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UNCONFINED UNDERGROUND RADIOACTIVE WASTE AND

CONTAMINATION IN THE 200 AREAS 1959

by

K. F. Baldrige
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INTRODUCTION

UNCONFINED UNDERGROUND RADIOACTIVE WASTE
AND CONTAMINATION IN THE 200 AREAS, 1959

The purpose of this report is to document the present knowledge about locations in the 200 Areas where radioactive wastes have been discharged to the ground. The primary intent is to prevent future use of these sites for other purposes, without knowledge of the existing contamination problem, not to determine whether the waste could contaminate the ground water.

In this report the Redox particle problem during 1954 has been omitted except where the concentration was sufficient to warrant posting the area as a radiation zone. Also, only those disposal sites within tank farms that were planned and scheduled have been included as the entire tank farm is now considered as having sufficient underground contamination to require monitoring for any excavating. Likewise omitted from this report is CPD Incident Number 59-1 concerning 200 West Industrial Burial Garden.

Although considerable effort was extended to supplement HW-28471, and HW-41535, dated 7-1-53 and 1-17-56 respectively, on "Unconfined Underground Waste" and to make this report complete with information now available through June, 1959, the nature of the subject and the number of different organizations involved in waste disposal allow the possibility of omitting pertinent data. The cooperation extended by other departmental personnel has been greatly appreciated and it is further requested that any one having knowledge of waste disposals which may supplement material covered in this document forward such information to the Environmental Monitoring office in the 329 Building, 300 Area.

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200 EAST AREA

216-BY CRIBS (1 through 8)

Cribs 1 through 3, located to the north of the "BY" tank farm were used for the disposal of TBP building scavenged waste from tanks 106, 107, 108, and 110-BY during the period November 1954 through June 1955. Cribs 4 and 5 were used for disposal of similar waste in September 1955. Cribs 6 and 7 were used for TBP building supernatant during November 1955. The area above the cribs is delimited by a chain fence and posted with radiation zone signs. (Sketch A, Drawing Reference 1)

216-BY CRIBS FLUSH TANK

Approximately 11,000 gallons overflowed from the flush tank during transfer of TBP building scavenged supernatant waste to crib 216-BY-5 on 9/15/55 to a location directly north of the flush tank. Most of the waste involved was removed to a site south of the 216-BY-1 crib and covered with two feet of clean soil and the contamination left near the flush tank was covered with approximately ten feet of clean soil. The exact location is not designated but is confined within an established radiation zone which is marked with a chain fence and radiation signs. (Sketch A, Drawing Reference 2)

B-C WASTE LINE DRAIN CRIB

This crib or french drain, located to the north of 241-B tank farm, has not been used to date, but will soon be used to drain and flush the waste lines to the 216-BC cribs. The disposal unit consists of a 60-inch concrete pipe buried and filled with gravel surrounded by a 30-foot by 30-foot chain fence posted with signs stating "Underground Contamination". (Sketch A, Drawing Reference 3)

241-B-3 CRIB AND TILE FIELD

Second cycle waste from 221-B has been routed since startup to tank storage in 241-B with the supernatant overflowing into the crib and tile field just north of the 110-111-112 tanks in the 241-B tank farm. In July 1951 the 5-6 cell drainage waste was also routed to this crib and tile field and continued until shutdown of the facility in 1952. The 224-B waste attendant with extensive decontamination and cleanup of the building during shutdown of the facility in 1952 were also routed to this cascade series, crib and tile field. The area is within the 241-B tank farm fence but is not further delimited. (Sketch A, Drawing Reference 4)

241-B-#1 AND #2 CRIBS

In September 1946 the 224-B wastes were routed to the 201-B settling tank. The supernatant overflowed from this tank to a two-crib cascade series just north of the 200 series tanks. In October 1948 the 224-B wastes were rerouted via the

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204, 203, 202-B cascade settling tank series but the supernatant continued going to the same cribs. The 5-6 cell drainage waste was also routed to this crib from October 1947 until August 1948 and again starting in December 1954 to date. The cribs are within the 241-B tank farm fence but are not delimited in any way. (Sketch A, Drawing Reference 5)

242-B-#1 AND #2 CRIBS

These cribs consist of 4-foot diameter steel culverts buried vertically 10 feet beneath ground level and 60 feet apart at a location just north of the 241-B tank farm. Condensate from the 242-B waste evaporator was discharged to the cribs from December 1951 until November 1954. The area is enclosed with a fence and posted with signs stating "Underground Contamination". (Sketch A, Drawing Reference 6)

216-BX TRENCHES (1, 2, 4, 5, 6, and 7)

These six trenches, located to the west of 241-BX tank farm, were used for the disposal of first cycle supernatant trenching from the 110-B, 111-BX, 112-BX, 106-BY, and 110-BY tanks during the period from February through October 1954. The waste was covered with 10 feet of clean earth and signs stating "Underground Contamination" were posted on the east and south sides only. (Sketch A, Drawing Reference 7)

216-BX-3 TRENCH

This trench, located with the other "BX" trenches near the 241-BX tank farm, was used for the disposal of first cycle evaporator bottoms from tanks 107, 108, and 109-B during the month of August 1954. The waste was covered with approximately 10 feet of clean earth and posted on the east side with a sign stating "Underground Contamination". (Sketch A, Drawing Reference 8)

216-BX-8 TRENCH

This trench, also west of 241-BX tank farm, was used during January and February 1955 for the disposal of TBP building scavenged waste from the 110-BY tank. The waste was covered with 10 feet of clean earth and posted on the south side with a sign stating "Underground Contamination". (Sketch A, Drawing Reference 9)

241-B-153 DIVERSION BOX

Contamination spread associated with work being done on the 153-B diversion box during 1954 and 1955 caused a general build-up of contamination. An area 50' x 100' is delimited by radiation tape and radiation zone signs. (Sketch A, Drawing Reference 10)

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241-B-152 DIVERSION BOX

An incident which occurred during the spring of 1954 while performing diversion box work caused an area approximately 50' square to become highly contaminated. A portion of the contaminant was removed and buried while the rest was covered with several inches of clean fill, delimited with rope and posted with radiation zone signs. (Sketch A, Drawing Reference 11)

241-B-151 DIVERSION BOX

The area around the box was contaminated as a result of diversion box work in the fall of 1951 and again in the summer of 1952. Most of the contamination was removed and that remaining was covered with approximately a foot of clean soil. The area involved is delimited with a chain fence and posted with signs stating "Underground Contamination". (Sketch A, Drawing Reference 12)

242-B TO 207-B WASTE LINE

Five leaks in the 242-B to 207-B condensate line were discovered in June 1953. Contamination levels up to 2500 c/m were measured at the points of emission of water from the ground. No determination of the activity below ground surface has been made. The area was backfilled with about two inches of clean earth but is not delimited in any manner. (Sketch A, Drawing Reference 13)

200 EAST INDUSTRIAL BURIAL GROUND #2

This burial ground, N-44400, W-53700, located between the "B" facility exclusion area and the 241-BX, BY tank farm is used for disposal of process equipment. The first trench was dug in 1947 and at the present time there are about nine trenches that have been filled with waste and covered with clean earth. Two trenches are open and currently being used. The area is enclosed with a wire fence and is posted with radiation zone signs. (Sketch A, Drawing Reference 14)

