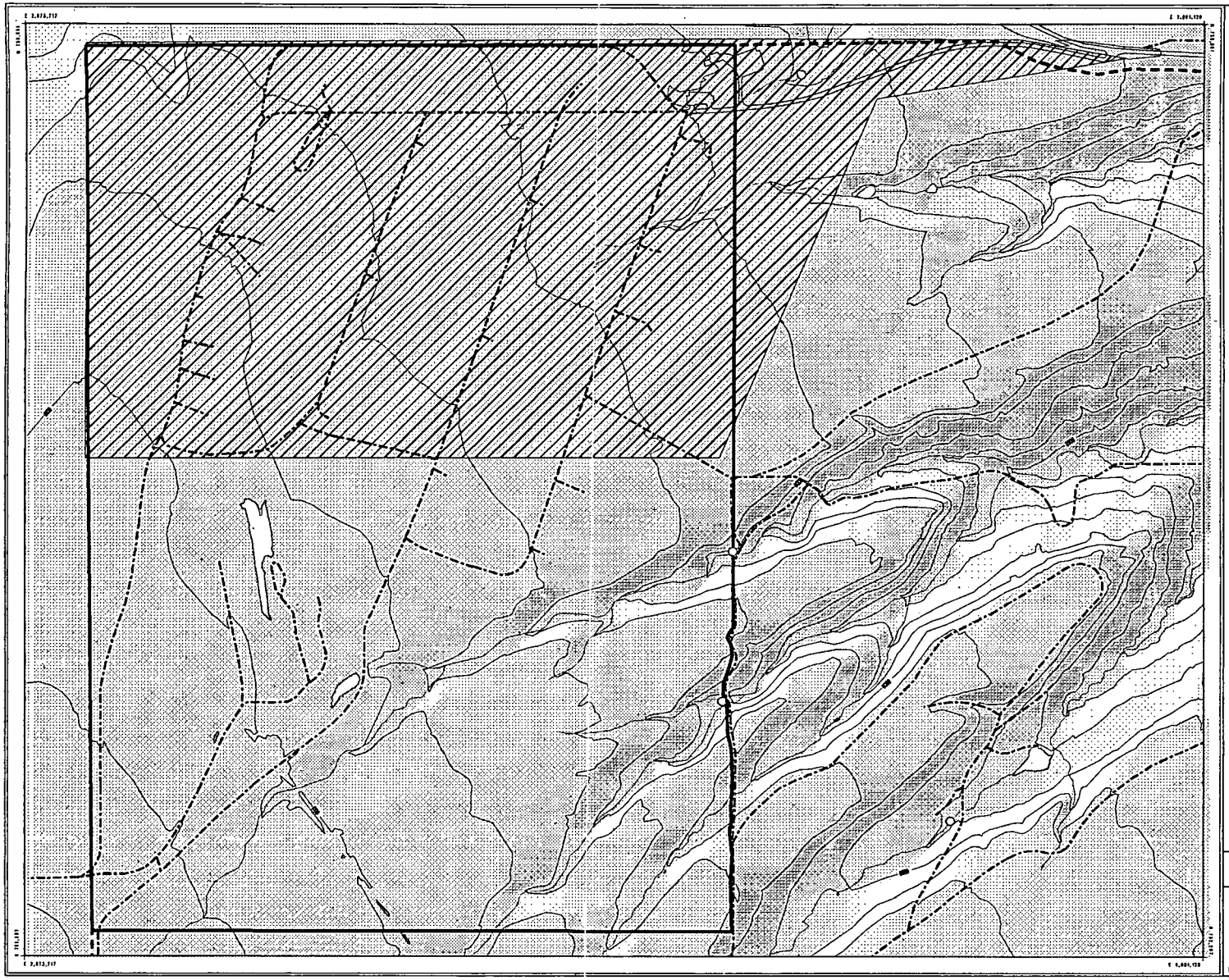

NW2 Surface Water Sampling Locations

August 20, 1995
(See Surface Water Basemap for Data Source)

EXPLANATION

- Surface water stations
- Routine operational sites
- NPDES/FFCA permit monitoring sites
- Gaging stations
- NPDES storm water permit sampling sites
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 500 1000ft

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
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Golden, CO 80402-0464

MAP ID: NW2

August 17, 1995

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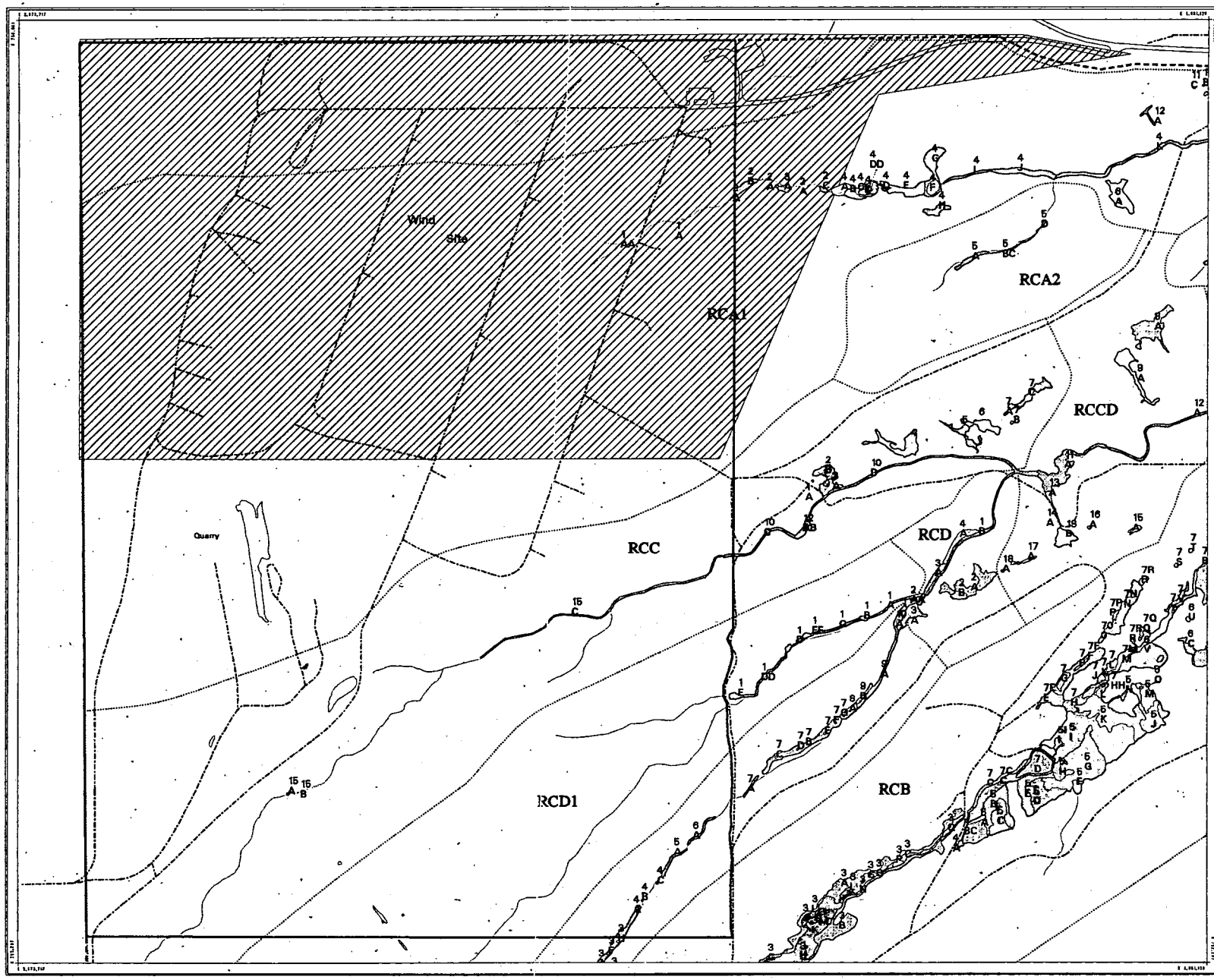

NW2 WETLANDS

August 20, 1995

(See wetlands base map for data source and notes)

Explanation

Buffer Zone Quadrants

Cowardin Wetlands Codes

- L1UBH
- PABH
- PEMA
- PEMB
- PEMC
- PEMF
- PFOA
- PFOC
- PSSA
- PSSC
- PUBF
- PUBH
- PUSC
- R4SBC
- R4SBG
- R4SBH
- R4SBJ

Non-Wetland Features

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Streams, ditches, or other drainage features
- Tributary Boundaries (e.g., WC8 = watershed drainage)
- Fences
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: NW2

August 17, 1995

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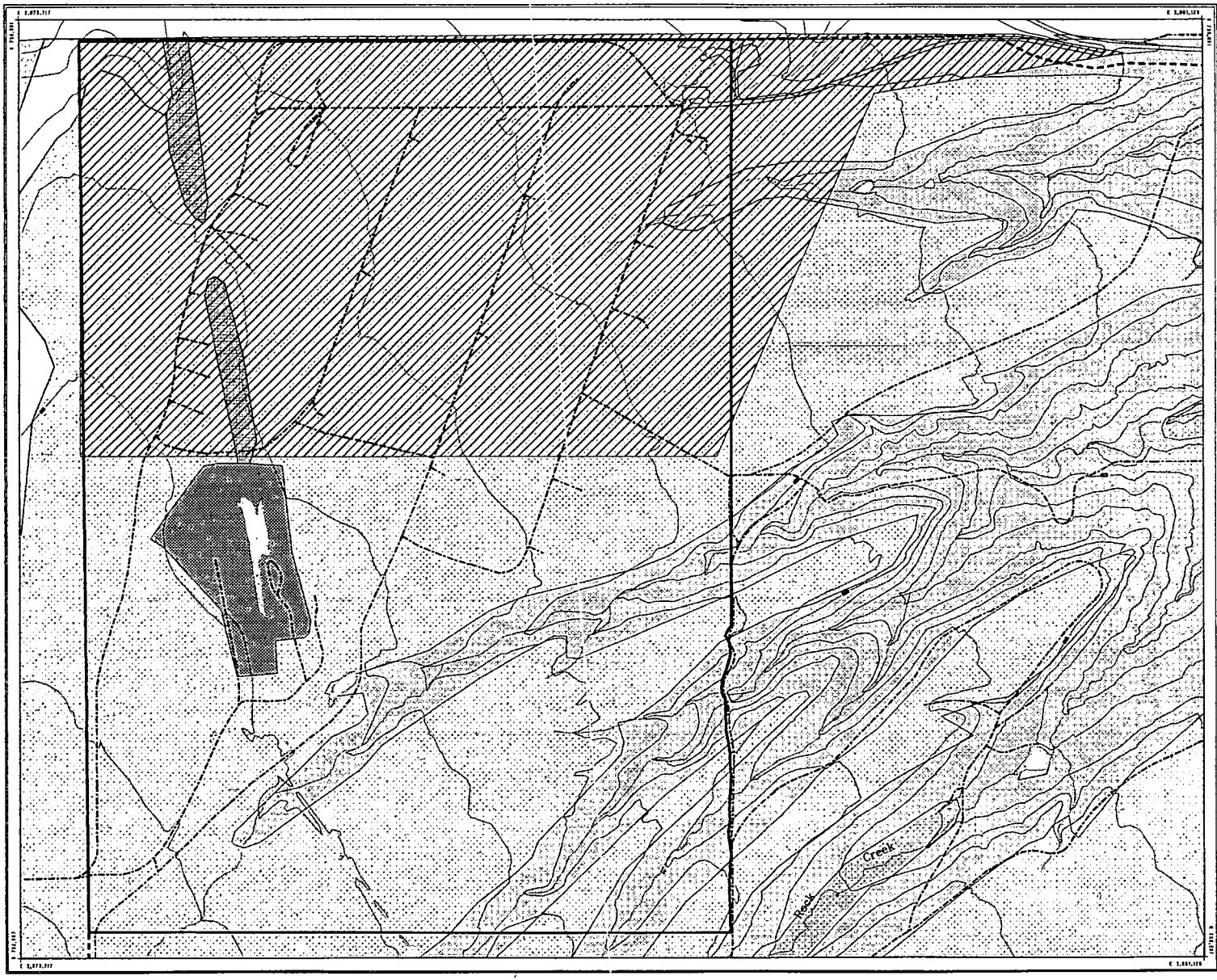

NW2 Soils Map

From Soil Conservation Service
August 20, 1995

(See Soils Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Argiustolls
- Paleustolls
- Haplargids
- Mollisol/Rock Outcrop complex
- Torrifluvents
- Haplustolls
- Torriorthents
- Camborthids
- Haplustolls
- Cryofluvents
- Haplaquolls
- Natrargids
- Argiborolls
- Gravel and Clay Pit
- Rock Outcrop
- DAM
- WATER

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: NW2 August 17, 1995

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NW2 Geologic Units

August 20, 1995
(See Geologic Units Basemap)
(for Data Source)

EXPLANATION

Geologic Map Units

- af - Artificial fill
- Qp - Post-Piney Creek and Piney Creek Alluvium
- Qt - Terrace Alluvium
- Qc - Colluvium
- Qls - Landslide deposits
- Qs - Slocum Alluvium
- Qv - Verdos Alluvium
- Qrf - Rocky Flats Alluvium
- Ka - Arapahoe Formation
- Kl - Laramie Formation
- Kfh - Fox Hills Sandstone

- Shallow closed depression
- Scarp of young landslide
- Areas of vegetation at and near springs
- Boundary of gravel and clay pit
- Spring
- Strike and dip of beds
- Clast identification site
- Capitol Mine (abandoned)
- Geologic Units boundaries
- Buffer Zone Quadrants
- Buildings or other structures
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
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Golden, CO 80402-0464

MAP ID: NW2 August 20, 1995

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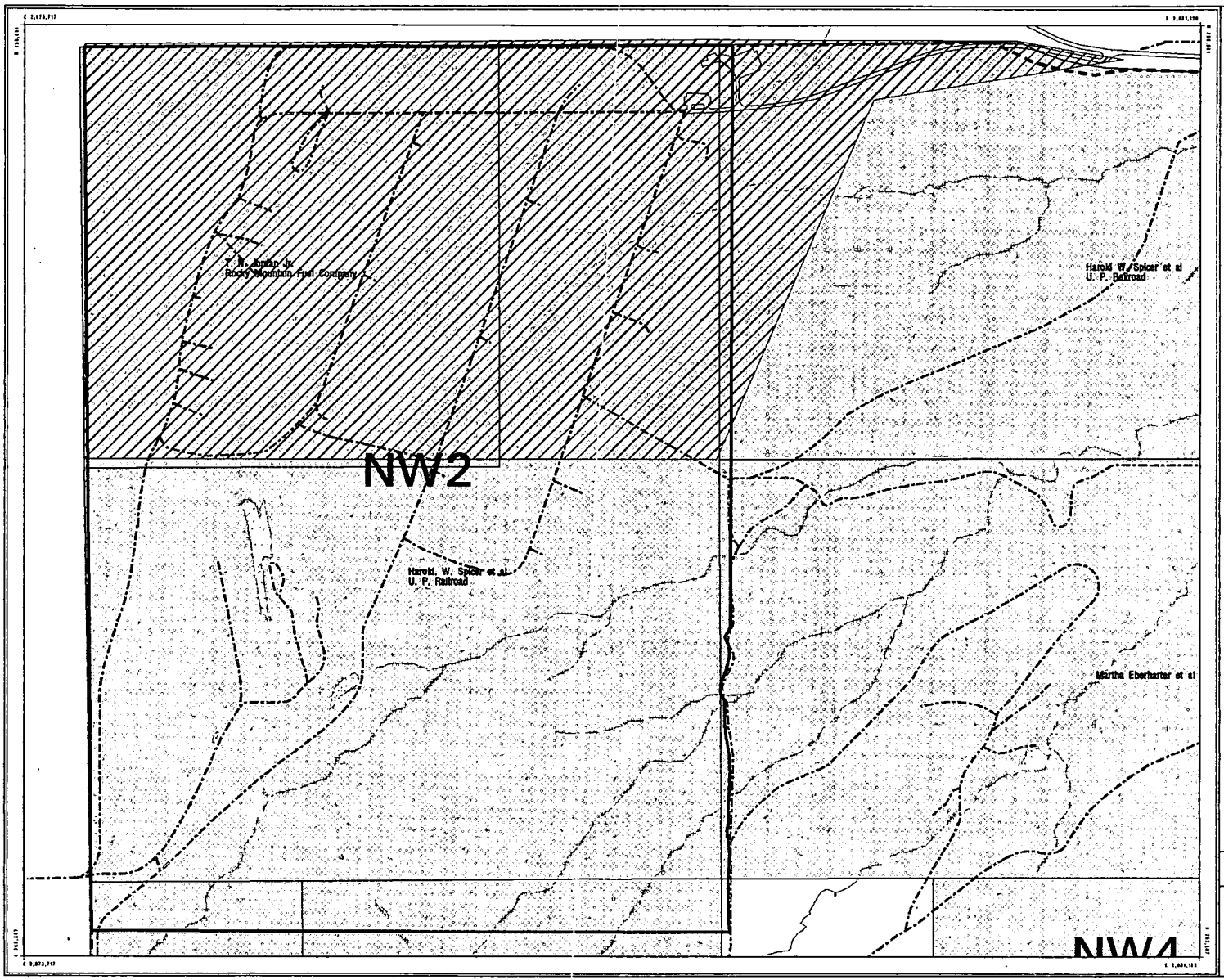

NW2 Mineral Rights at Rocky Flats Environmental Technology Site

August 20, 1995
(See Mineral Rights Basemap for Data Source)

EXPLANATION

- Private
- Government
- Both Government and Private
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
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Golden, CO 80402-0464

MAP ID: NW2 August 17, 1995

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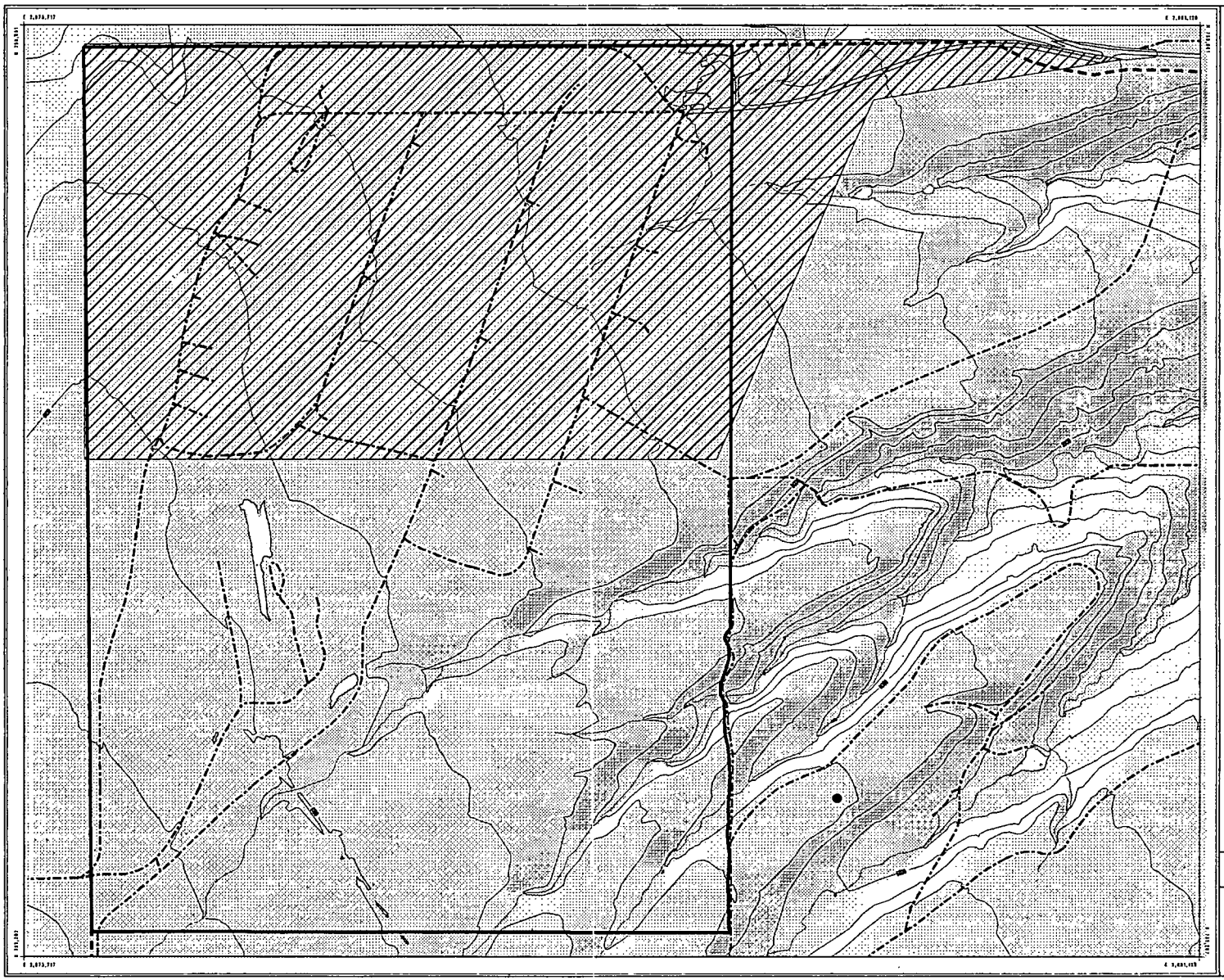

NW2 Borehole Sampling Locations

August 20, 1995

(See Borehole Basemap for Data Source)

EXPLANATION

- Borehole locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 500 1000 ft

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

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Geographic Information Systems Group
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Golden, CO 80402-0464

MAP ID: NW2

August 17, 1995

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NW2 SEDIMENT SAMPLING LOCATIONS

August 20, 1995

(See Sediment Basemap for Data Source)

EXPLANATION

- Sediment Sample Locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

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Geographic Information Systems Group
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Golden, CO 80402-0464

MAP ID: NW2

August 17, 1995

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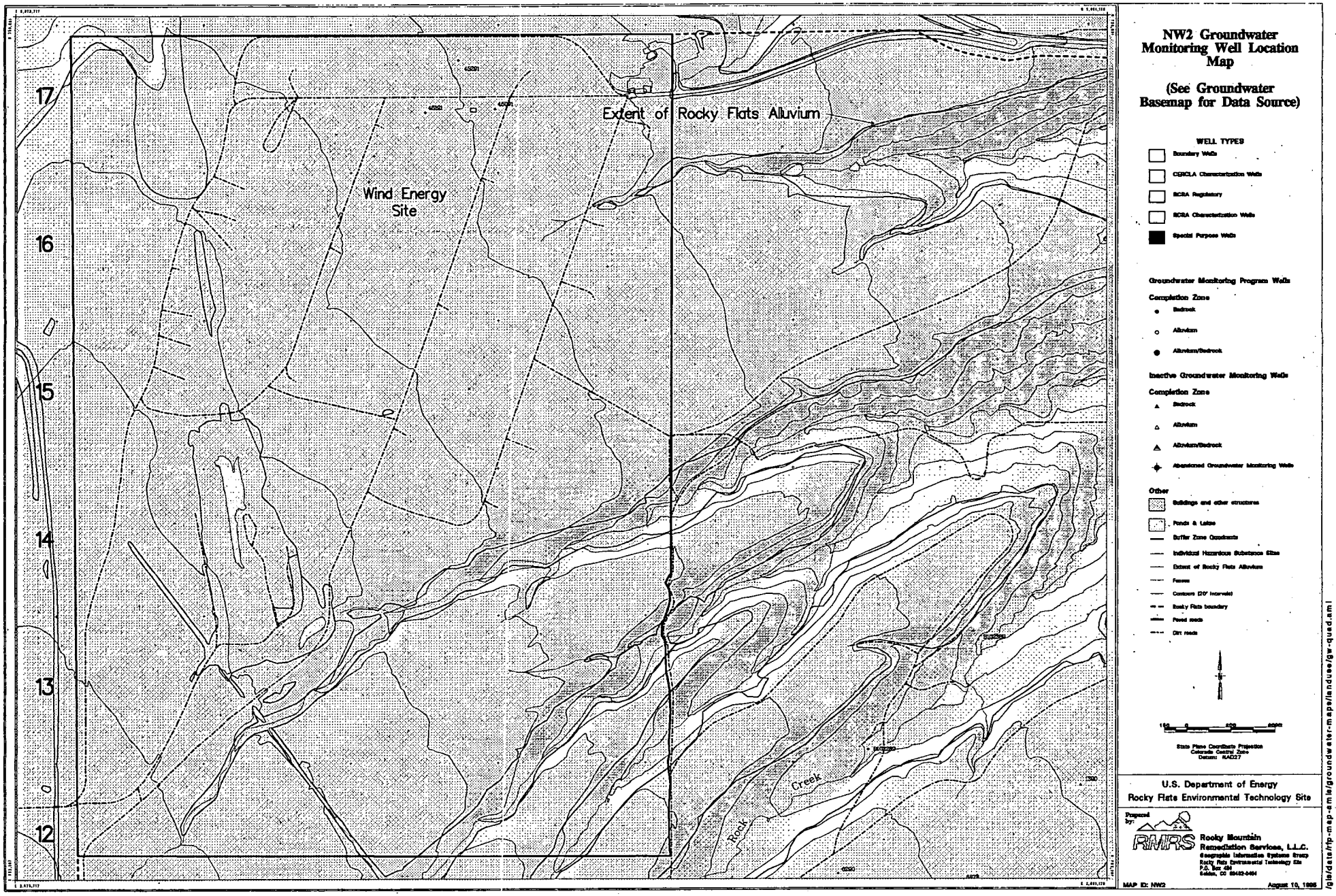

NW2 Groundwater Monitoring Well Location Map

(See Groundwater Basemap for Data Source)

WELL TYPES

- Boundary Wells
- CERCLA Characterization Wells
- RCRA Regulatory
- RCRA Characterization Wells
- Special Purpose Wells

Groundwater Monitoring Program Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock

Inactive Groundwater Monitoring Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock
- Abandoned Groundwater Monitoring Wells

Other

- Buildings and other structures
- Ponds & Lakes
- Buffer Zone Quadrants
- Individual Hazardous Substance Sites
- Extent of Rocky Flats Alluvium
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

150 0 200 4000

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

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Golden, CO 80402-0464

MAP ID: NW2

August 10, 1995

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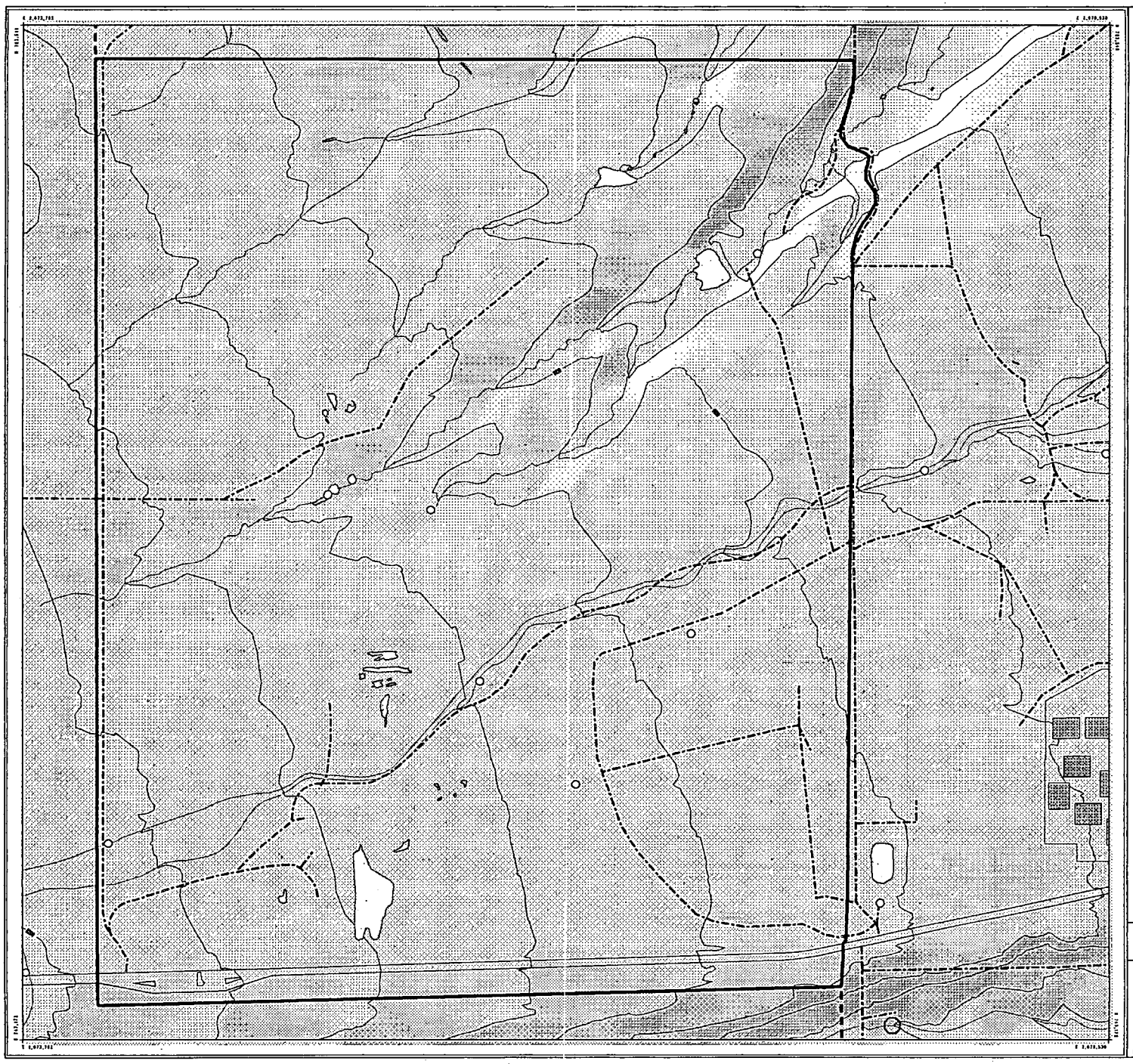

NW3 Surface Water Sampling Locations

August 20, 1995
(See Surface Water Basemap for Data Source)

EXPLANATION

- Surface water stations
- Routine operational sites
- NPDES/FFCA permit monitoring sites
- Gaging stations
- NPDES storm water permit sampling sites
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
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Golden, CO 80402-0464

MAP ID: NW3

August 17, 1996

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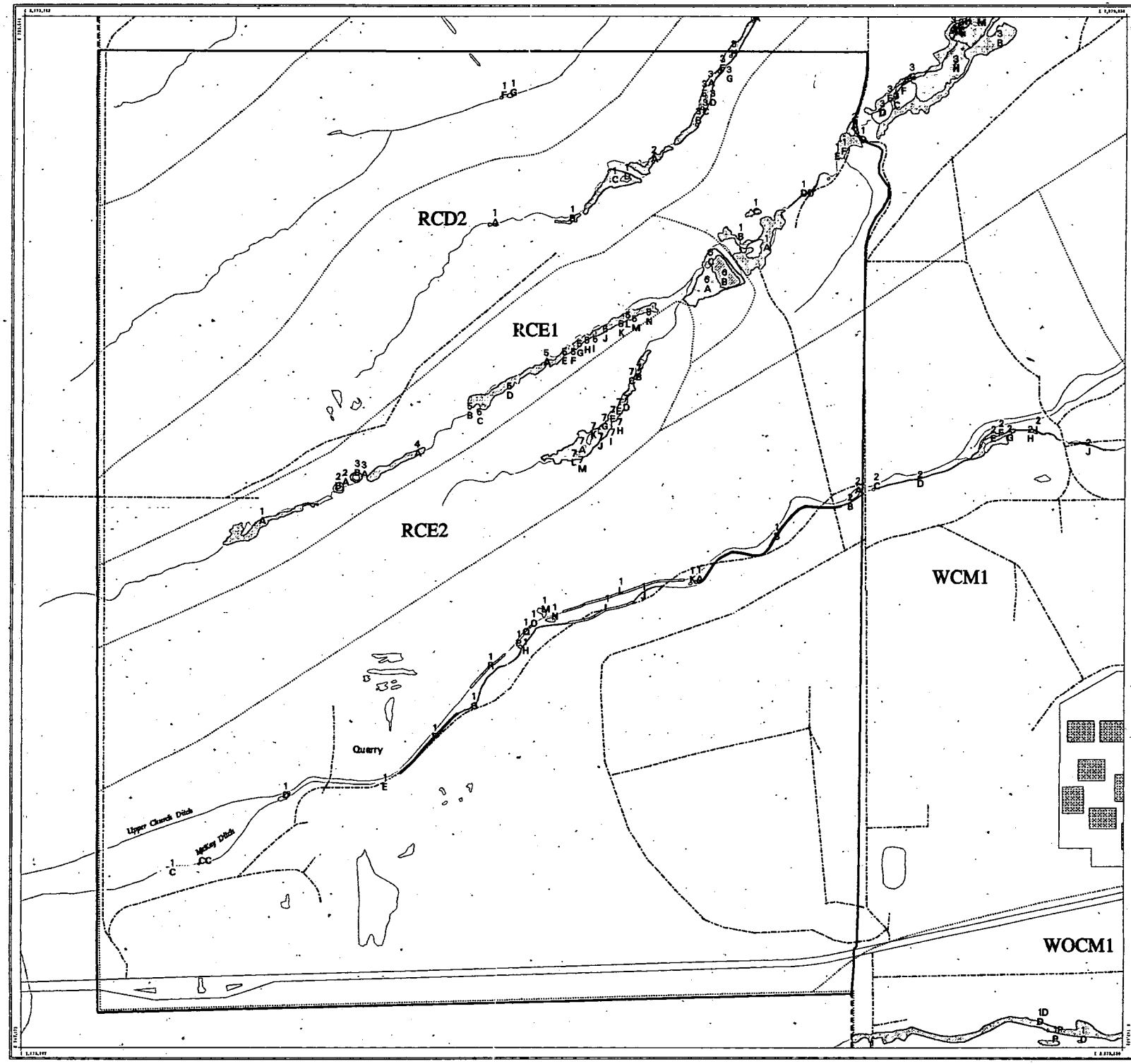

NW3 WETLANDS

August 20, 1995

(See wetlands base map for data source and notes)

Explanation

Buffer Zone Quadrants

Cowardin Wetlands Codes

- L1UBH
- PABH
- PEMA
- PEMB
- PEMC
- PEMF
- PFOA
- PFOC
- PSSA
- PSSC
- PUBF
- PUBH
- PUSC
- R4SBC
- R4SBG
- R4SBH
- R4SBJ

Non-Wetland Features

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Streams, ditches, or other drainage features
- Tributary Boundaries (e.g., WCB = watershed drainage)
- Fences
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: NW3

August 17, 1995

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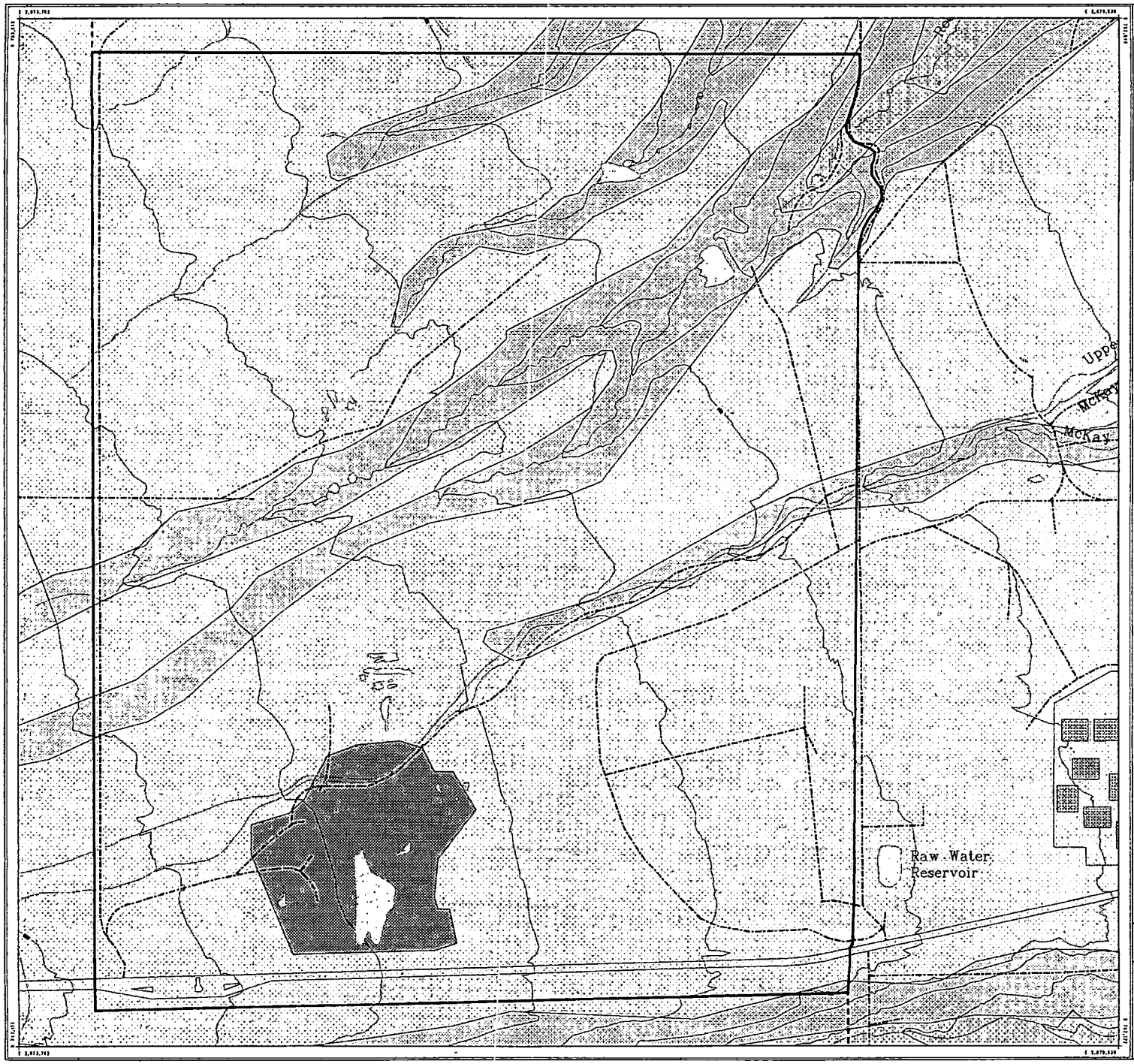