GROUND CONTAMINATION NEAR DIVERSION BOXES
241-BX-153 AND 241-BX-155

A spill which occurred during pressure testing of lines and jumpers in the 155-BX diversion box on October 6, 1955, caused the ground to become contaminated to a maximum detected dosage rate of 22.6 rads/hour at surface. The area, approximately 200' square, is designated a radiation zone by a combination of a tape and chain fence posted with radiation zone signs. (Sketch A, Drawing Reference 15)

MINOR CONSTRUCTION BURIAL GROUND #4

A burial ground, N-43850, W-49450, first used during February 1955 by construction forces, was established for the disposal of wastes removed from the 221-B

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during modifications to the building in 1955. There are two trenches running in a north-south direction, both covered with approximately 8-10 feet of clean soil. The area is delimited with a wire fence posted with radiation zone signs. (Sketch A, Drawing Reference 16)

241-B-361 CRIB AND TILE FIELD

In August 1948 the 361-B crib and tile field just north of the 361-B settling tank was completed and the 5-6 cell drainage waste from the 221-B was rerouted from the 201-B tank and cribs direct to this crib and tile field, by-passing the 361-B settling tank. In July 1951 the use of this crib was discontinued. The area is enclosed with a wire fence posted with radiation zone signs. (Sketch A, Drawing Reference 17)

241-B-361 REVERSE WELL⁽¹⁾

From startup in April 1945, the 224-B building waste and the cell drainage from the 221-B 5-6 sump were routed to the 361-B settling tank from which the supernatant overflowed into the 361-B reverse well which had been drilled to a depth of 300 feet. In September 1946 the 224-B wastes were routed elsewhere; however, the 361-B reverse well continued to receive the 5-6 cell drainage up to October 1947 at which time the presence of contamination in the ground water beneath the well was verified and the use of the well was discontinued completely. The area above ground is enclosed in a wire fence and is posted with radiation zone signs. (Sketch A, Drawing Reference 18)

GROUND CAVE-IN NEAR 241-B-361 CRIB

Leakage from the waste line while cell wash water was being jetted from the 5-9 tank in the 221-B building to the 361-B crib on 11/30/54 caused the ground to cave in near the 361-B crib. Approximately 5000 gallons of liquid were lost to the ground with the maximum surface dosage rate observed being 1.7 rads/hour over an area 30 feet square. The contamination was covered and the area delimited by a chain fence that is posted with signs stating, "Underground Contamination". (Sketch A, Drawing Reference 19)

216-ER-#1, #2, AND #3 CRIBS

These cribs are located approximately 1000 feet northwest of the 221-B building. Condensate of low-level activity from the evaporators in the 221-U and 224-U buildings has been disposed of here since November 1952. They are covered with approximately 10 feet of clean earth and are marked above ground with a wooden fence and posted with radiation zone signs. (Sketch A, Drawing Reference 20)

(1) Term designating a pipe encased drilled hole, commonly called a reverse well, or a reverse flow well, or a dry well. The lower end of the pipe is perforated to allow seepage to the ground.

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241-B-154 DIVERSION BOX

Metal waste solution was spread to the ground around this diversion box as a result of work associated with replacement of a leaky jumper in the box late in 1946. The contamination was covered with approximately a foot of clean soil and posted as a radiation zone by enclosing the area with a wire fence and attaching radiation zone signs. (Sketch A, Drawing Reference 21)

R-3 RADIATION ZONE

A leak during 1946 from an underground metal waste line south of the 221-B building resulted in the spread of an unknown quantity of activity to an area 100 feet wide by 500 feet in length. A portion of the area above the leak caved in but was subsequently backfilled with several feet of clean gravel. The area is enclosed with a wire fence and is posted with radiation zone signs. (Sketch A, Drawing Reference 22)

BURIED CONTAMINATION

Contaminated forms, a shack, and other wooden items were removed from the 291-B stack area during clean-up of the exclusion area in the fall of 1955. A trench approximately four feet deep was dug and the contaminated items were burned with the ashes being covered. Area is designated above ground by three signs stating "Underground Contamination". (Sketch A, Drawing Reference 23)

222-B DRYWELL

This well consists of a three foot diameter pipe sunk 75 feet into the ground near the northwest corner of the 222-B building. It was used to receive waste from the 222-B decontamination sink and sample "slurper" from startup of the building until the winter of 1949. The area above ground is delimited by a wooden fence but is not posted as a radiation zone. (Sketch A, Drawing Reference 24)

222-B DRY WASTE DISPOSAL VAULTS

The three vaults in this group are located approximately 200 feet south of the 222-B building. The first vault was built in 1945 and filled by 1950, at which time the second vault was constructed. This second vault was still in use in 1952 when the building was shut down. Both of these vaults have 12" square, baffled chute openings over the center and both are delimited above ground by wooden fences posted with radiation zone signs. The third vault was first used in 1954 and has a two foot metal corrugated pipe opening for packaged waste disposal. This vault is enclosed by a chain fence posted with radiation zone signs. (Sketch A, Drawing Reference 25)

222-B-#1 AND #2 CRIBS

Two cribs, cascading in series from east to west, were built in 1949 to receive

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the 222-B decontamination sink waste and the sample "slurper" wastes. Wastes from research work carried on in 292-B were also directed to these cribs. The area is enclosed above ground with a wooden fence and posted with radiation zone signs. (Sketch A, Drawing Reference 26)

241-ER-151 DIVERSION BOX

In March 1953 at least 1700 gallons of contaminated acid were lost to the ground when the catch tank developed a leak. No ground surface contamination was detected. The area is established as a radiation zone by a cyclone fence and radiation zone signs. (Sketch A, Drawing Reference 27)

C-CANYON EXCAVATION

This is a long trench located immediately north of the Hot Semi-Works exclusion area. The trench was first used for coil and condenser cooling water in June 1953 and is currently being used for the disposal of miscellaneous types of cooling water from nearly all buildings in the 201-C exclusion area. The area is enclosed with a wooden fence and posted with radiation zone signs. (Sketch A, Drawing Reference 28)

216-C-2 DRYWELL

This drywell or french drain has been used since startup of the Hot Semi-Works to collect the drainage from the stack pan and ventilation filter water seal. The area above ground is not designated in any way. (Sketch A, Drawing Reference 29)

216-C-4 CRIB

This crib, located near the leaching pit in the southwest corner of the 201-C exclusion area, has been used intermittently since July 1955 for the disposal of contaminated organic wastes from the 276-C building. The area is delimited above ground by a wooden fence and radiation zone signs. (Sketch A, Drawing Reference 30)

216-C-3 CRIB

The leaching pit, as 216-C-3 crib is called, was used from startup through March 1954 for wastes from the 201-C building. The access to the crib has since been blanked off and the crib abandoned. The area above ground is not designated in any way. (Sketch A, Drawing Reference 31)

216-C-5 CRIB

Crib 216-C-5, located near the leaching pit, has been used since March 1955 for the disposal of high salt, cold-run wastes from the 201-C building. The area is

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delimited above ground by a wooden fence and radiation zone signs. (Sketch A, Drawing Reference 32)

216-C-1 CRIB

This crib is covered with two feet of dirt and is located south of the 201-C building. Liquid wastes that are within the cribbing limits were first discharged from the Hot Semi-Works to the crib during January 1953. The area is enclosed with a wooden fence and posted with radiation zone signs. (Sketch A, Drawing Reference 33)

216-C-6 CRIB

This crib was first used for the disposal of condensate from tank #72 and floor drain wastes from the 241-CX vault during September 1955. Other than being within the 241-CX tank farm radiation zone it is not designated above ground. (Sketch A, Drawing Reference 34)