NW3 Soils Map

From Soil Conservation Service
August 20, 1995

(See Soils Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Argiustolls
- Paleustolls
- Haplargids
- Mollisol/Rock Outcrop complex
- Torrifluvents
- Haplustolls
- Torriorthents
- Camborthids
- Haplustolls
- Cryofluvents
- Haplaquolls
- Natrargids
- Argiborolls
- Gravel and Clay Pit
- Rock Outcrop
- DAM
- WATER
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: NW3

August 17, 1995

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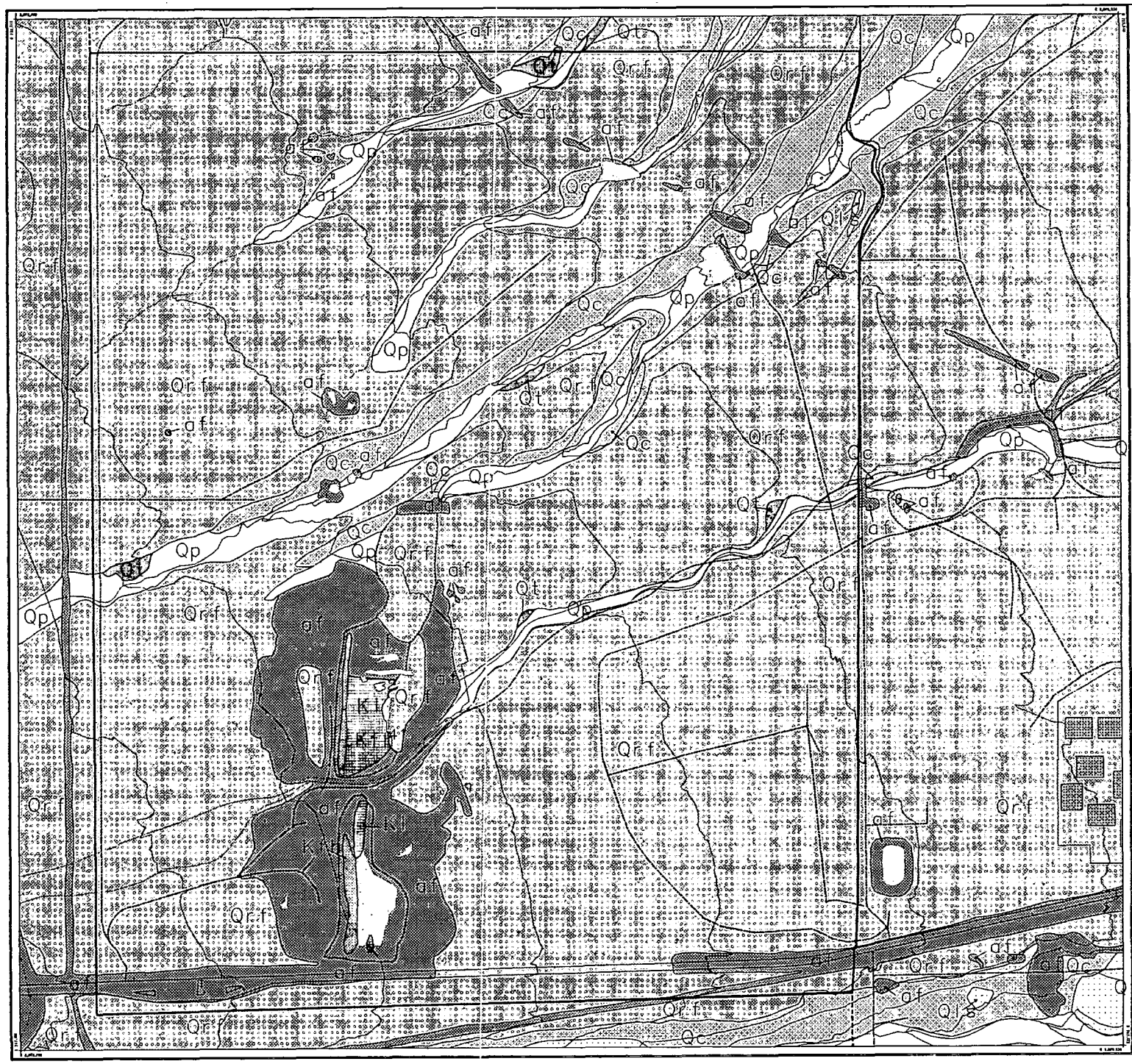

NW3 Geologic Units

August 20, 1995
(See Geologic Units Basemap)
(for Data Source)

EXPLANATION

Geologic Map Units

af - Artificial fill
Qp - Post-Piney Creek and Piney Creek Alluvium
Qt - Terrace Alluvium
Qc - Colluvium
Qls - Landslide deposits
Qs - Slocum Alluvium
Qv - Verdos Alluvium
Qrf - Rocky Flats Alluvium
Ka - Arapahoe Formation
Kl - Laramie Formation
Kfh - Fox Hills Sandstone

Shallow closed depression
Scarp of young landslide
Areas of vegetation at and near springs
Boundary of gravel and clay pit
Spring
Strike and dip of beds
Clast identification site
Capitol Mine (abandoned)
Geologic Units boundaries
Buffer Zone Quadrants

Buildings or other structures
Lakes and ponds
Streams, ditches, or other drainage features
Fences
Contours (20' intervals)
Rocky Flats boundary
Paved roads
Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
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Prepared by:
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Golden, CO 80402-0464

MAP ID: NW3 August 20, 1995

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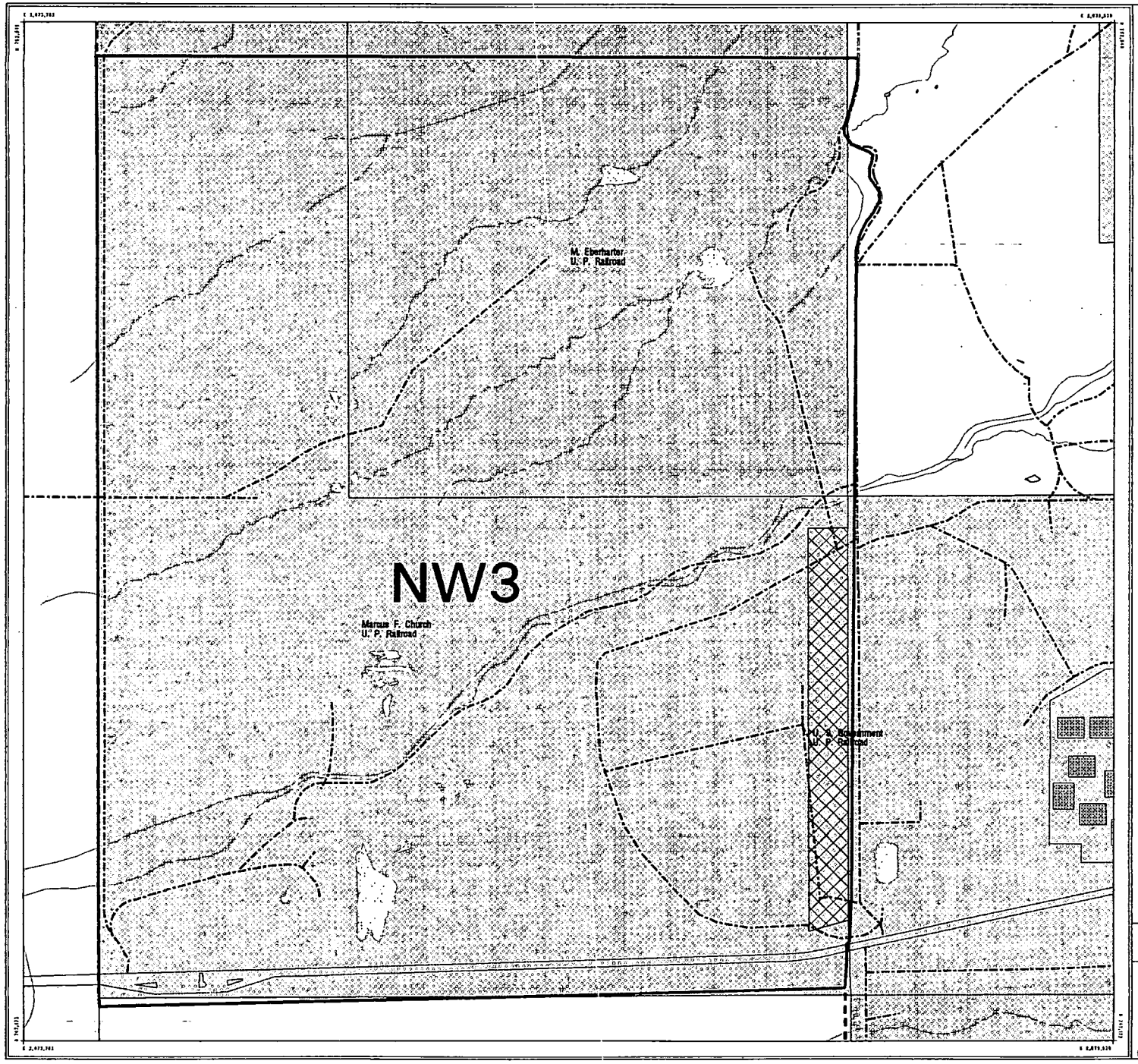

NW3 Mineral Rights at Rocky Flats Environmental Technology Site

August 20, 1995
(See Mineral Rights Basemap for Data Source)

EXPLANATION

- Private
- Government
- Both Government and Private
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
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MAP ID: NW3

August 17, 1995

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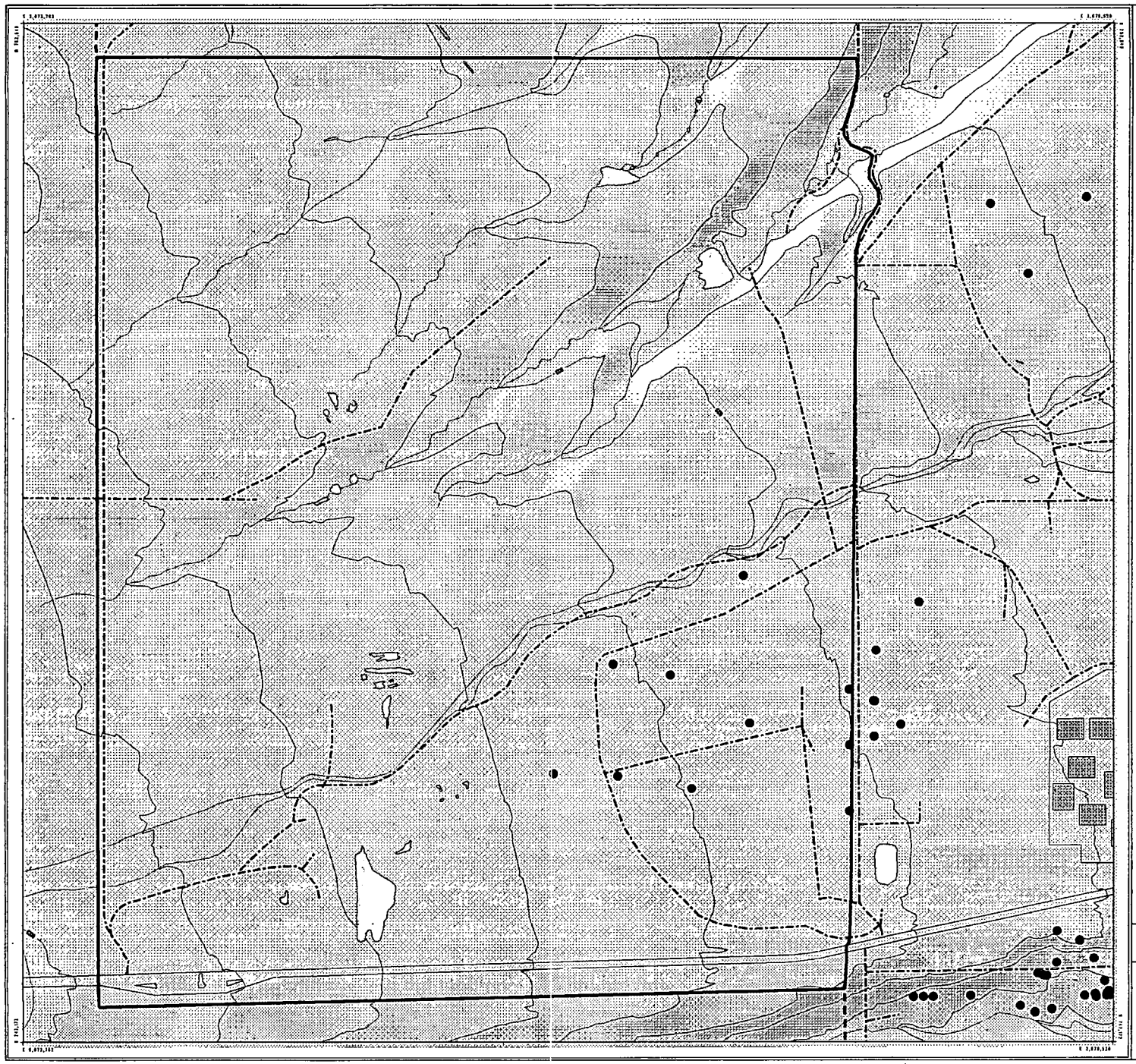

NW3 Borehole Sampling Locations

August 20, 1995

(See Borehole Basemap for Data Source)

EXPLANATION

- Borehole locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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Rocky Flats Environmental Technology Site

Prepared by:

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MAP ID: NW3

August 17, 1995

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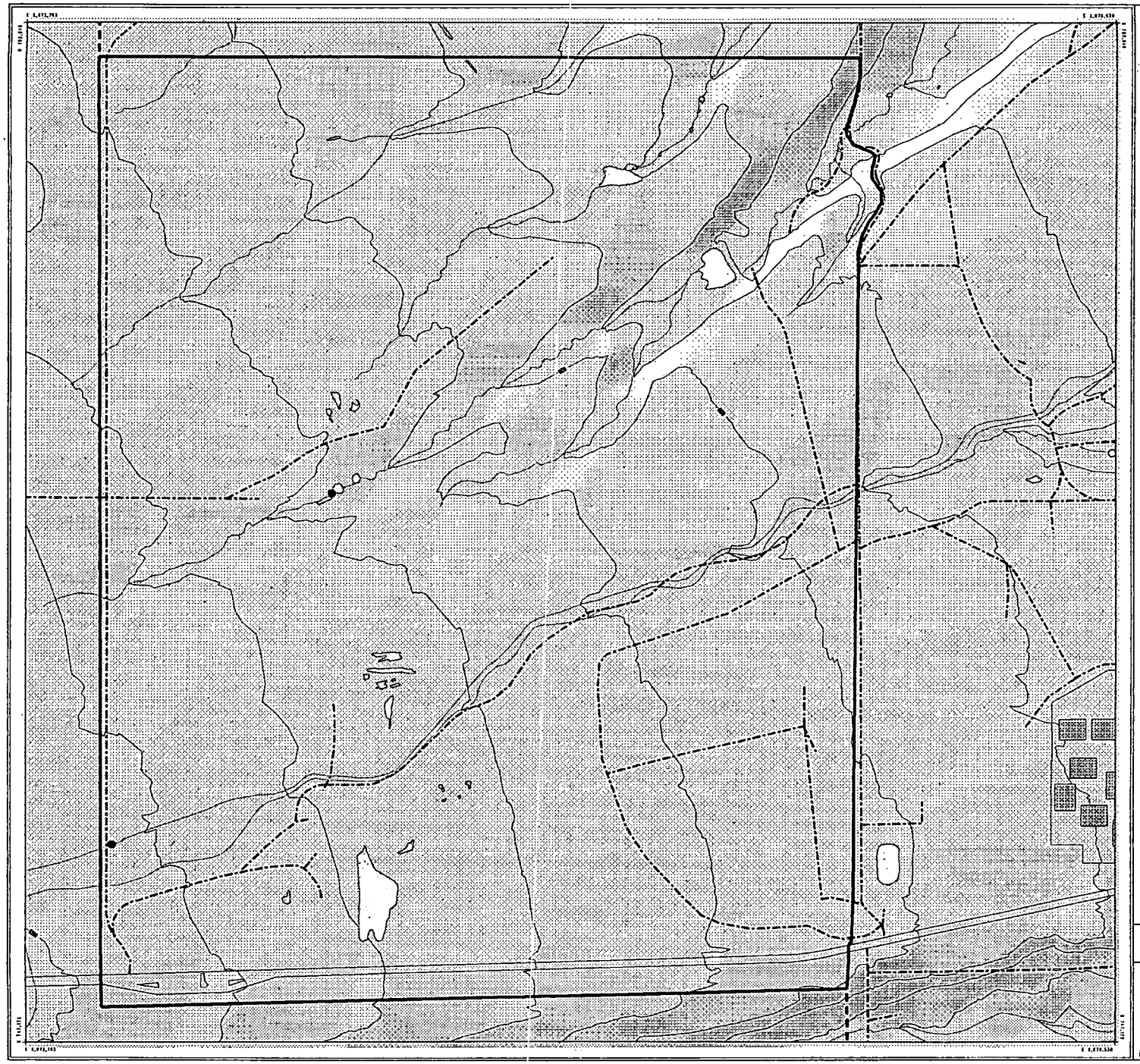

NW3 SEDIMENT SAMPLING LOCATIONS

August 20, 1995

(See Sediment Basemap for Data Source)

EXPLANATION

- Sediment Sample Locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

200 0 400 800ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

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MAP ID: NW3

August 17, 1996

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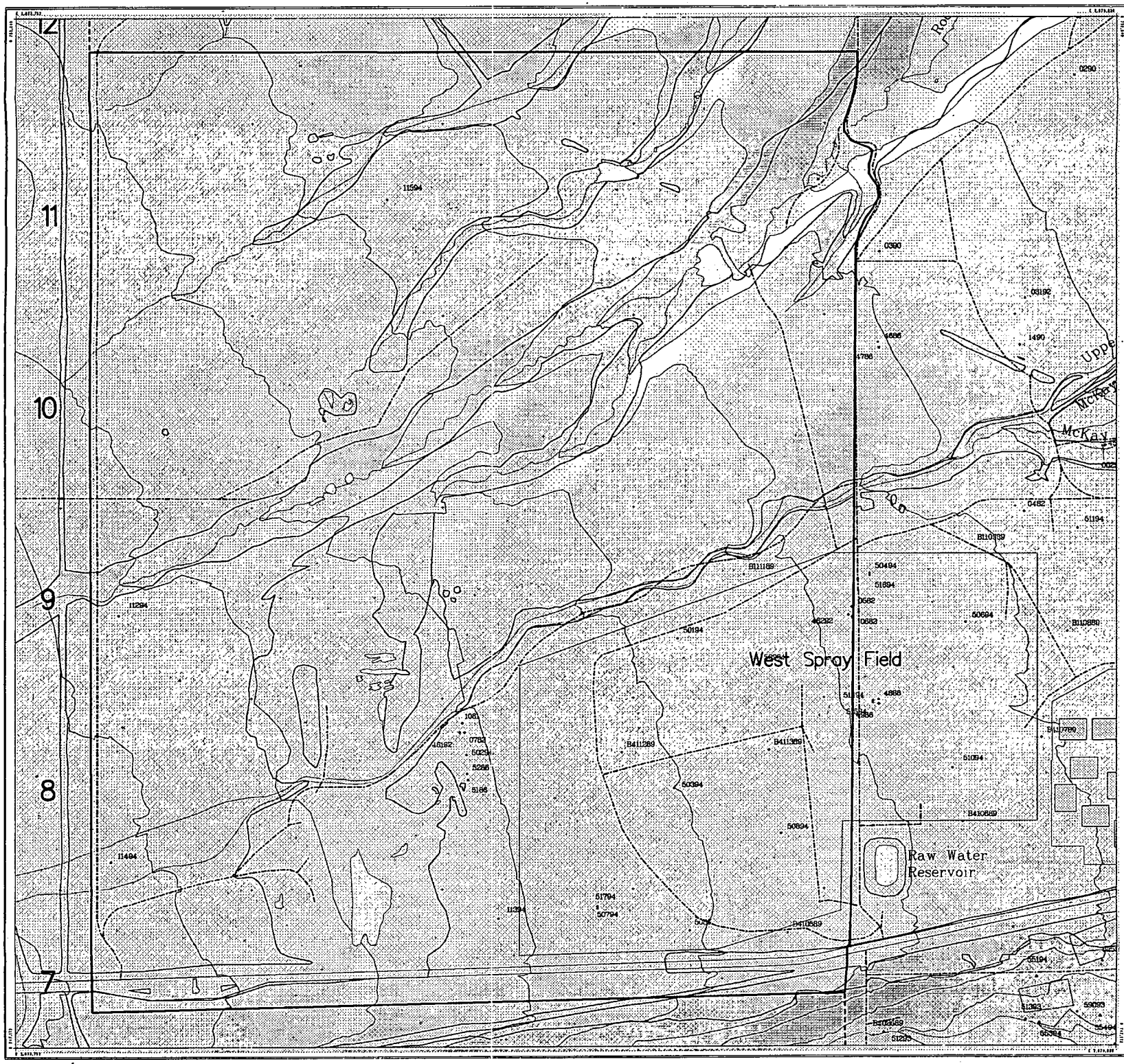

NW3 Groundwater Monitoring Well Location Map

(See Groundwater Basemap for Data Source)

WELL TYPES

- Boundary Wells
- CERCLA Characterization Wells
- RCRA Regulatory
- RCRA Characterization Wells
- Special Purpose Wells

Groundwater Monitoring Program Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock

Inactive Groundwater Monitoring Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock
- Abandoned Groundwater Monitoring Wells

Other

- Buildings and other structures
- Ponds & Lakes
- Buffer Zone Quadrants
- Individual Hazardous Substance Sites
- Extent of Rocky Flats Alluvium
- Fences
- Contours (20' Interval)
- Rocky Flats boundary
- Paved roads
- Dirt roads

100 0 200 400

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by
RMRS Rocky Mountain Remediation Services, L.L.C.
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: NW3

August 10, 1998

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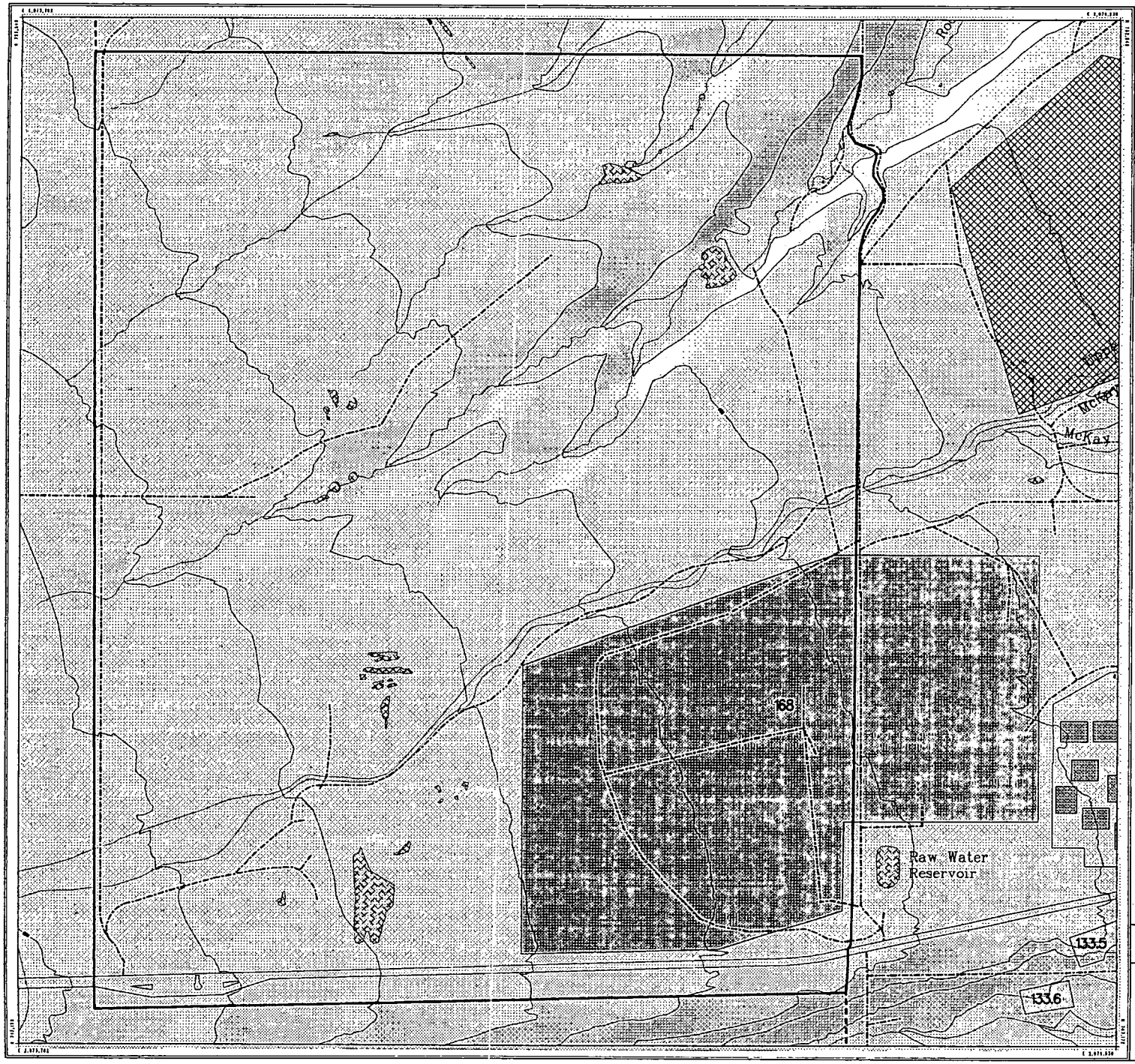

NW3 IHSS

(See IHSS Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Operable Unit 1
- Operable Unit 2
- Operable Unit 4
- Operable Unit 5
- Operable Unit 6
- Operable Unit 7
- Operable Unit 8
- Operable Unit 9
- Operable Unit 10
- Operable Unit 11
- Operable Unit 12
- Operable Unit 13
- Operable Unit 14
- Operable Unit 15
- Operable Unit 16
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
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Golden, CO 80402-0464

MAP ID: NW3

August 18, 1995

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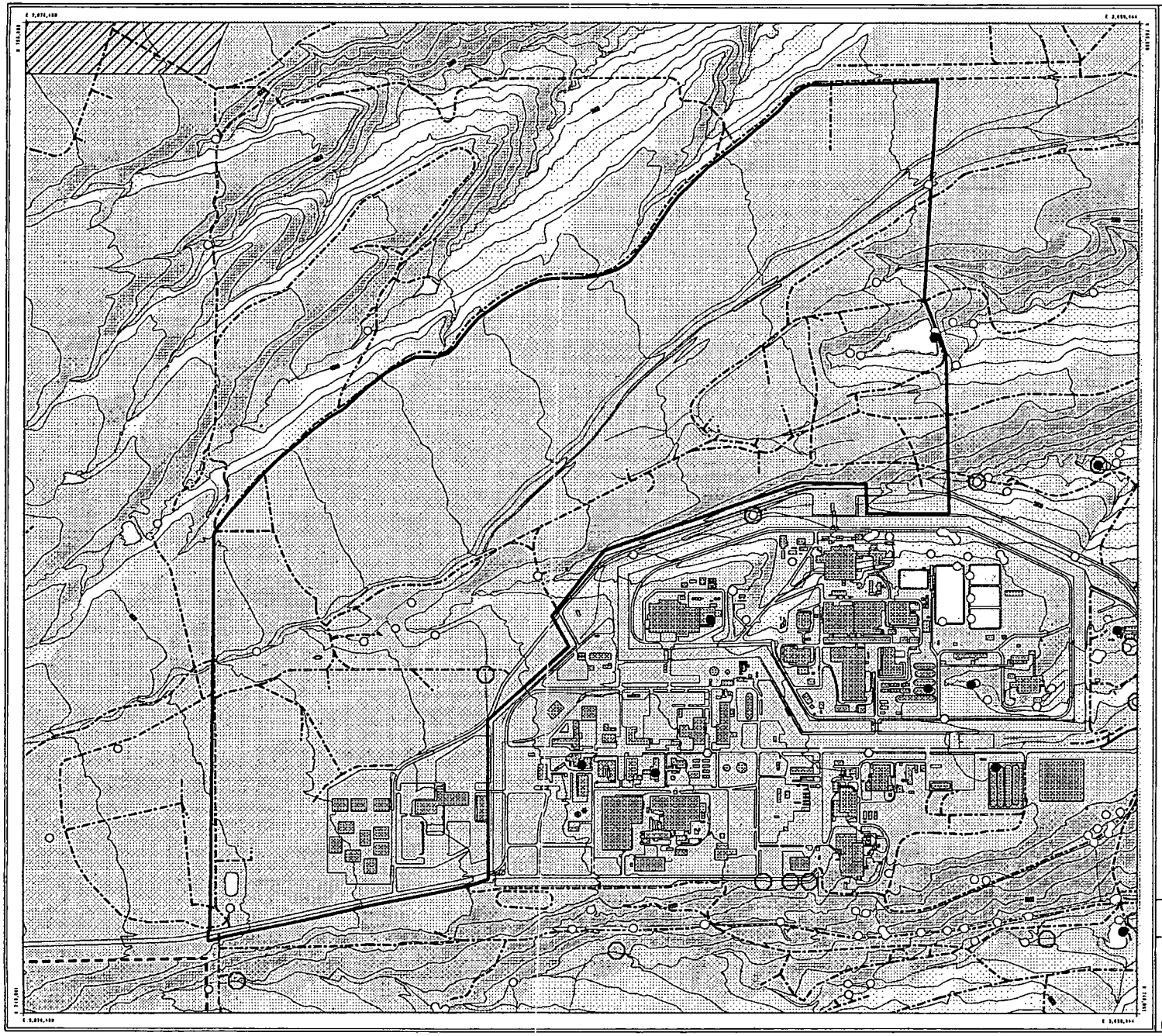

NW4 Surface Water Sampling Locations

August 20, 1995
(See Surface Water Basemap for Data Source)

EXPLANATION

- Surface water stations
- Routine operational sites
- NPDES/FFCA permit monitoring sites
- Gaging stations
- NPDES storm water permit sampling sites
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
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Rocky Flats Environmental Technology Site
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Golden, CO 80402-0464

MAP ID: NW4

August 17, 1995

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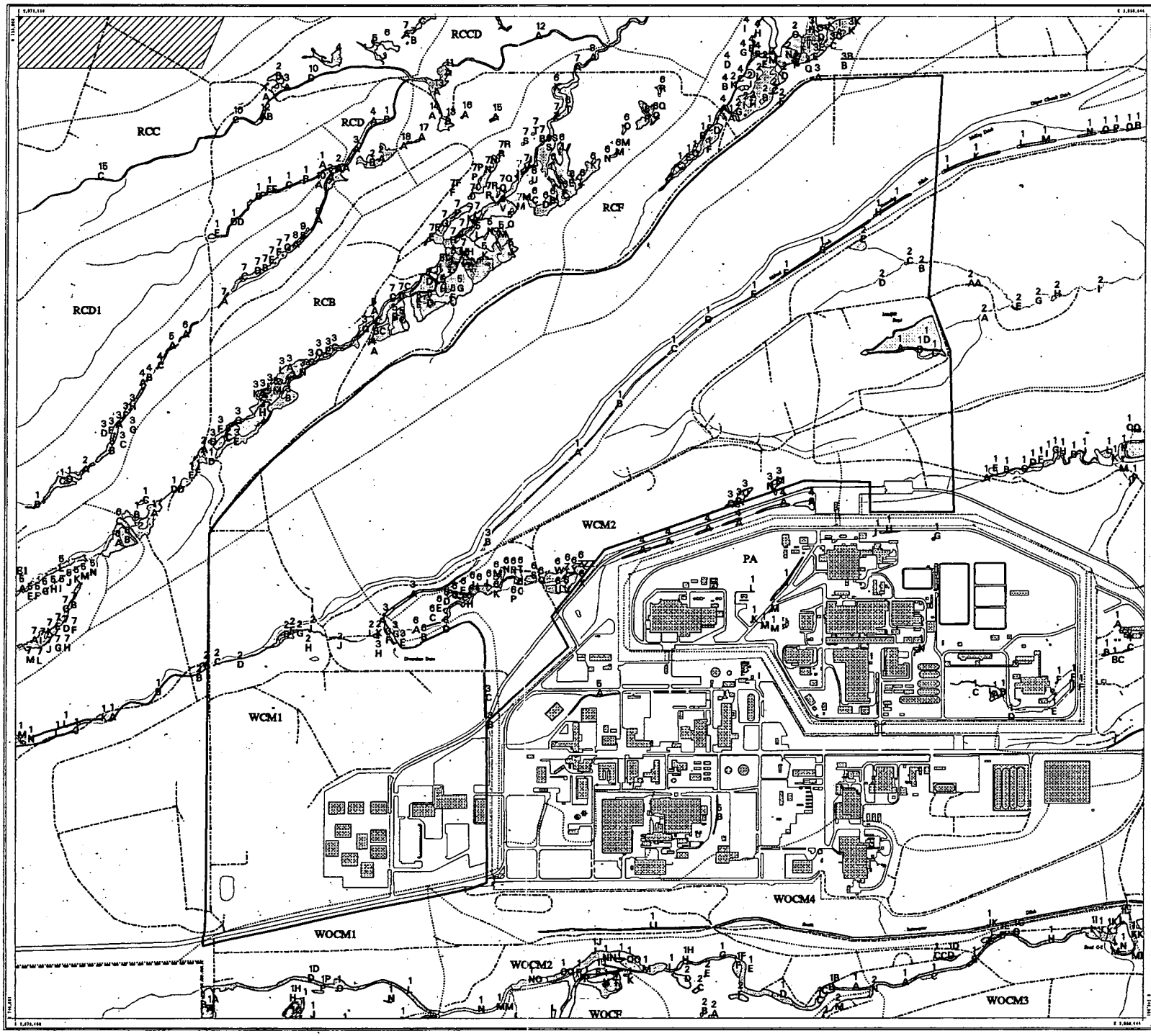

NW4 WETLANDS

August 20, 1995

(See wetlands base map for data source and notes)

Explanation

Buffer Zone Quadrants

Cowardin Wetlands Codes

- L1UBH
- PABH
- PEMA
- PEMB
- PEMC
- PEMF
- PFOA
- PFOC
- PSSA
- PSSC
- PUBF
- PUBH
- PUSC
- R4SBC
- R4SBG
- R4SBH
- R4SBJ

Non-Wetland Features

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Streams, ditches, or other drainage features
- Tributary Boundaries (e.g., WCB = watershed drainage)
- Fences
- Rocky Flats boundary
- Paved roads
- Dirt roads

N

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

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Golden, CO 80402-0464

MAP ID: NW4

August 17, 1995

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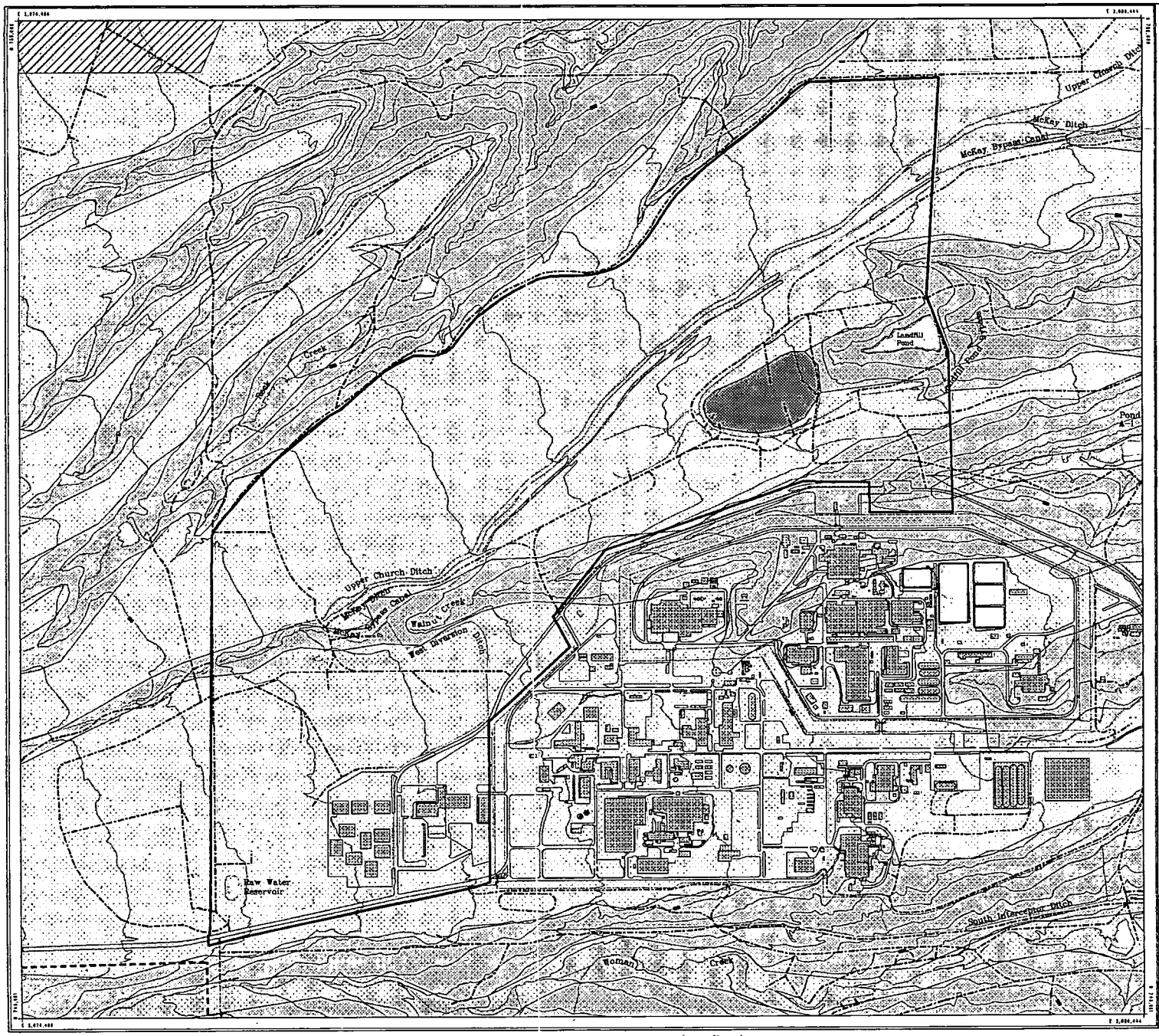