DRY WASTE BURIAL GROUND #3

This area, at N-39700, W-49450, 250' x 250' located approximately 500' east of 202-A building was used for disposal of packaged waste from the process buildings from 1945 until March 1953 at which time all open trenches were filled with approximately three feet of clean soil. A monument has been erected on the center line at the ends of all trenches and the area is enclosed with a wire fence posted with radiation zone signs. (Sketch A, Drawing Reference 35)

216-A-10 CRIB

This crib, from N-39370 W-48492 to N-39090 W-48492, starting 420' to the south of the west end of the 202-A building, is approximately 270 feet long by 48 feet wide. It is planned that this crib will be used for the disposal of process condensate from the 202-A building. The area is delimited above ground by a chain fence posted with radiation zone signs. (Sketch A, Drawing Reference 36)

216-A-5 CRIB

This crib, N-39397 W-48714, located 450' south of the 202-A building and 640' west of 291-A stack was first used in November 1955 for the disposal of process condensate from the 202-A building. The area above ground, 65' by 65', is posted as a radiation zone by a chain fence and radiation zone signs. (Sketch A, Drawing Reference 37)

216-A-2 CRIB

This crib, N-39515 W-48278, area 45' by 45' for the disposal of organic waste from the 202-A building, is situated west of the 291-A stack area and is delimited with a chain fence and posted with radiation zone signs. (Sketch A, Drawing Reference 38)

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216-A-4 CRIB

This crib, N-39515 W-48158, located 120 feet south of the 291-A stack area and near 216-A-2 crib, was first used in November 1955 for the disposal of lab, cell, and stack drainage from the Purex facilities. The area above ground, 45 feet by 45 feet is delimited with a chain fence and posted with radiation zone signs. (Sketch A, Drawing Reference 39)

216-A-6 CRIB

This crib, N-39880 W-47000, located 1000 feet east of 202-A building and outside the 200-E area perimeter fence, was first used in November 1955 for the disposal of steam condensate from the 202-A building. A wire fence, posted with radiation zone signs, delimits the area, 155 feet by 155 feet, above ground. (Sketch A, Drawing Reference 40)

216-A-3 CRIB

This crib, N-40530 W-48540, area 45 feet by 45 feet, is used for the disposal of waste from the 203 silica gel facilities in Purex. It is located 225 feet to the north of the 203-A building and is posted as a radiation zone by chain fence and radiation zone signs. (Sketch A, Drawing Reference 41)

216-A-9 CRIB

This crib, from N-41000 W-48355 to N-41320 W-48675, approximately 400 feet long by 40 feet wide, is located 400 feet northwest of Purex railroad gate and runs 450 feet northwest. It is used for the disposal of condensate from the vacuum acid fractionator in the 202-A building. The area is delimited above ground by a chain fence and posted with radiation zone signs. (Sketch A, Drawing Reference 42)

216-A-7 CRIB

Crib 216-A-7, N-41205 W-47200, located 200 feet east of 241-A-152 Diversion Box and outside the 200-E area perimeter fence, was first used in November 1955 for the disposal of sump drain wastes from the 241-A-152 diversion box. The area, 35 feet by 35 feet, above ground is delimited with a wire fence and posted with radiation zone signs. (Sketch A, Drawing Reference 43)

216-A-1 CRIB

This crib, N-41330 W-47150, located east of 200-E area was used in November - December 1955 for the disposal of cold-run waste during the startup of Purex facilities. Approximately 152 kilograms of uranium contained in 26,500 gallons of liquid were covered with ten feet of clean soil. The area, 60 feet by 60 feet, above ground is delimited by a rope fence and radiation zone signs. (Sketch A, Drawing Reference 44)

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216-A-18 CRIB

This crib, N-41860 W-47000, also referred to as 216-A-8 crib (unfinished) is located 600 feet northeast of the 241-A tank farm and outside the 200 East area perimeter fence. It was used during November - December 1955 for the disposal of cold-run wastes from the 202-A building at which time approximately 19 kilograms of uranium contained in 21,200 gallons of liquid waste were disposed of and covered with several feet of clean earth. The area, 80 feet by 80 feet, is designated a radiation zone by a rope fence posted with radiation zone signs. (Sketch A, Drawing Reference 45)

216-A-19 TRENCH

This trench, N-41900 W-46680, near the 216-A-18 crib and 950 feet northeast of 241-A-271 building was also used for the disposal of cold-run wastes from the 202-A building during November and December 1955. An open ditch approximately 40 feet by 40 feet was used to route an estimated 2460 kilograms of uranium contained in approximately 129,000 gallons of waste to this disposal site. The trench and ditch have been covered with several feet of clean earth and the ground surface above both the trench and the ditch is delimited by a rope fence and radiation zone signs. (Sketch A, Drawing Reference 46)

216-A-8 CRIB

This crib, from N-41640 W-46770 to N-41779 W-45870, first used for the disposal of 241-A condensate and cooling water during November 1955, is located 750 feet east northeast of the 241-A-271 building and outside the 200-E area perimeter fence. The crib is approximately 880 feet long by 50 feet wide and is posted a radiation zone by a chain fence and radiation zone signs. (Sketch A, Drawing Reference 47)

DIVERSION BOXES 241-C-151, 152, AND 153

The area surrounding these three diversion boxes is contaminated due to a general buildup of contamination over a long period of time caused by work in the diversion boxes. An area approximately 100 feet square was chained off and posted with "Underground Contamination" signs in the spring of 1955. (Sketch A, Drawing Reference 48)

241-CR STEAM CLEANING PIT

A pit for steam cleaning heavy equipment was dug during 1954 northeast of the 103-CR tank. The approximate center coordinates are N-42800 and W-48200. The pit has been covered but is not delimited above ground in any way other than being within the 241-C tank farm fence. (Sketch A, Drawing Reference 49)

DITCH FROM "B" RETENTION BASIN TO SWAMP

The trench and swamp have been in use since startup of "B" facility for the

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disposal of process tank jacket cooling water. Analyses of samples of water and mud from the ditch and swamp have shown only low-level activity to date. Condenser cooling water from the 244-BX metal recovery facilities was directed via the trench to the swamp on startup of this unit in March 1953. The ditch where open above ground and the swamp are posted about every 100 feet with radiation zone signs. (Sketch A, Drawing Reference 50)

UNH SPILL ON RT. 4-S

A trailer carrying 1600 gallons of UNH solution overturned on 12-30-54 spreading contamination to the roadway and the nearby ditch. The maximum dosage rate observed was 60 mrads/hour at the surface. That portion of the contaminant that could be recovered was removed and the balance was washed off the road and covered at the location indicated in sketch B. The road was resurfaced and the area posted with a sign stating "Underground Contamination". (Sketch B)

216-A-11 CRIB

This crib is a french drain, 10 inches in diameter put into service in 1955 at coordinates N-39780 and W-48503 just south of trap pit #1 on the south side of 202-A. There is no known activity as yet so there are no markings. (Sketch A-1)

216-A-12 CRIB

This french drain 10 inches in diameter went into service in 1955 just south of trap pit number 3 on the south side of 202-A at coordinates N-39780 and W-48503. With no known activity as yet no markings have been set up. (Sketch A-1)

216-A-13 CRIB

This french drain five inches in diameter and located at the SW corner of the 202-A building, coordinates N-39814 and W-49010, went into service in 1955. It receives cooling water from the 202-A air sampler vacuum pumps. There has been very little activity and it is covered with a steel cover plate only. (Sketch A-1)

216-A-14 CRIB

This crib went into service in 1955 and is located at the vacuum cleaner filter pit 40 feet south of 202-A, coordinates N-39742 and W-48551, to receive drainage from this vacuum cleaner filter pit. There is as yet no known activity and therefore no markings. (Sketch A-1)

216-A-15 CRIB

This crib located 300 feet south of 202-A and 55 feet west of A-5 and A-10 sampler pit, coordinates N-39515 and W-48656, also went into service in 1955.

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It is a french drain 4 inches in diameter and receives U - Pu and mixed fission products at low levels. No markings yet. (Sketch A-1)

216-A-16 CRIB

This drywell 4 inches in diameter located in 241-A tank farm, 25 feet NE of the 431 stack vent, coordinates N-41191 and W-47443, went into service in 1956. It receives the overflow from 216-A-17 of mixed fission products. No markings have been staked out as yet. (Sketch A-2)

216-A-17 CRIB

This drywell went into service in 1956 at coordinates N-41181 and W-47453. It is 4 inches in diameter and located in the 241-A tank farm, 11 feet NE of the stack vent building. It receives condensed vapors from the 241-A contact condenser stack vent line which are fission products. No marking yet. (Sketch A-2)

216-A-20 CRIB

This crib located outside 200 East perimeter fence, 1050 feet NE of the 241-A-271 building, coordinates N-41875 and W-46540, was in service in November - December 1955 and abandoned. It is a backfilled hole covering an area 15 feet by 15 feet and was used for Purex cold uranium startup waste. It is staked with radiation zone signs at 30 foot intervals. (Sketch A-2)

Note: Cribs A-19 and A-20 were filled from a pipe which terminated at N-4170 and W-46760 by ditching to the cribs. The A-20 crib overflowed covering an area which runs 100 feet north and 200 feet east of the cribsite. (Sketch A-2)

216-A-21 CRIB

This is a rock filled crib 10 feet by 50 feet located outside Purex exclusion area 360 feet south of 291-A stack, coordinates N-39300 and W-48160. It was used for neutralized caustic from 293-A scrubber from October 1957 to June 1958, after which it received 29-A stack drainage and 293-A sump materials. This activity was U - Pu and mixed F. P. It is staked and chained with radiation zone signs. (Sketch A-1)

216-A-22 CRIB

This french drain 14 inches in diameter and located 22 feet north of 202-A area, coordinates N-40352 and W-48550, went into service in 1955. It receives uranium from the 203-A doc area UNH tank sump drains and coil condensate. It is marked inside the 203-A with stakes, chains and radiation zone signs. (Sketch A-1)

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216-A-23 CRIB A & B

These drywells 3-1/2 inches in diameter are located 9 feet south of the 214-A-431 building at coordinates N-41147, W-47463-A and W-47473-B. They went into service in 1957 and handle mixed fission products in the form of condensed vapors from 241-A stack deentrainment tank. This is inside 241-A tank farm and marked with radiation zone signs. (Sketch A-2)

216-A-24 CRIB

This is a rock-filled crib 50 feet by 1400 feet which starts 1000 feet northwest of the 241-A-271 building. The coordinates are from N-42256, W-46920 to N-45512, W-45278. It went into service in May 1958 as a replacement for A-8 handling mixed F. P. or condensate from 241-A tank overheads plus contact condenser cooling water. It is staked with radiation zone signs at 50 foot intervals. (Sketch A-2)

216-A-25 CRIB

Another 3 inch french drain which went into service in 1959 to handle mixed F. P. from the 291-A turbine house. It is located due south of the 291-A turbine house 5 feet south of the Purex exclusion area fence at coordinates N-39550 and W-48208. There is a stake and chain around A-25; also A-2 and A-4. (Sketch A-1)

INDUSTRIAL BURIAL GARDEN #5

This garden 130 feet by 300 feet in size was in service 1954 through 1957. It is located 1800 feet south of 221-B on west side of burial garden #2. Coordinates are N-44450 and W-54050. It contains miscellaneous equipment from tank farm recovery program and some miscellaneous Purex equipment. All trenches have been backfilled. Markings are stake, chain and radiation zone signs. (Sketch A-3)

INDUSTRIAL BURIAL GARDEN #5A

This garden was completed in 1958 and covers 350 feet by 500 feet. It is located 1800 feet south of 221-B on the west side of burial garden #5 at coordinates N-44500 and W-54500. It contains Purex L-cell packages concentrator grossly contaminated with Pu and other boxes of miscellaneous cell equipment. All trenches are backfilled, marked with stake, chains and radiation zone signs. (Sketch A-3)

OVERGROUND STORAGE #9

This area, 200 feet by 350 feet, was opened in 1953. It is located 1800 feet south of 221-B on east side of burial garden #2 at coordinates N-44400 and W-53360. It was used for the above ground storage of fission product equipment which became contaminated in the uranium recovery program at the tank farms. It is marked with wire fence, stakes, rope and radiation zone signs. (Sketch A-3)

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INDUSTRIAL BURIAL GARDEN #10

This garden, 400 feet by 1450 feet, went into service in 1955. It is located 2000 feet north-northwest of 221-B at coordinates N-45200 and W-54900. This trench has been backfilled about half its length north to south and contains some 14 burial boxes of tanks, columns, tube bundles, jumpers, and other miscellaneous equipment. This is mixed F. P. and Pu. It is marked with stake, chain and radiation zone signs. (Sketch A-3)

DRY WASTE GARDEN #12

This plot 300 feet by 800 feet went into service in 1956. Located at 500 feet north of the northwest corner of the 241-C tank farm on coordinates N-43650 and W-48850, it received boxed waste from the Purex plant containing both Pu and mixed F. P. One trench has been filled, two are open. It is marked with stakes, chain and radiation zone signs. (Sketch A-3)

CONSTRUCTION BURIAL GARDEN
(No number)

Completed in 1958 it is a plot 150 feet by 500 feet located 2000 feet north of 241-C at northwest edge of the burning pit, coordinates N-45500 and W-48000. It was used to handle equipment from 293-A construction and the temporary Purex canyon ventilation barricade used for the new crane addition. It is marked with stakes, chain and radiation zone signs. (Sketch A-3)

B- SWAMP

It went into service in 1945 and is located from N-43700, W-47000 due east to N-43700, W-41000. It is used for cooling water and steam condensate from 221-B and cooling water from 202-A. It is marked with stakes and radiation zone signs at 100 foot intervals. (Sketch A-4)

A - SWAMP AND DITCH TO B - SWAMP

Opened in 1955 the location is: from N-40370, W-46550, the swamp and ditch run northeast to B - swamp at N-43000, W-44000. Both Purex chemical sewer and process cooling water have been discharged to this swamp. As of 1957 the cooling water has been discharged to Gable Mountain Swamp. It is marked with stakes and radiation zone signs. (Sketch A-4)

CHEMICAL SEWER DITCH

Opened in 1955 it extends from N-40686, W-47110 due east to the A - swamp ditch. It receives Purex chemical sewage and tail water from the acid fractionator overheads. It is marked with stake and radiation zone signs. (Sketch A-4)

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WEST DITCH TO B SWAMP

Located from N-43700, W-46900 due east to B swamp. From 1945 to 1954 this ditch carried B-plant steam condensate and cooling water. Since 1957 it has received about 50 per cent of the Purex cooling water. It is marked with stakes and radiation zone signs. (Sketch A-4)