NW4 Soils Map

From Soil Conservation Service August 20, 1995

(See Soils Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Argiustolls
- Paleustolls
- Haplargids
- Mollisol/Rock Outcrop complex
- Torrifluvents
- Haplustolls
- Torriorthents
- Camborthids
- Haplustolls
- Cryofluvents
- Haplaquolls
- Natrargids
- Argiborolls
- Gravel and Clay Pit
- Rock Outcrop
- DAM
- WATER

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 250 1000 ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
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Golden, CO 80402-0464

MAP ID: NW4

August 17, 1995

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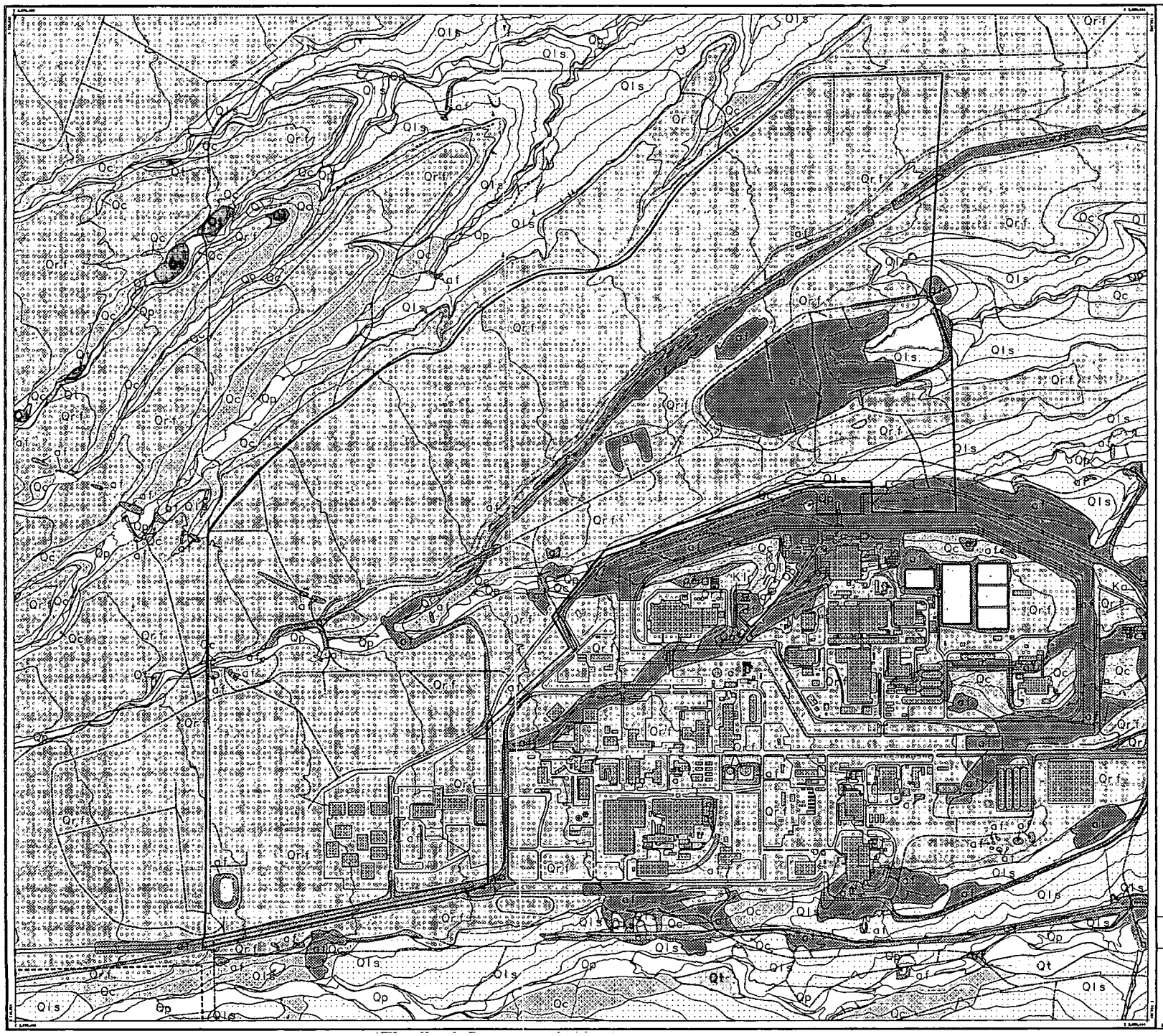

NW4 Geologic Units

August 20, 1995
(See Geologic Units Basemap)
(for Data Source)

EXPLANATION

Geologic Map Units

af - Artificial fill
Qp - Post-Piney Creek and Piney Creek Alluvium
Qt - Terrace Alluvium
Qc - Colluvium
Qls - Landslide deposits
Qs - Slocum Alluvium
Qv - Verdos Alluvium
Qrf - Rocky Flats Alluvium
Ka - Arapahoe Formation
Kl - Laramie Formation
Kfh - Fox Hills Sandstone

Shallow closed depression
Scarp of young landslide
Areas of vegetation at and near springs
Boundary of gravel and clay pit
Spring
Strike and dip of beds
Clast identification site
Capitol Mine (abandoned)
Geologic Units boundaries
Buffer Zone Quadrants

Buildings or other structures
Lakes and ponds
Streams, ditches, or other drainage features
Fences
Contours (20' intervals)
Rocky Flats boundary
Paved roads
Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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Rocky Flats Environmental Technology Site

Prepared by:
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Geographic Information Systems Group
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Golden, CO 80402-0464

MAP ID: NW4 August 20, 1995

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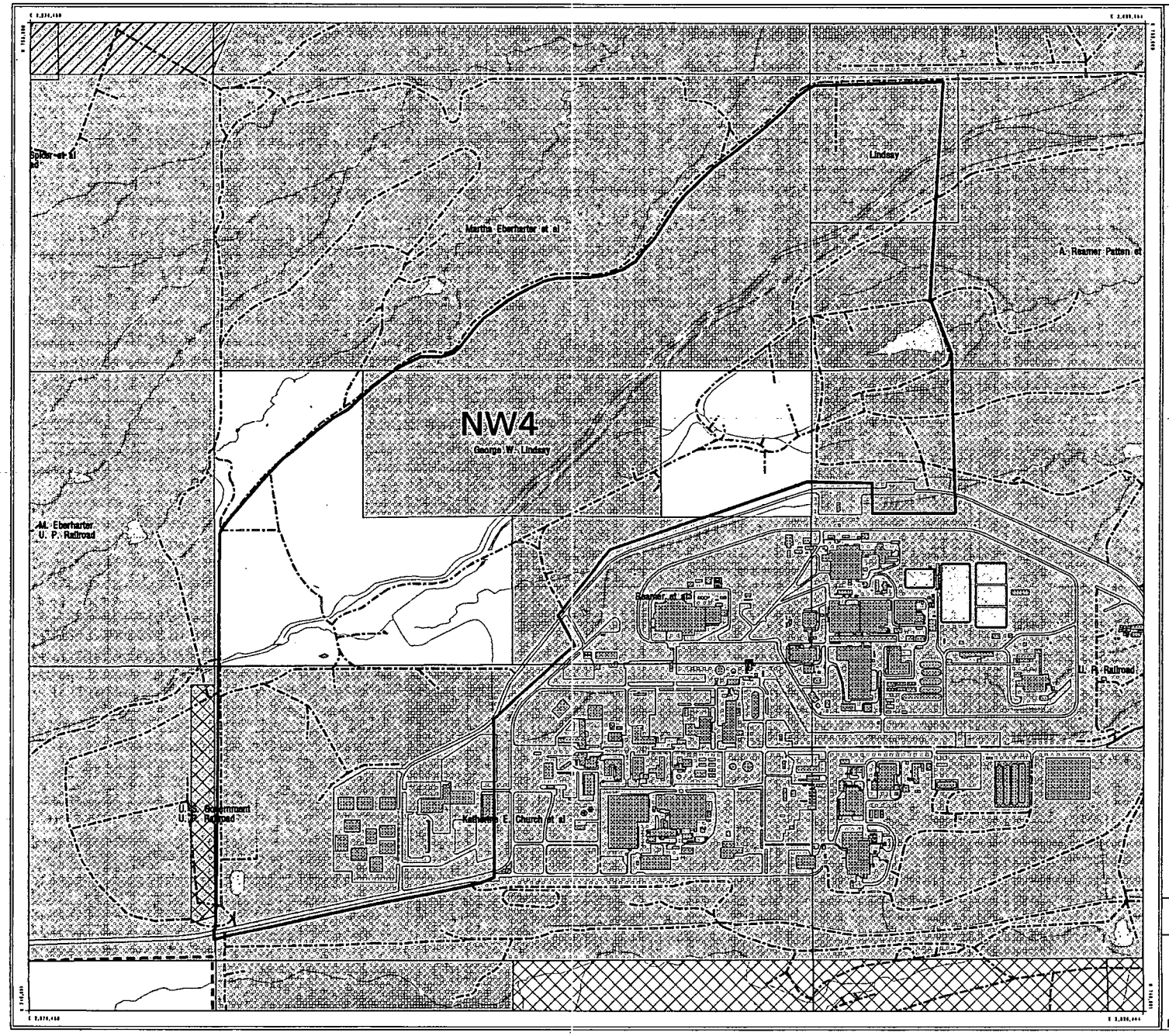

NW4 Mineral Rights at Rocky Flats Environmental Technology Site

August 20, 1995
(See Mineral Rights Basemap for Data Source)

EXPLANATION

- Private
- Government
- Both Government and Private
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
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Golden, CO 80402-0464

MAP ID: NW4 August 17, 1995

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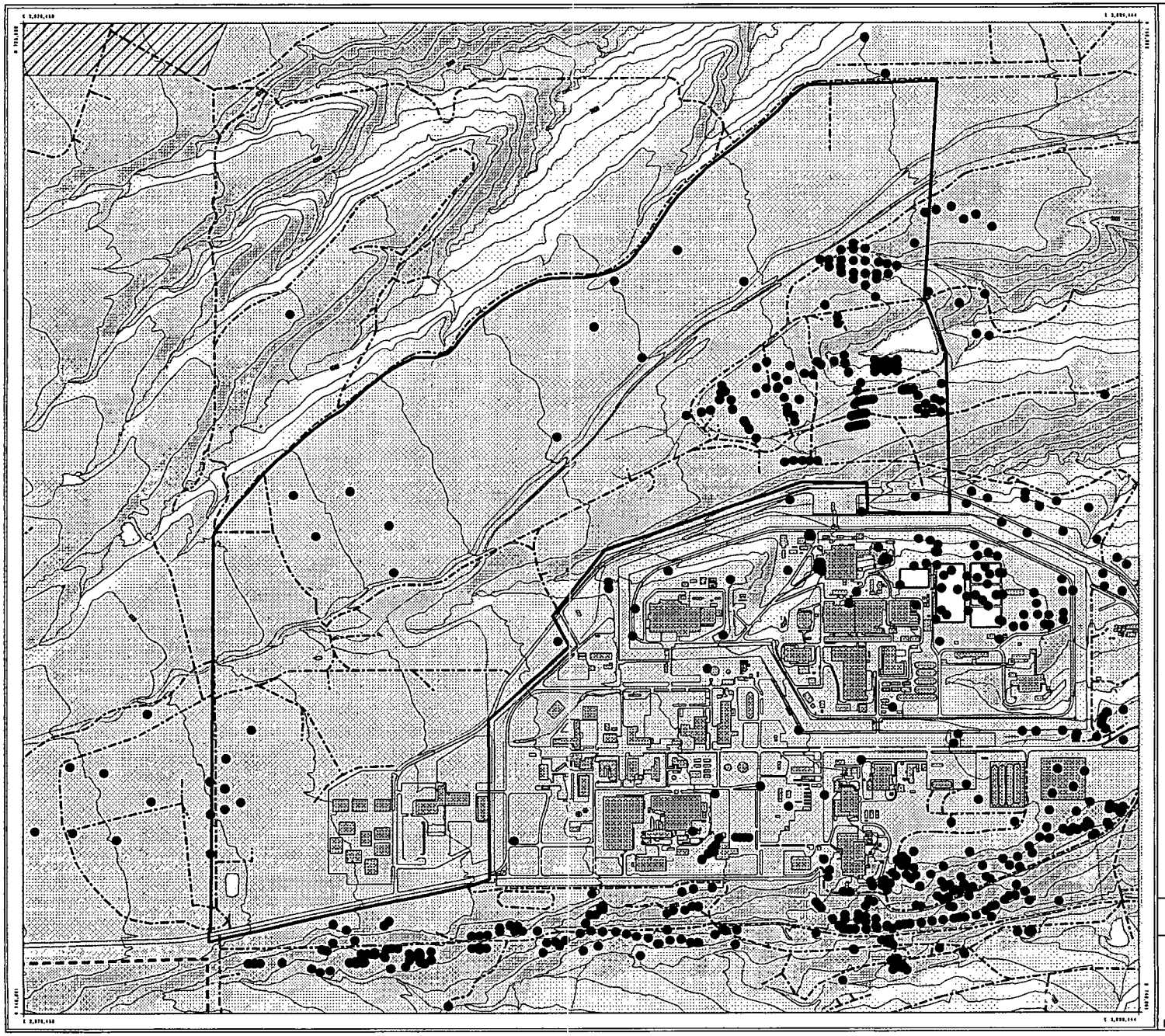

NW4 Borehole Sampling Locations
August 20, 1995

(See Borehole Basemap for Data Source)

EXPLANATION

- Borehole locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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MAP ID: NW4

August 17, 1995

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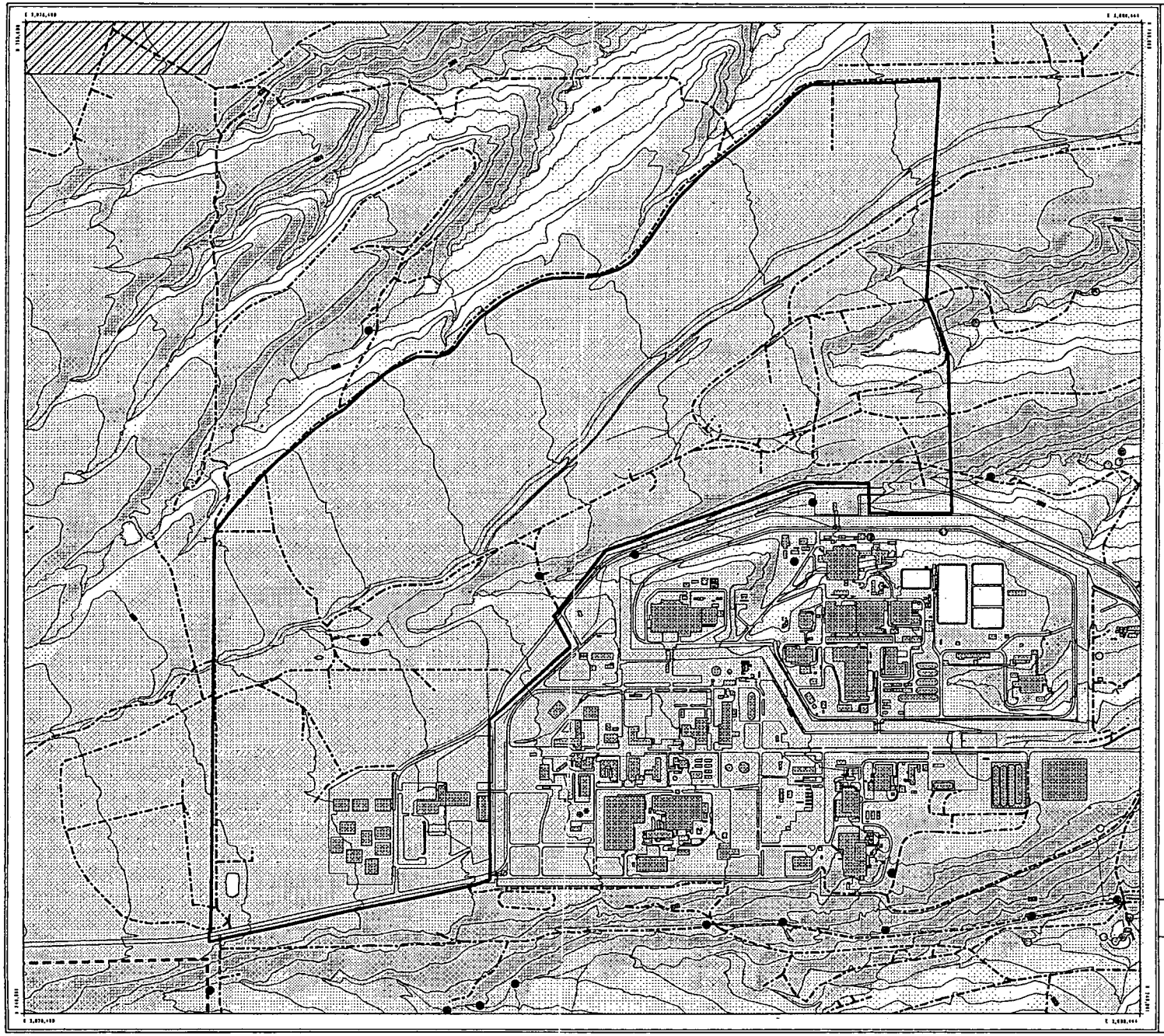

NW4 SEDIMENT SAMPLING LOCATIONS

August 20, 1995

(See Sediment Basemap for Data Source)

EXPLANATION

- Sediment Sample Locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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MAP ID: NW4