GABLE MOUNTAIN SWAMP

Located from N-51700, W-47400 to N-53200, W-49500 it receives Purex process cooling water. It is marked with stakes and radiation zone signs. (Sketch A-4)

B SWAMP BREAKTHROUGH

Intermittant since 1945 from the end of B-swamp (dike) at N-43700, W-41000 to the east and north following the ravine to about N-45000 and W-36000. This was a natural extension of B swamp which received little liquid. Diked off in 1956 the dike broke and was repaired in 1958. It is marked with stakes and radiation zone signs to include all active areas at 100 foot intervals. (Sketch A-4)

A-8 CRIB OVERFLOW RETENTION AREA

This was an area 100 feet by 100 feet about 200 feet north of the west end of 216-A-8 crib at coordinates N-42000 and W-45900. In service from 1956 to 1958 it handled excess liquid overflow from the 216-A-8 crib in an open earth retention area. Marked with stakes and radiation zone signs at 30 foot intervals. (Sketch A-4)

UNPLANNED SOIL CONTAMINATION

PUREX 291-A STACK FALLOUT AREA

General ground contamination has built up around the 291-A stack from mixed fission product fallout. The heaviest concentrations are NW and SE of the stack within about 300 feet. The area is staked and chained off with radiation zone signs and its boundaries include 202-A building on the north, N-39250 on the south, W-48500 on the west, and W-47700 on the east. (Sketch A-1)

A-6 PROPORTIONAL SAMPLER PIT

Low level fission product contamination has seeped into the ground around the edges of the concrete pad. The contamination is from moisture which drips from the vent pipe bonnet. This pit is located 600 feet east of 202-A at coordinates N-39750, W-47340, marked with stake, chain and radiation zone signs. (Sketch A-1)

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A-8 PROPORTIONAL SAMPLER PIT

Fission product contamination has seeped into the ground around the edges of the concrete pad contaminating it on the soil surface. The contamination is from moisture dripping from the vent pipe bonnet. This pit is located 100 feet east of 241-A-271 building at coordinates N-41380, W-42340, marked with stake, chain and radiation zone signs. (Sketch A-2)

241-C TANK FARM (105-C to 108-C Overground Transfer)

About 50 gallons of Purex coating waste leaked from an overground transfer line contaminating the soil. The area about 20 feet wide and about 50 feet long is located 60 feet NE of the 105-C tank pit. Coordinates are approximately N-42900, W-48310. The remaining contaminated pipe was buried in a trench near the 241-C fence due north of original site of the contamination spread at coordinates N-43000, W-48200. The original site is marked with stake, chain and underground radiation zone signs. The trench is marked with stakes and underground radiation zone signs. (Sketch A-3)

216-A-22 SURFACE URANIUM CONTAMINATION

At the 216-A-22 crib site sufficient splashing occurred at the crib inlet to cause the ground area on top of the crib to become yellow with uranium. This area is covered over and is unmarked other than it is within the 203-A stack and chained radiation zone. Location: See 216-A-22 crib site (Sketch A-1)

RAILROAD RIGHT-OF-WAYS WITHIN 200 EAST AREA

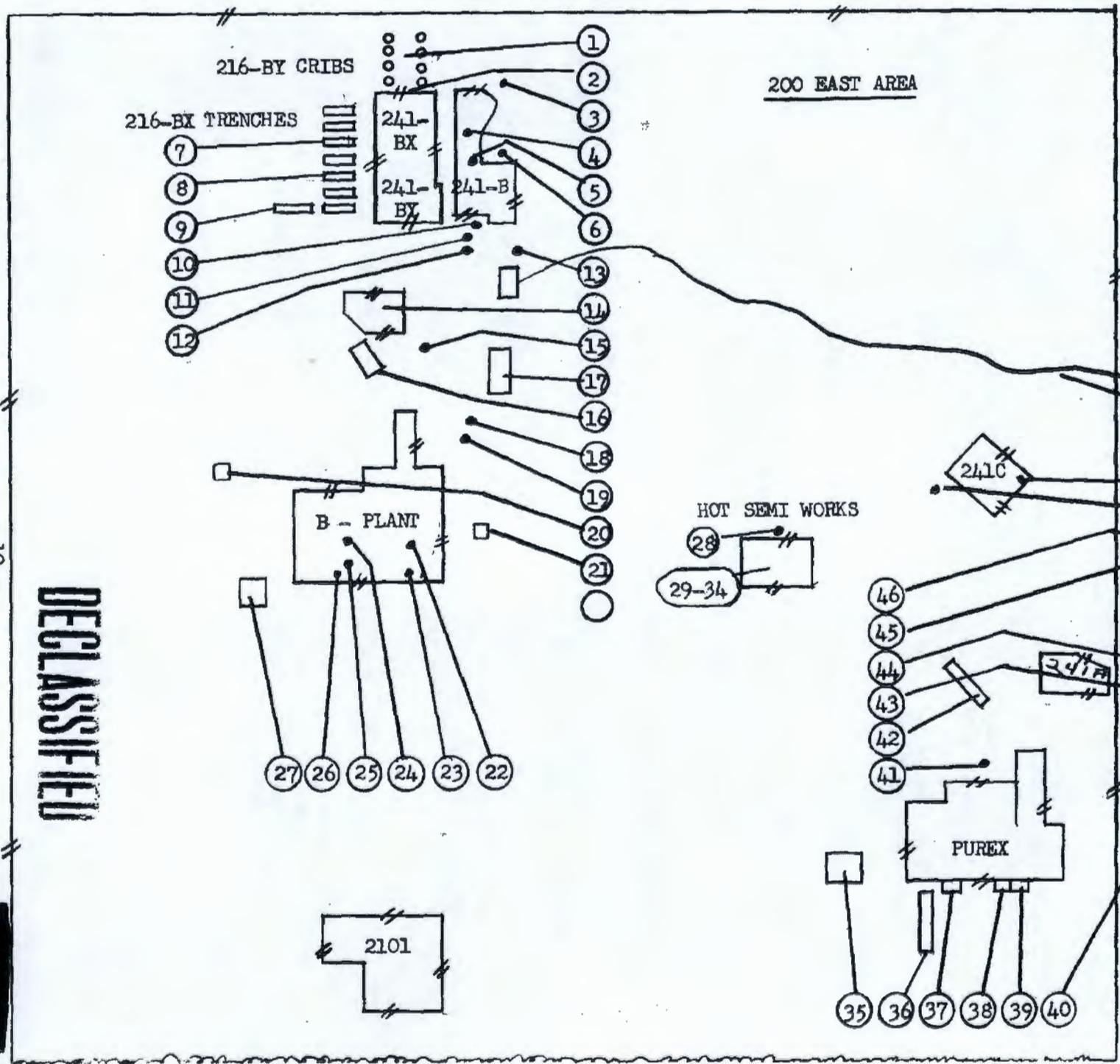
In 1957 fission product contamination spots dripped along the railroad sidings from Purex plant to the #5 burial garden. Most of the contamination was removed. This area has been marked with stakes and radiation zone signs at 100 foot intervals, 30 feet on either side of the tracks. Contaminated tracks include the line from the Purex tunnel entrance at N-40680, W-48100 to the west exclusion area fence at N-45200, W-56800; the spur into Industrial Burial Garden #5 and the "TC" spur from N-41500, W-49700 to N-40500, W-49300. (Sketch A-3)

BURIED CONTAMINATION AT THE 216-A-4 CRIB SITE

In December 1958 the 216-A-4 crib plugged and flooded an area between the A-4 crib site and 291-A stack contaminating the ground at surface. The contaminated soil was removed to a trench along the south boundary of the A-4 crib from W-48127 to W-48207 along N-39447 and covered with a foot of soil. (Sketch A-1)

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200 EAST AREA



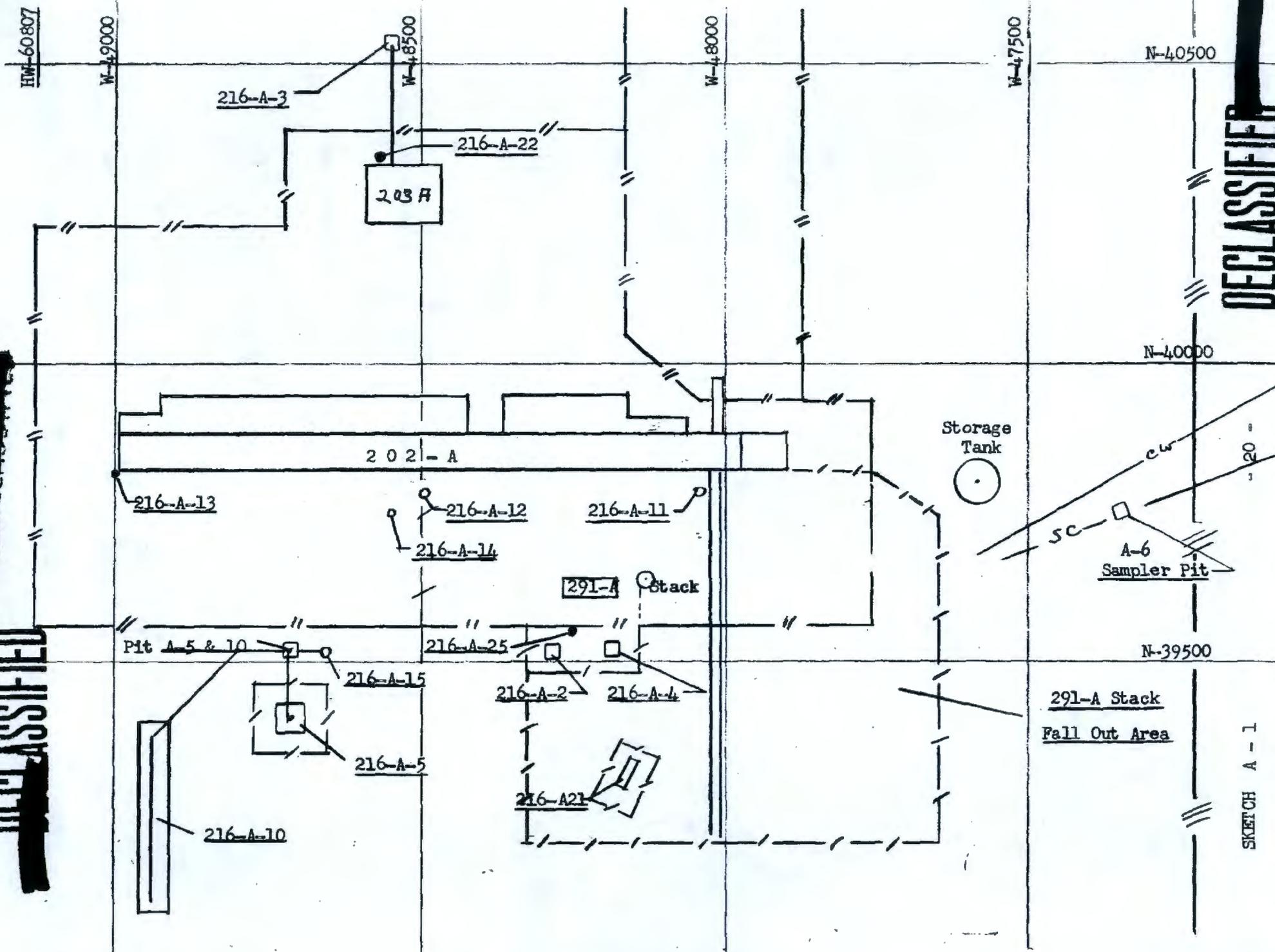
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SKETCH "A"

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SKETCH A - 1

N-425000

47500-W

47000-W

46500-W

HW-60807

N-42000

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200 EAST AREA



216-A-19

216-A-19

216-A-24

A-8 Overflow

SKETCH A - 2

A-20 Overflow

216-A-20

216-A-8

- 21 -

N-41500

Compressor Bldg.