August 17, 1995

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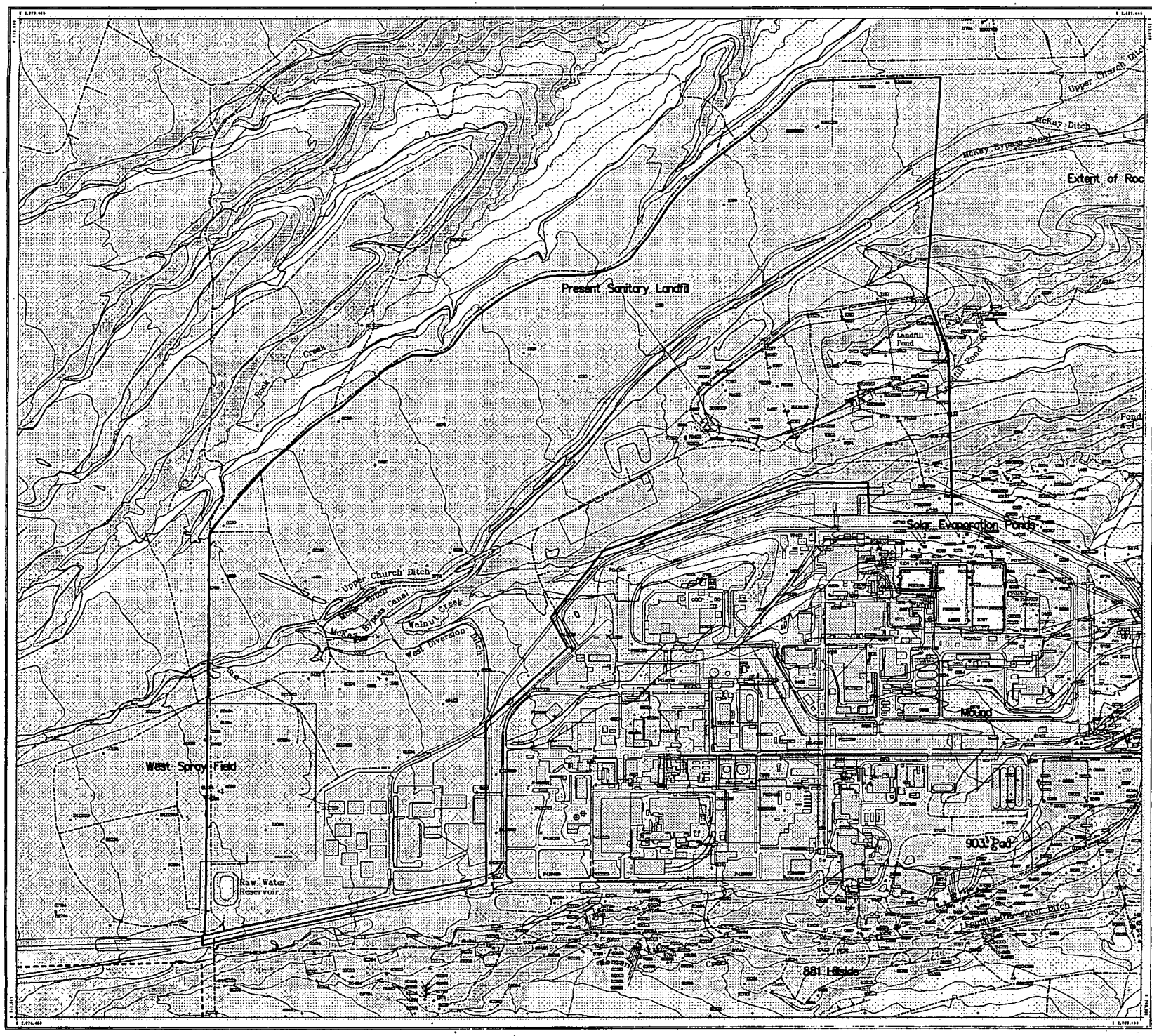

NW4 Groundwater Monitoring Well Location Map

(See Groundwater Basemap for Data Source)

WELL TYPES

- Boundary Wells
- CERCLA Characterization Wells
- RCRA Regulatory
- RCRA Characterization Wells
- Special Purpose Wells

Groundwater Monitoring Program Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock

Inactive Groundwater Monitoring Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock
- Abandoned Groundwater Monitoring Wells

Other

- Buildings and other structures
- Ponds & Lakes
- Buffer Zone Quadrants
- Individual Hazardous Substance Sites
- Extent of Rocky Flats Alluvium
- Fences
- Contours (20' intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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Rocky Flats Environmental Technology Site

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MAP ID: NW4

August 15, 1996

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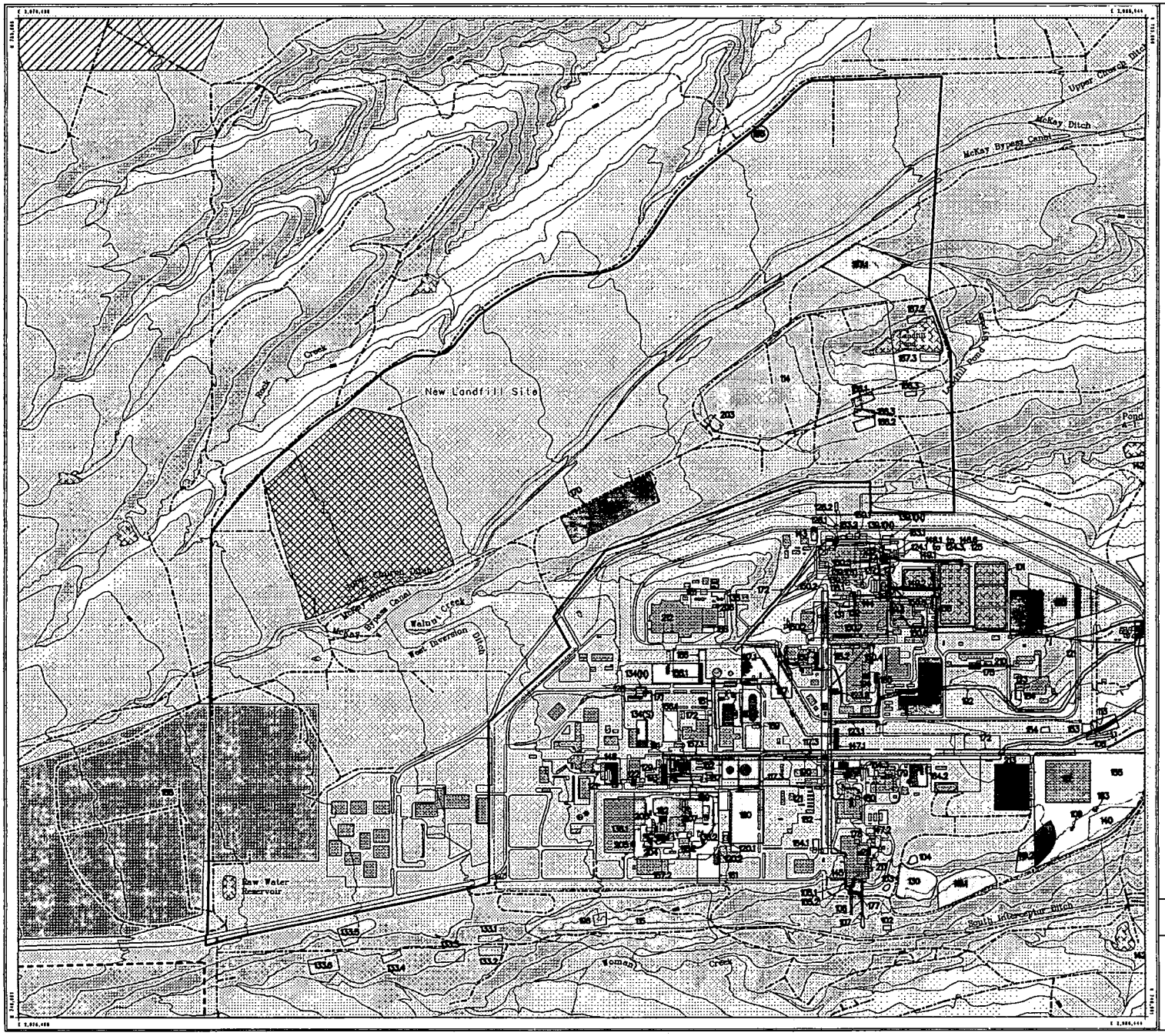

NW4 IHSS

(See IHSS Basemap for Data Source)

EXPLANATION

- Buffer Zone Quadrants
- Operable Unit 1
- Operable Unit 2
- Operable Unit 4
- Operable Unit 5
- Operable Unit 6
- Operable Unit 7
- Operable Unit 8
- Operable Unit 9
- Operable Unit 10
- Operable Unit 11
- Operable Unit 12
- Operable Unit 13
- Operable Unit 14
- Operable Unit 15
- Operable Unit 16

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

250 0 500 1000m

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
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MAP ID: NW4

August 18, 1995

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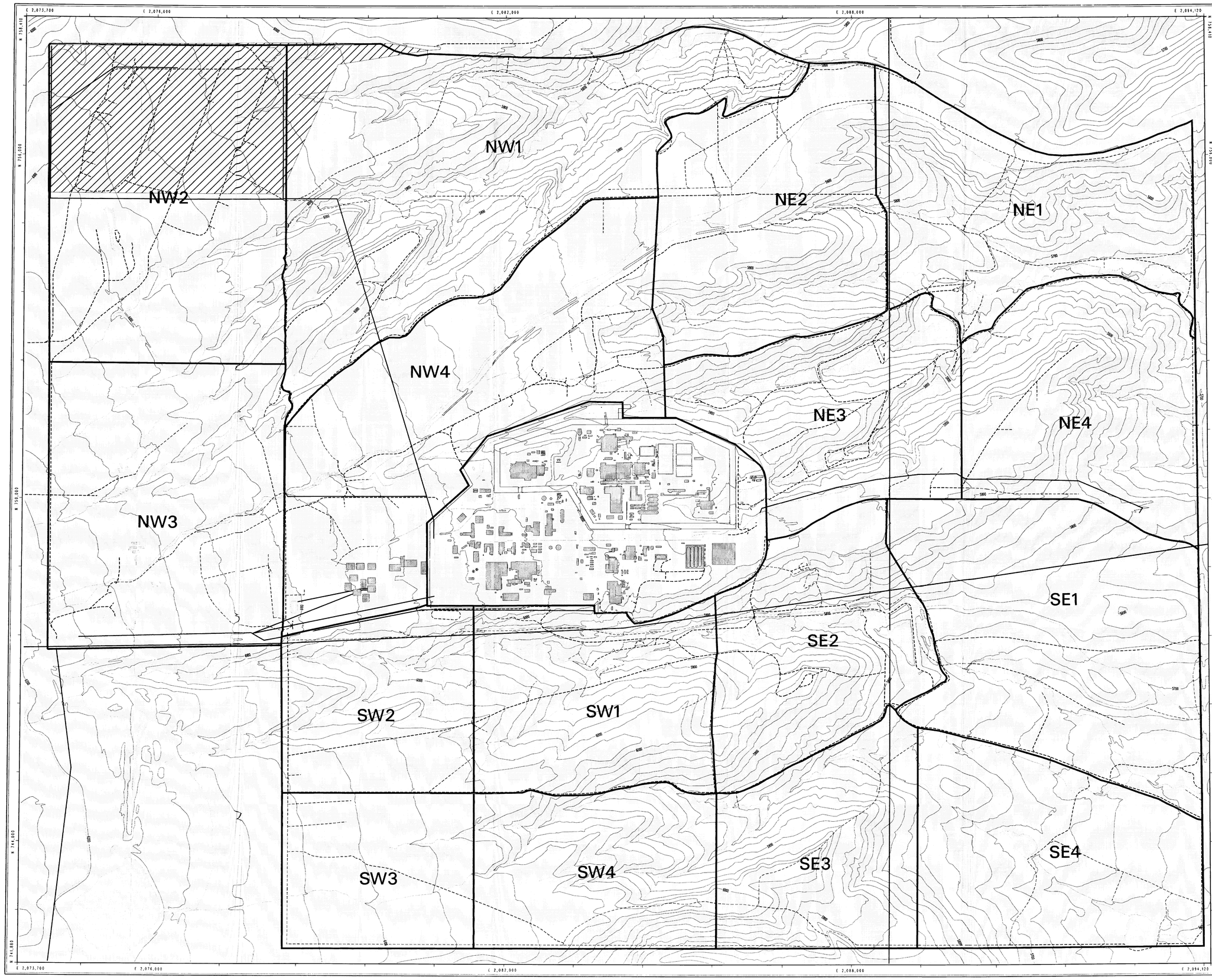

Utilities and Vechicle Access

EXPLANATION

- Below ground utilities
- Buffer Zone Quadrants
- Dirt road for general use
- Dirt road by permission only
- Dirt road closed to vehicle use
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary

DATA SOURCE:
The underground utilities information supplied by EG&G Facilities Engineering - Date Unknown.
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

Scale = 1 : 7200
1 inch represents 600 feet

500 0 1000 2000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

Rocky Mountain Remediation Services, L.L.C.
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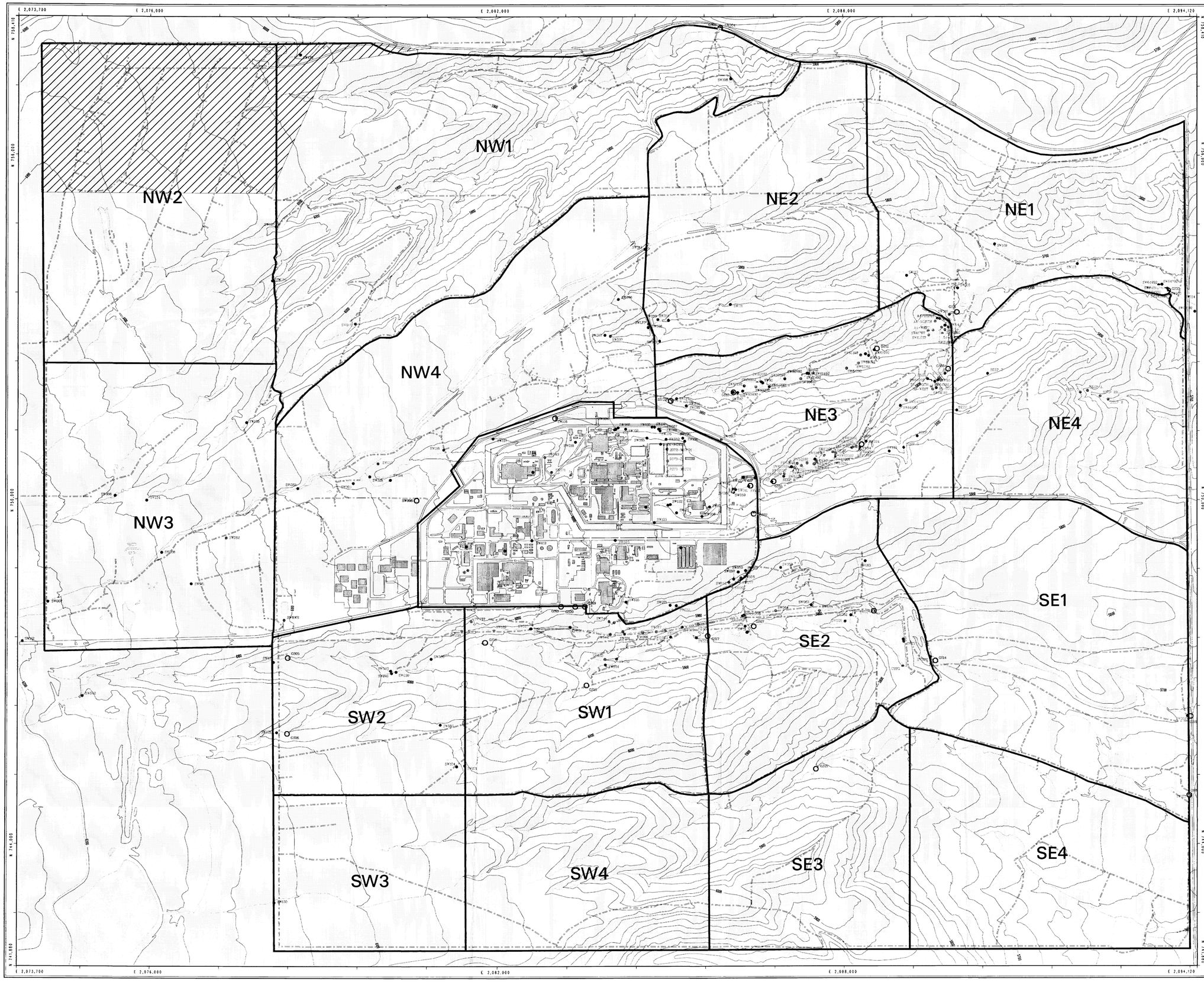
Golden, CO 80402-0464

MAP ID: UTILS-ROADS

August 15, 1995

SW-A-005226
1 OF 11



Surface Water Sampling Locations

EXPLANATION

- Surface water stations
- Routine operational sites
- NPDES/FFCA permit monitoring sites
- Gaging stations
- NPDES storm water permit sampling sites
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

Scale = 1 : 7200
1 inch represents 600 feet

500 0 1000 2000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

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Geographic Information Systems Group
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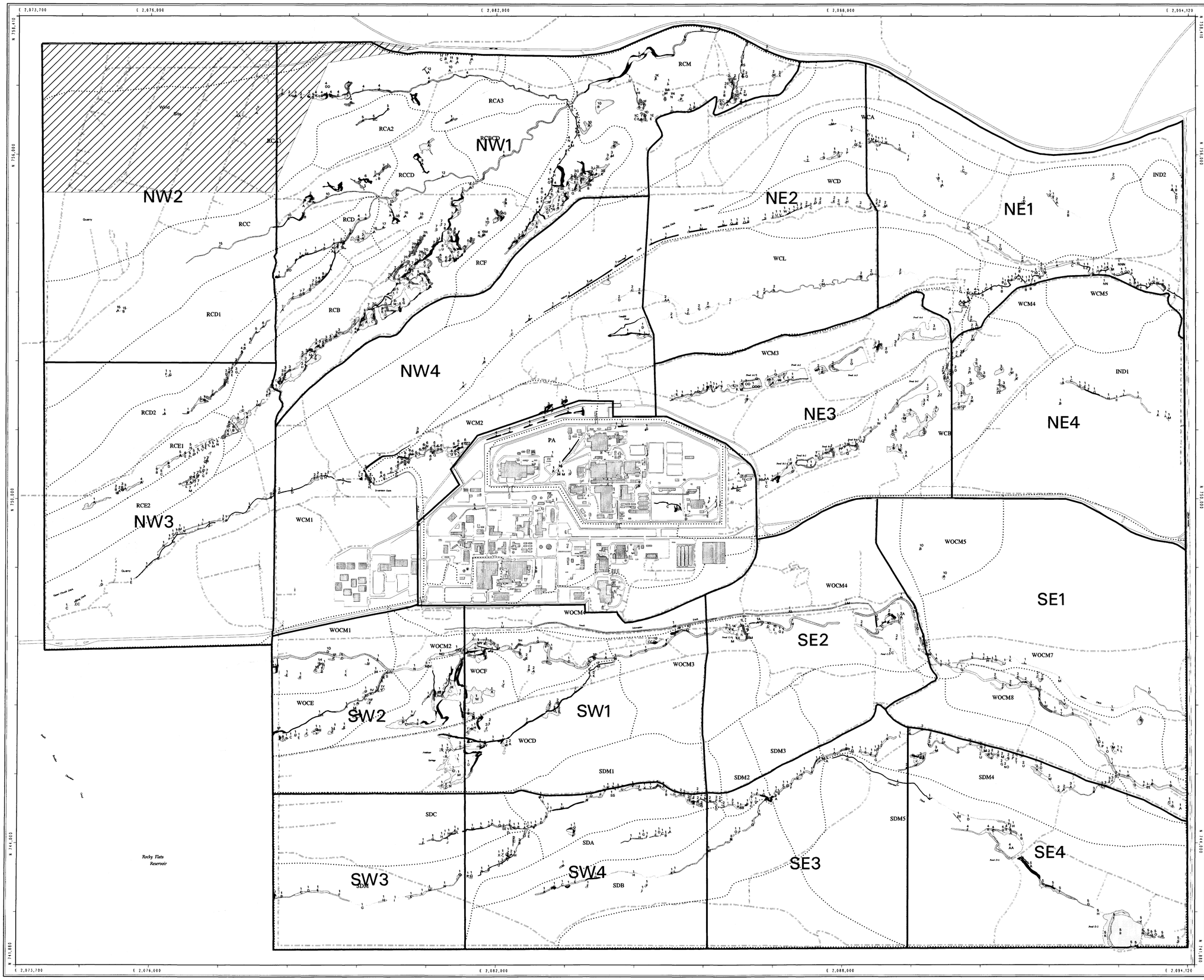
Golden, CO 80402-0464

MAP ID: SW

August 15, 1995

SW-A-002226
2 of 11



Wetlands Map

(August 20, 1995)

LEGEND

Cowardin Wetlands Classification Codes

- L1UBH (Lacustrine Limnetic, Unconsolidated Bottom, Permanently Flooded)
- PABH (Palustrine Aquatic Bed, Permanently Flooded)
- PEMA (Palustrine Emergent, Temporarily Flooded)
- PEMB (Palustrine Emergent, Saturated)
- PEMC (Palustrine Emergent, Seasonally Flooded)
- PEMF (Palustrine Emergent, Semipermanently Flooded)
- PFOA (Palustrine Forested, Temporarily Flooded)
- PFOC (Palustrine Forested, Seasonally Flooded)
- PSSA (Palustrine Scrub-Shrub, Temporarily Flooded)
- PSSC (Palustrine Scrub-Shrub, Seasonally Flooded)
- PUBF (Palustrine Unconsolidated Bottom, Semipermanently Flooded)
- PUBH (Palustrine Unconsolidated Bottom, Permanently Flooded)
- PUSC (Palustrine Unconsolidated Shore Seasonally Flooded)
- R4SBC (Riverine Intermittent, Streambed, Seasonally Flooded)
- R4SBG (Riverine Intermittent, Streambed, Intermittently Exposed)
- R4SBH (Riverine Intermittent, Streambed, Permanently Flooded)
- R4SBJ (Riverine Intermittent, Streambed, Intermittently Flooded)

NOTE--
Very small wetland features consist of points or lines. The point features represent wetlands which are less than 10' in diameter and are shown with small outlined (closed) circles. The line features represent wetlands which are less than 10' in width and are shown with lines which are not bounded by an outline.