241-A-271

241-A Tank Farm

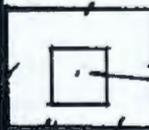
216-A-16

216-A-17

241-A-431

216-A-23 B

216-A-23 A



216-A-1

216-A-7

N-41000

W-46000

DECLASSIFIED

W-57000

W-55000

W-53000

W-51000

W-49000

W-47000

W-45000

N-47000

N-45000

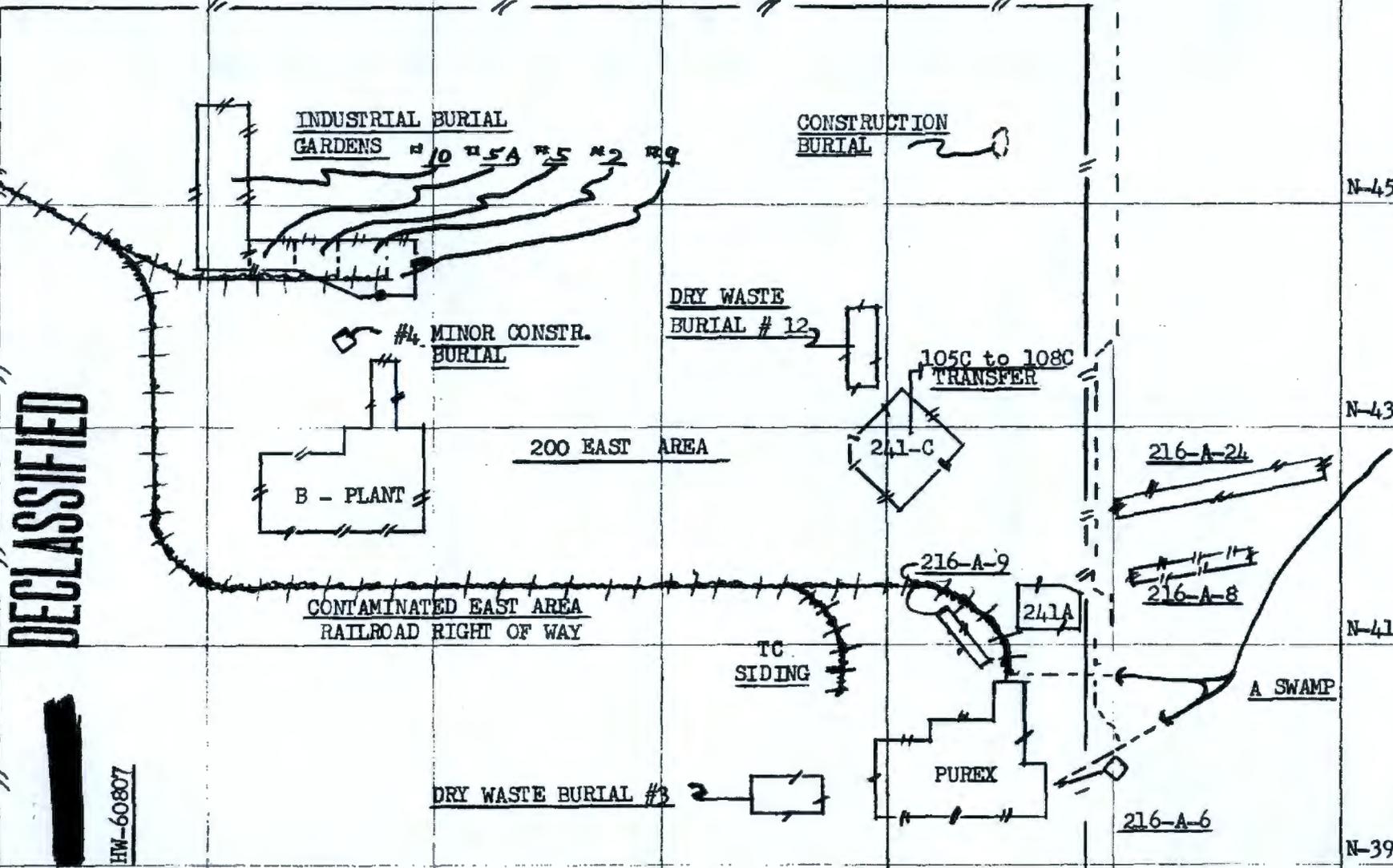
N-43000

N-41000

N-39000

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SKETCH A - 3



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SCALE 3/4" = 1000'

UNCLASSIFIED

HW-6080

N-60000

W-50000

W-45000

W-40000

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N-55000

GABLE MOUNTAIN SWAMP

N-50000

GOLD CREEK ROAD

N-45000

200 East Area

B Swamp

B Swamp Breakthrough

N-40000

CS

A Swamp

NOMENCLATURE
CS-Chemical Sewer

CW

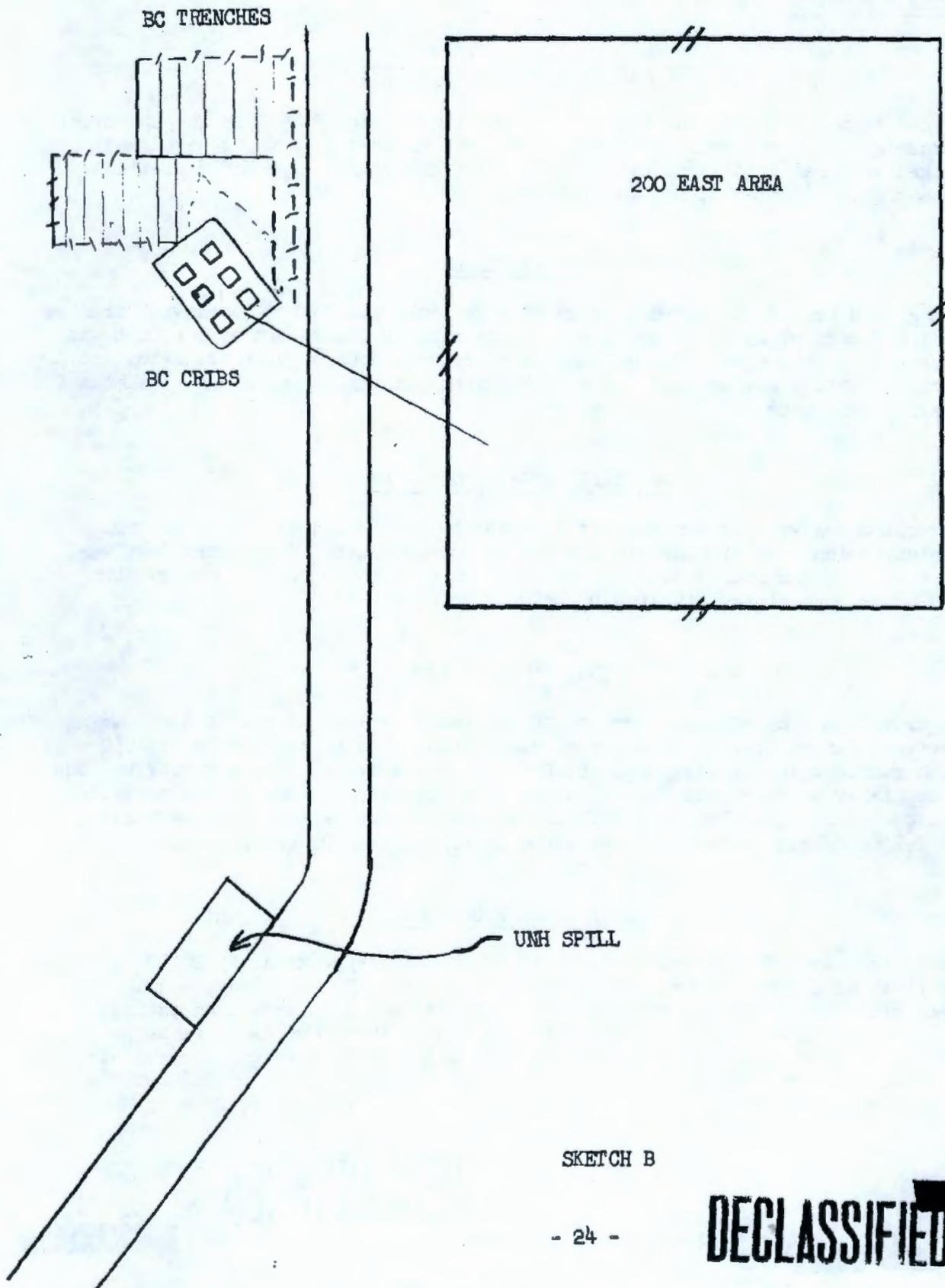
CW-Cooling Water

Scale 1" = 2500'

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SKETCH B

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200 WEST AREA

REDOX EXCLUSION AREA

LEAK FROM UNH PROCESS LINE

A leak from a process line occurred during the summer of 1954 in the northwest corner of the Redox exclusion area. The contaminated area was covered and marked as a radiation zone by use of magenta and yellow tape and radiation zone signs. (Sketch D, Drawing Reference 1)

203-S TANKS

The ground around the 203-S uranium storage tanks was contaminated with uranium in the summer of 1952. A maximum counting rate of 10,000 c/m at one inch was observed in this area. The contaminated area was covered with black-top and enclosed with a wooden rail fence posted with radiation zone signs. (Sketch D, Drawing Reference 2)

240-S-151 DIVERSION BOX AREA

Diversion box work in January and February 1953 resulted in extensive ground contamination. An area around the box of approximately 1000 square feet was covered with six inches of clean gravel. This is roped off and posted with radiation zone signs. (Sketch D, Drawing Reference 3)

REDOX PARTICLE FIELD

An area including the east portion of the Redox exclusion area, and extending eastward for several hundred yards, was contaminated in the spring of 1952 with radioactive particles emitted from the Redox stack. The activity was due essentially to Ru¹⁰³ and Ru¹⁰⁶. Gross beta activity of some of the particles approached 0.1 μ c. The area with the highest concentration of these particles is delimited and posted as a radiation zone. (Sketch D, Drawing Reference 4)

REDOX STACK FLUSH TRENCH

Early in July 1954 the Redox stack was flushed and approximately 20,000 gallons of flush water was drained into a pit 20 feet wide, 90 feet long, and 10 feet deep situated in the northeast corner of Redox exclusion area. An estimated five curies of beta particle emitters and two to three curies of gamma particle emitters, predominantly Ru and Zr-Nb, were disposed of here and covered with several feet of clean soil. The area is not indicated above ground but the approximate coordinates are: N-34965 and W-73384. (Sketch D, Drawing Reference 5)