Larger wetland features which are greater than 10' in diameter or width are shown with outlined (closed) polygons. Wetland and sub-wetland numbers are designated as 1A, 1B, 2A, etc.

Special wetland types created or modified by impoundment, excavation, ditching or riprap are shown in spreadsheets contained within the "Rocky Flats Plant Wetlands Mapping and Resource Study", December, 1994; U.S. Army Corp of Engineers.

Non-Wetland Features

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Streams, ditches, or other drainage features
- Tributary Boundaries (eg., WCB = watershed drainage)
- Fences
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:

Wetlands data surveyed, compiled, and assembled by the U.S. Army Corps of Engineers; 1994.
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

Scale = 1 : 7200
1 inch represents 600 feet

500 0 1000 2000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

Rocky Mountain Remediation Services, L.L.C.
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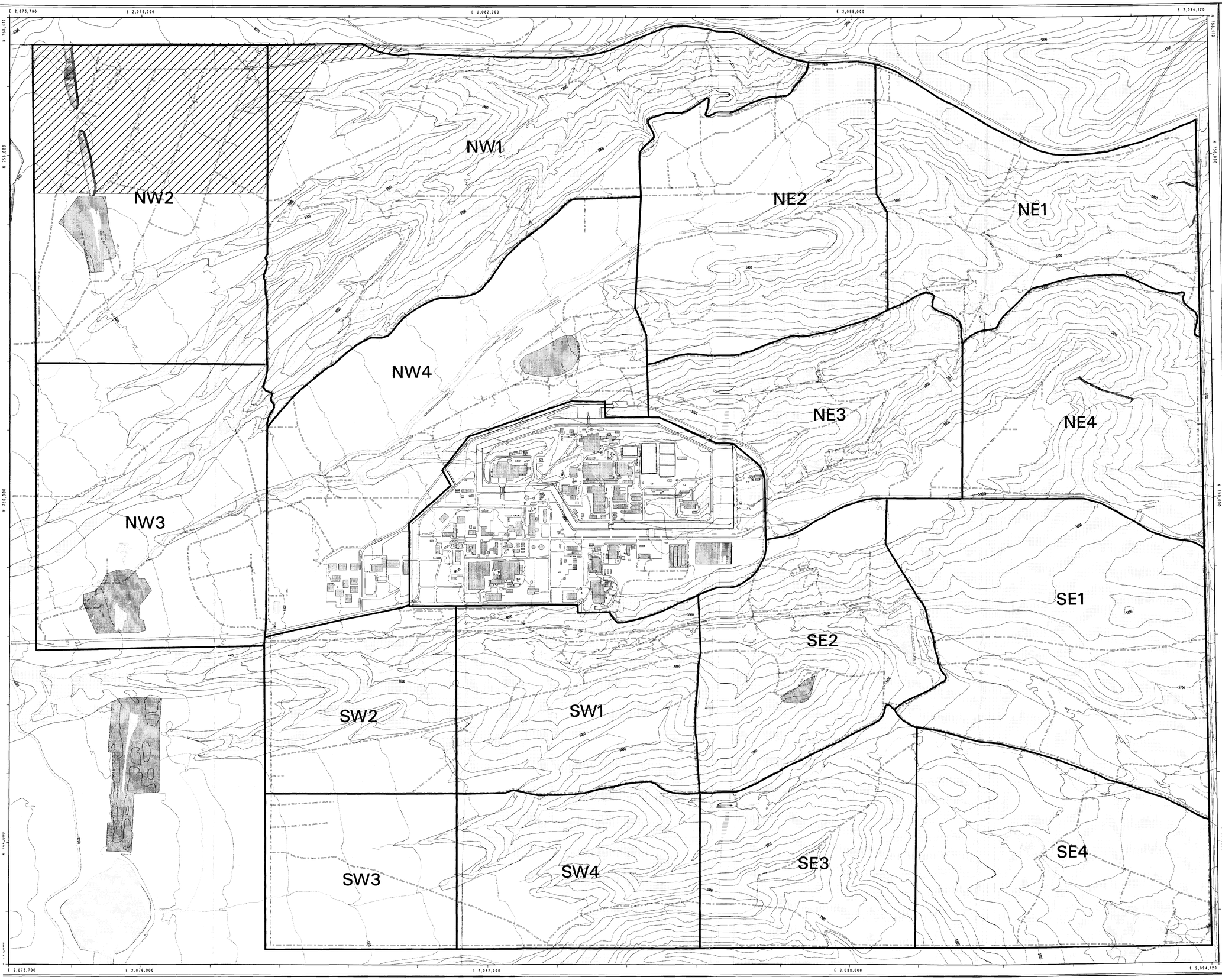
Golden, CO 80402-0464

MAP ID: WET

August 18, 1995

SW-A-002226
3 of 11



Soils Map
From Soil Conservation Service
(August 20, 1995)

EXPLANATION

- Buffer Zone Quadrants
- Argiustolls
- Paleustolls
- Haplargids
- Mollisol/Rock Outcrop complex
- Torrifluvents
- Haplustolls
- Torriorthents
- Camborthids
- Haplustolls
- Cryofluvents
- Haplaquolls
- Natrargids
- Argiborolls
- Gravel and Clay Pit
- Rock Outcrop
- DAM
- WATER
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

Scale = 1 : 7200
1 inch represents 600 feet

500 0 1000 2000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

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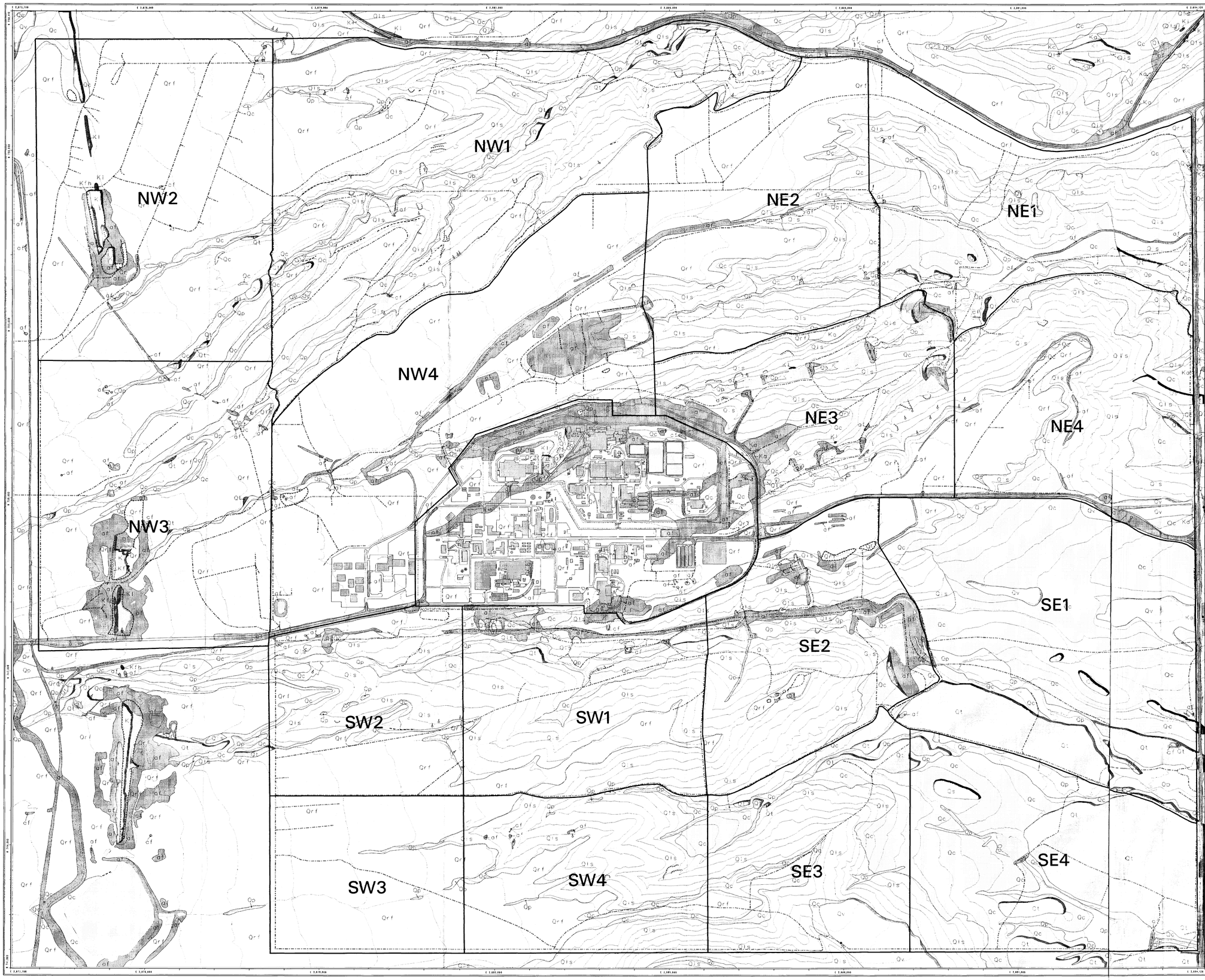
MAP ID: SED

August 18, 1995

SW-A-002226
4 of 11



Geologic Units at Rocky Flats Environmental Technology Site

Produced in co-operation with the U.S. Geological Survey

EXPLANATION

af Qp Qc Qls
Qt
Qs
Qv
Qrf
Ka
Kl
Kfh

Geologic Map Units

af - Artificial fill
Qp - Post-Piney Creek and Piney Creek Alluvium
Qt - Terrace Alluvium
Qc - Colluvium
Qls - Landslide deposits
Qs - Slocum Alluvium
Qv - Verdos Alluvium
Qrf - Rocky Flats Alluvium
Ka - Arapahoe Formation
Kl - Laramie Formation
Kfh - Fox Hills Sandstone

Shallow closed depression
Scarp of young landslide
Areas of vegetation at and near springs
Boundary of gravel and clay pit
Spring
Strike and dip of beds
Clast identification site
Capitol Mine (abandoned)
Geologic Units boundaries
Buffer Zone Quadrants
Buildings or other structures
Lakes and ponds
Streams, ditches, or other drainage features
Fences
Contours (20' Intervals)
Rocky Flats boundary
Paved roads
Dirt roads

DATA SOURCE:
Location of buildings, roads, and fences by Facilities Engr, EG&G Rocky Flats, Inc. - 1991.
Hydrology by Water Resources Division USGS - 1988 and 1989 - Lakes and ponds.
Geology by Scott A. Shroba, R.P., and Carrara, P.E. Preliminary Surficial Geologic Map of the Rocky Flats Plant and Vicinity, Jefferson and Boulder Counties, Colorado; U.S. Geological Survey Open-File Report 94-162, Scale 1:6000
Site source of topo base: see OFR 94-162 (on map).

Scale = 1 : 7200
1 inch represents 600 feet

2.5 0 5.0 10.0 Inches

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

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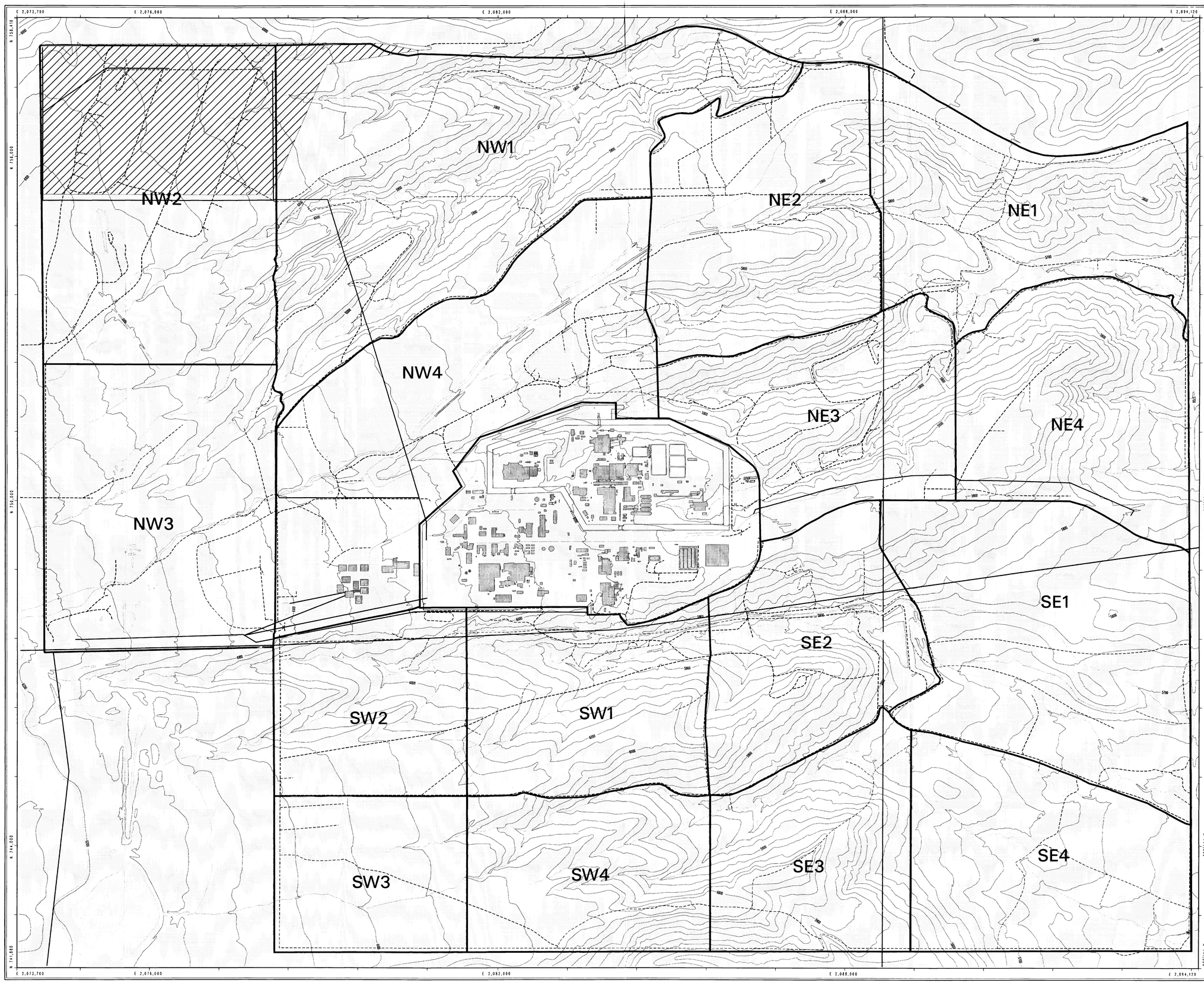
MAP ID: geo-0001
August 15, 1995

SW-A-003226
5 of 11



Utilities and Vechicle Access

EXPLANATION

- Below ground utilities
- Buffer Zone Quadrants
- Dirt road for general use
- Dirt road by permission only
- Dirt road closed to vehicle use
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary

DATA SOURCE:
The underground utilities information supplied by EG&G Facilities Engineering - Date Unknown.
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

Scale = 1 : 7200
1 inch represents 600 feet

500 0 1000 2000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

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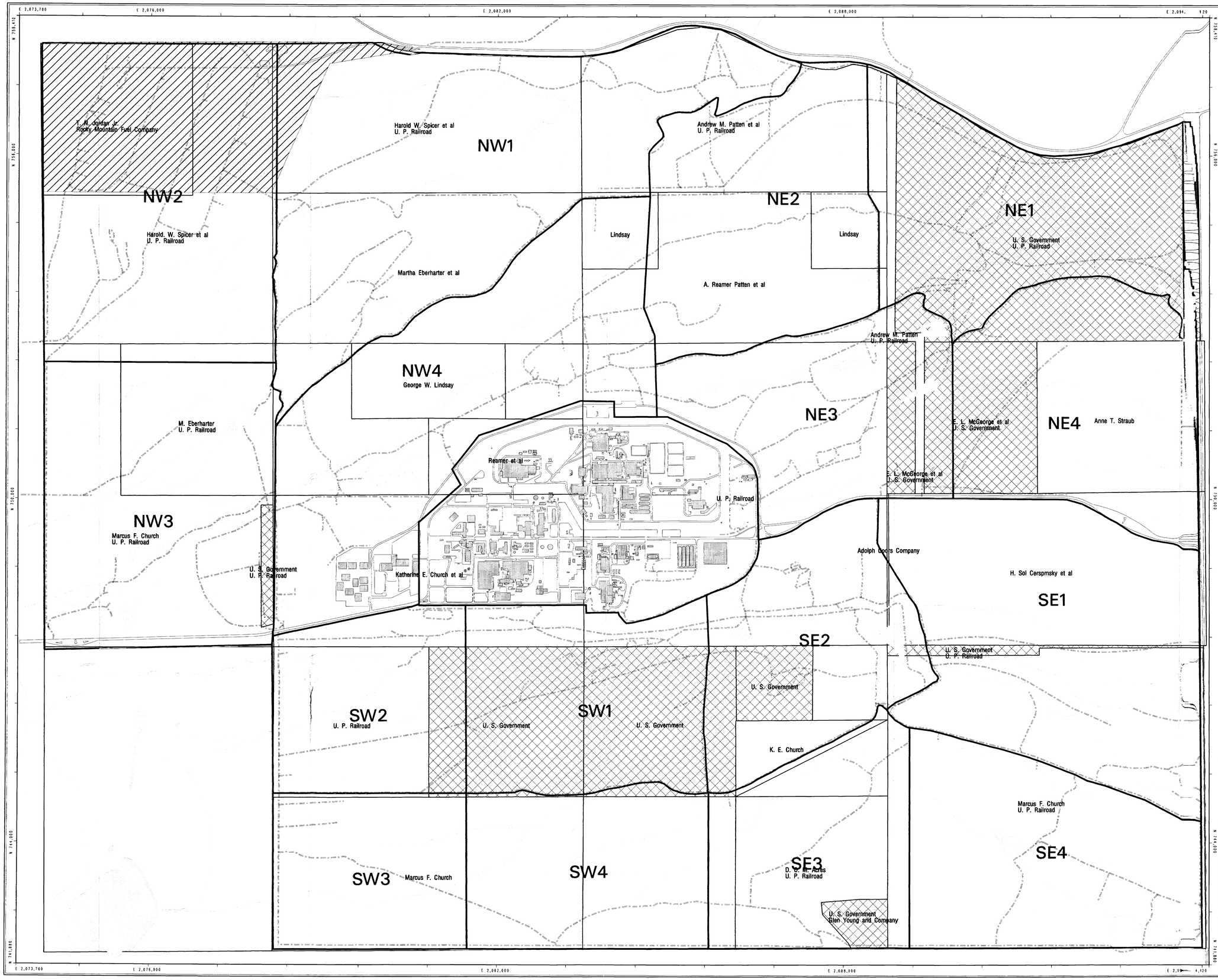
MAP ID: UTILS-ROADS

August 15, 1995

SW-A-002226
6 of 11

Mineral Rights at Rocky Flats Environmental Technology Site



EXPLANATION

- Private
- Government
- Both Government and Private
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)
Mineral Rights Provided by DOE Rocky Flats Real Estate Office.

Scale = 1 : 7200
1 inch represents 600 feet

500 0 1000 2000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

Rocky Mountain Remediation Services, L.L.C.
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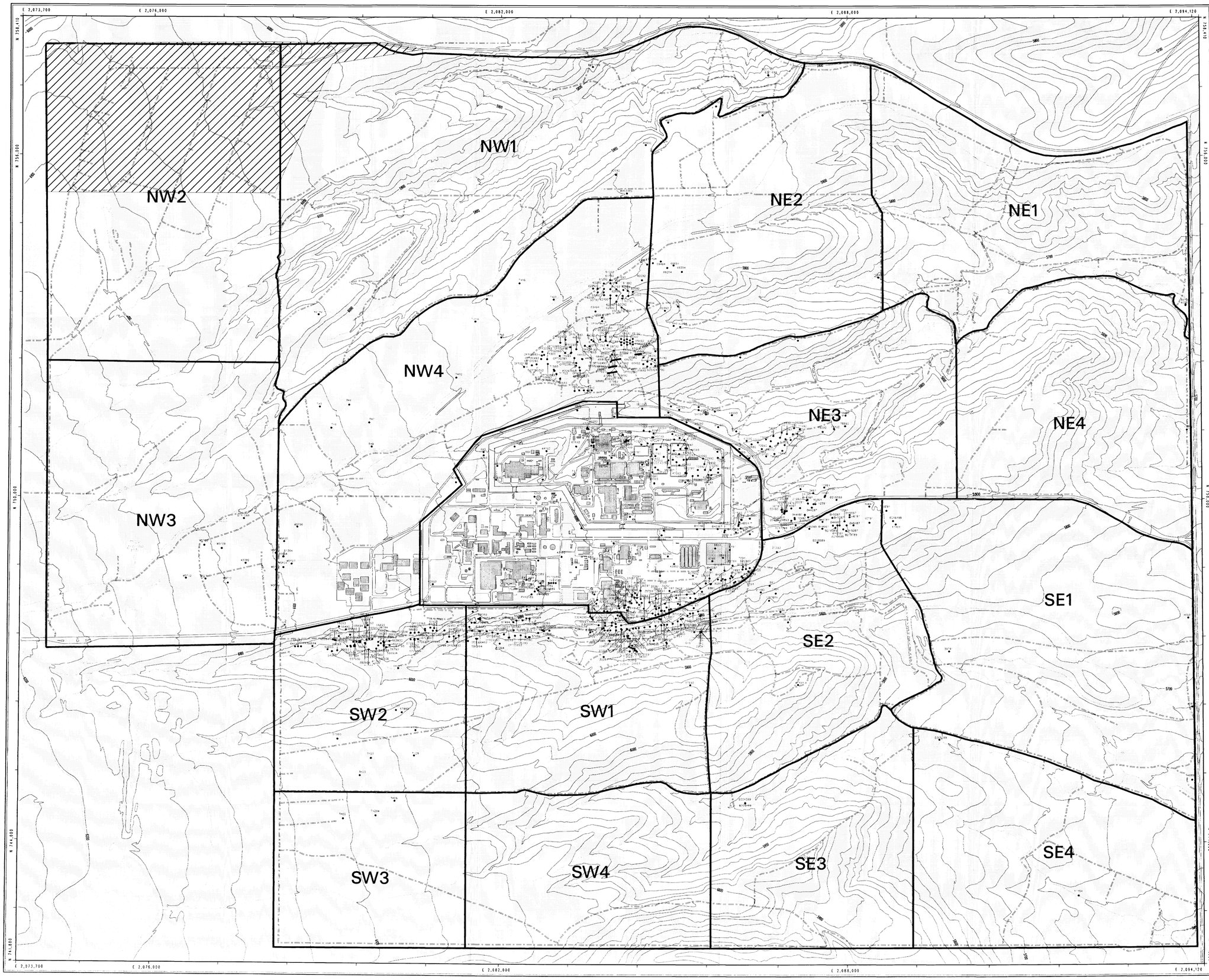
Golden, CO 80402-0464

MAP ID: MIN

August 16, 1995

SW-A-002276
7 of 11



Borehole Sample Locations

EXPLANATION

- Borehole locations
- Buffer Zone Quadrants
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)
Borehole locations from Geosciences.

Scale = 1 : 7200
1 inch represents 600 feet

500 0 1000 2000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

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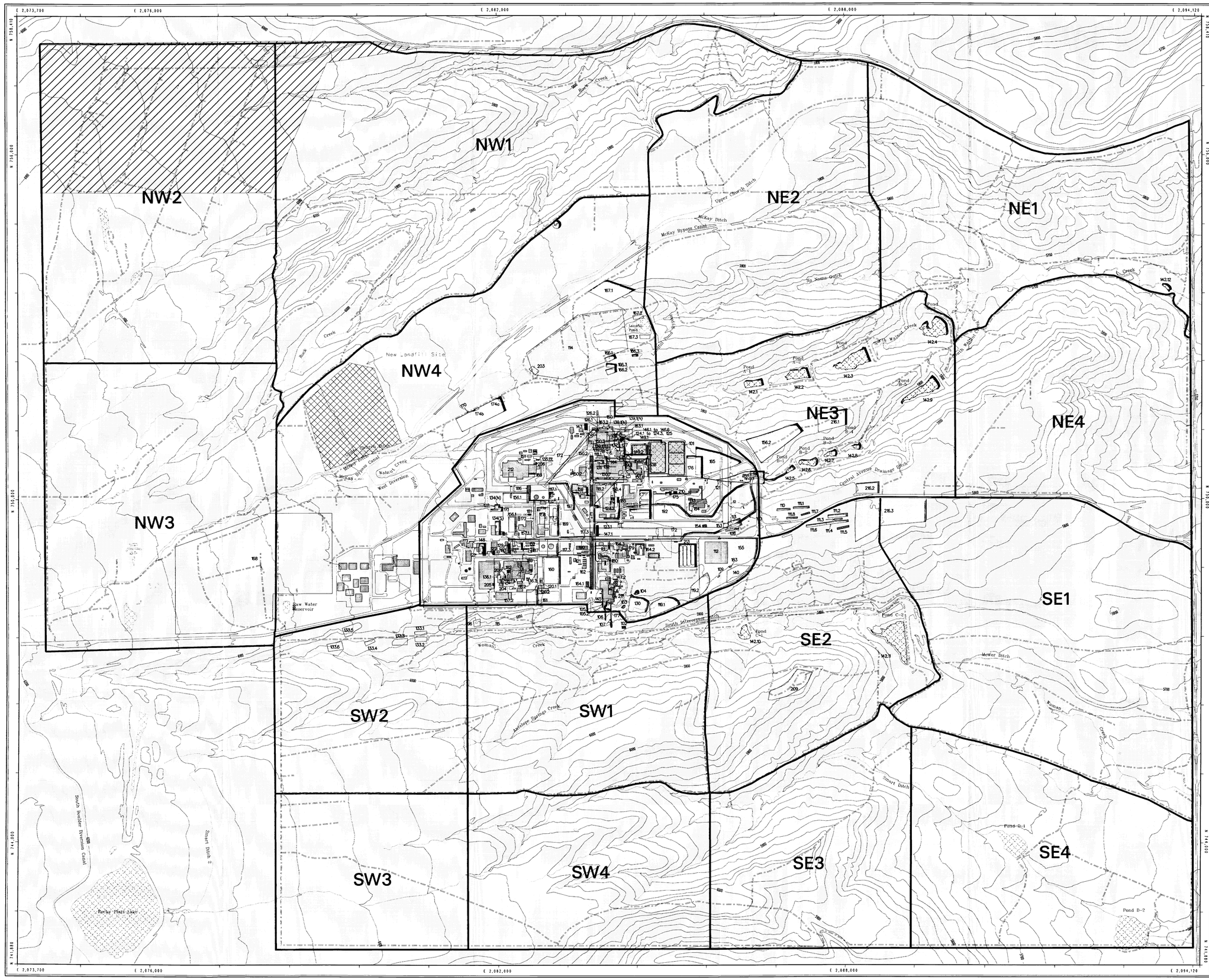
MAP ID: BH

August 15, 1995

SW-A-002226
8 of 11



Individual Hazardous Substance Sites by Operable Unit
(August 20, 1995)

EXPLANATION

- Buffer Zone Quadrants
- Operable Unit 1
- Operable Unit 2
- Operable Unit 4
- Operable Unit 5
- Operable Unit 6
- Operable Unit 7
- Operable Unit 8
- Operable Unit 9
- Operable Unit 10
- Operable Unit 11
- Operable Unit 12
- Operable Unit 13
- Operable Unit 14
- Operable Unit 15
- Operable Unit 16

- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)
Individual Hazardous Substance Sites (IHSS's) are determined by the following:
OU1 - RFRI Phase III Report
OU2, 4, 7, 11, & 15 - HRR
The remaining OU's are defined by their respective Operation Unit Workplan.

Scale = 1 : 7200
1 inch represents 600 feet

500 0 1000 2000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RMRS **Rocky Mountain Remediation Services, L.L.C.**
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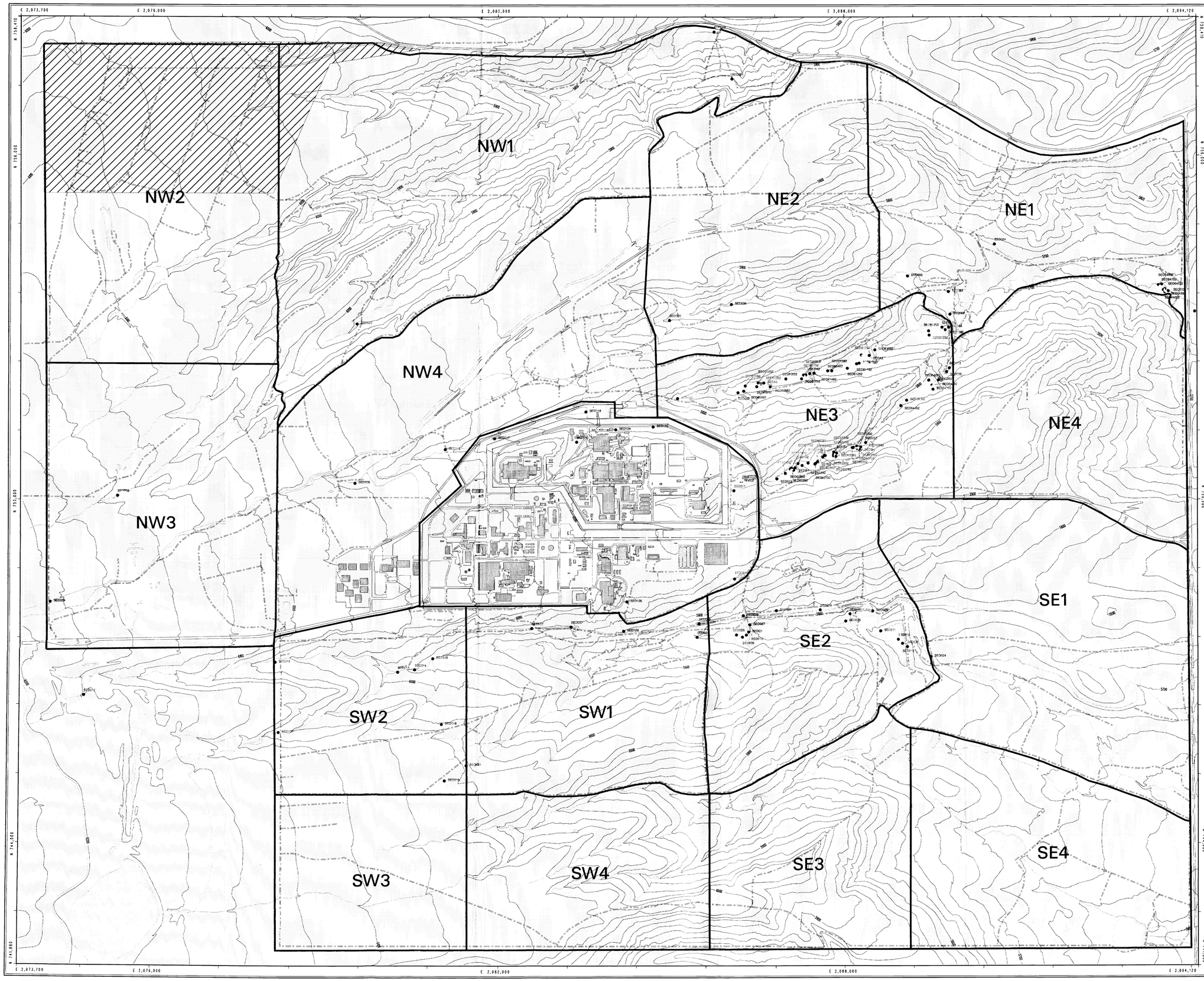
MAP ID: IHSS

August 18, 1995

SW-A-002226
9 of 11



Sediment Sampling Locations

EXPLANATION

- Sediment Sample Locations
- Buildings or other structures
- National Renewable Energy Laboratory (NREL)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Facilities Engr., EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by USGS - (date unknown)

Scale = 1 : 7200
1 inch represents 600 feet

500 0 1000 2000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

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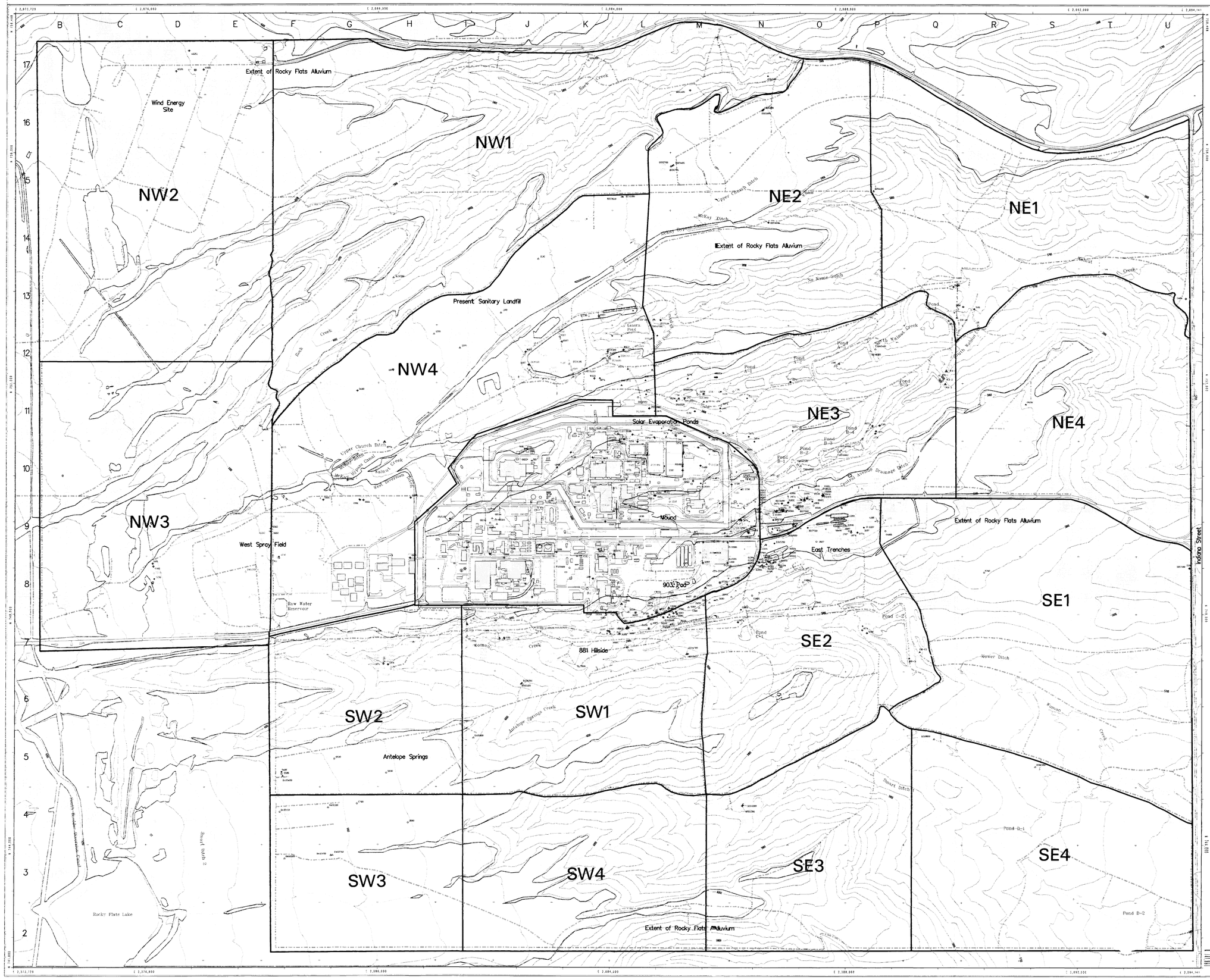
MAP ID: SED

August 15, 1995

SW-A-002226
10 of 11



Groundwater Monitoring Well Location Map

(Posted as of 12/1/94)

Plate 1

WELL TYPES

- Boundary-AIP Wells
- CERCLA Wells
- RCRA-S Wells
- RCRA-C Wells
- Non-GMP Wells
- Plant Protection Wells
- New Sanitary Landfill Wells

Groundwater Monitoring Program Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock

Inactive Groundwater Monitoring Wells

Completion Zone

- Bedrock
- Alluvium
- Alluvium/Bedrock
- Abandoned Bedrock Wells
- Abandoned Alluvium Wells
- Abandoned Alluvium/Bedrock Wells

Other

- Buildings and other structures
- Ponds and lakes
- Individual Hazardous Substance Sites
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Well locations from Geosciences spreadsheet, 12/94
Buildings, roads, and fences provided by:
Facilities Engr.,
EG&G Rocky Flats, Inc. - 1991.
Hydrology provided by:
USGS - (date unknown)

Scale = 1 : 7200
1 inch represents 600 feet

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy

Rocky Flats Environmental Technology Site

Prepared by:

Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: gw95a

August 22, 1995

SW-A-002226
11 of 11