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REDOX EXCLUSION AREA (Continued)

216-SL CRIBS

These cribs have been in use since early 1952 receiving laboratory waste of low activity from the 222-S building. They are located approximately ten feet underground and have a filtered vent above the ground. They are enclosed with a single rail wooden fence which is posted with radiation zone signs. (Sketch D, Drawing Reference 6)

222-S DRY WASTE DISPOSAL VAULT

This vault has been in use since early 1952 receiving dry packaged waste from the 222-S laboratory. The vault is a steel tank approximately twelve feet in diameter, fourteen feet high and is buried with its top about six feet below ground level. The area above ground is delimited by a chain fence and is posted with radiation zone signs. (Sketch D, Drawing Reference 7)

221-T EXCLUSION AREA

222-T CRIBS #1 AND #2

Two standard type cribs cascading in series were built in spring of 1950 to receive waste from the 222-T building previously sent to the 222-T drywell. These cribs are located approximately 500 feet east of 222-T. The area is delimited above ground by a wooden rail fence and is posted with radiation zone signs. (Sketch E, Drawing Reference 1)

222-T DRY WASTE DISPOSAL VAULTS

This disposal group consists of three vaults receiving dry packaged waste from the 222-T building. The first one built in 1944 and the second one built in 1949 are of wooden construction 10 feet wide by 12 feet long by 10 feet deep and covered with about six feet of clean earth. The third vault built in 1950 is approximately 10 feet in diameter and 30 feet deep. It was constructed of concrete rings and is the only one of the three vaults still in use. All three vaults are located in a north-south line 200 feet east of the 222-T building. The area is marked as a radiation zone by a wooden rail fence and radiation zone signs. (Sketch E, Drawing Reference 2)

221-T PLANT GROUNDS

January 3, 1956, approximately 2,000 gallons of liquid waste was spilled on the ground on the southeast side of the 221-T building between the 154-TX diversion box and the 302 catch tank. Initial spill involved about 1,500 square feet but after backfilling with clean dirt approximately 4,000 square feet around the 221-T building was affected. This area was sprayed with tar and identified with radiation zone stake and signs. (Sketch I)

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221-T EXCLUSION AREA (Continued)

222-T DRY WELL

This well consists of a three-inch diameter pipe sunk approximately 75 feet in the ground. The bottom 20 feet of the pipe is perforated to allow liquid waste to seep out into the soil. The well is located approximately 12 feet south and three feet west of the northwest corner of the 222-T building. It was used to receive waste from the 222-T decontamination sink and sample "slurper" from start-up until the spring of 1950, after which time the wastes were routed to the 222-T cribs. The area is enclosed in a wooden rail fence and is posted with radiation zone signs. (Sketch E, Drawing Reference 3)

R-19 RADIATION ZONE

A leak in an underground metal waste line at the southeast corner of the 221-T building in the spring of 1947 resulted in the spread of an unknown amount of activity to the ground. A maximum dose rate of 20 r/hour at two inches was detected. The area was subsequently covered with several feet of gravel and was enclosed with a wire fence posted with radiation zone signs. (Sketch E, Drawing Reference 4)

GROUND CONTAMINATION - 241-TX-154 DIVERSION BOX

A cave-in of the ground occurred early in July 1953 over a process line near the 241-TX diversion box causing an extended area on both sides of the road between 221-T and 222-T buildings to become contaminated and was reported as a dose rate of 25 rads/hour at eight inches. This area has been covered with blacktop and posted with underground contamination signs. (Sketch E, Drawing Reference 5)

291-T SAND FILTER SEWER

The 291-T sand filter inlet trenches drain to a french drain pipe extending into the ground at the north corner of the sand filter. Any moisture condensed from the canyon air on the filter bed will escape to the ground at this location. The amount and activity are both very low. (Sketch E, Drawing Reference 6)

"T" FACILITY RAILROAD CUT

Contamination from cask cars and equipment being hauled to the burial ground was spread to the ground along the railroad on several occasions during 1949. In the spring of 1950 the contamination was covered with about ten inches of clean gravel. This area is within an established radiation zone. (Sketch E, Drawing Reference 7)

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221-U EXCLUSION AREA

BURIED CONTAMINATED SOIL

Contamination caused by a leak from 224-U during March 1954 was spread to an area southeast of the 224-U building. This contamination was buried in a trench approximately 10 feet wide by 50 feet long and covered with three feet of clean soil. The area is now covered by the 224-UA addition. (Sketch F, Drawing Reference 1)

222-U DRY WELL

This well consists of a pipe sunk approximately 75 feet in the ground. The bottom 20 feet of the pipe is perforated to allow liquid waste to seep out into the soil. The well is located approximately 12 feet south and three feet west of the southwest corner of 222-U. It was first used to receive liquid wastes from the 222-U laboratory in the spring of 1947. Both plutonium and fission product wastes from the decontamination hoods used in the laboratory drain into this unit. The pipe has been sealed off above ground level but is not posted as a radiation zone. (Sketch F, Drawing Reference 2)

221-U VESSEL VENT BLOWER PIT FRENCH DRAIN

In June 1953 an estimated 380 pounds of uranium (UNH solution) overflowed into the 221-U building vessel vent blower pit and then to ground through the french drain. This is in an established radiation zone. (Sketch F, Drawing Reference 3)

"U" FACILITY UNIRRADIATED URANIUM WASTE TRENCHES

Approximately 1.19×10^6 gallons of liquid containing about 16,000 pounds of test run unirradiated uranium were discharged to these trenches following start-up of the facility in 1952. Coordinates of the center lines of the trenches are N-39042, W-73038, N-39018, and W-72940. The trenches have been backfilled and the area is delimited by a rope fence posted with underground radiation signs. (Sketch F, Drawing Reference 4)

221-U BUILDING - WEST END

Reclaimed acid spilled onto the ground at the west end of the 221-U building in March 1957 contaminating an area 65 feet by 90 feet. Several such spills have each been covered with a three-inch backfill of sand and gravel with the entire contaminated area barricaded with posts and chains. Radiation zone signs and underground waste signs are posted. (Sketch F, Drawing Reference 7)

224-U BUILDING - EAST END

A leaking flange of the C-5 condensate line from the 224-U building in March 1955 caused ground contamination three feet square located 90 feet east of the 224-U

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221-U EXCLUSION AREA (Continued)

building. The top four inches of contaminated dirt was removed and new dirt filled in. An area 10 by 15 feet is roped off with radiation signs posted. (Sketch F, Drawing Reference 6)

"Z" FACILITIES

234-5 #3 AND #4 CRIBS

During the summer of 1952 these two cribs were constructed and tied in series to the line from the 234-5 building to the tile field. These cribs are located approximately 100 feet east of #1 and #2 cribs and are included within the posted cyclone fence. (Sketch C, Drawing Reference 1)

234-5 #1 AND #2 CRIBS AND TILE FIELD

This disposal unit is located approximately 200 yards south of the 234-5 retention basin and receives low-level activity from the 234-5 building. All wastes from the 234-5 building were discharged to this unit from start-up in June 1949 until the summer of 1952 when the #3 and #4 cribs were added to this series. (Sketch C, Drawing Reference 2)

234-5 DRYWELLS #1, #2, AND #3

Dry well #1, located approximately 50 feet northeast of the 234-5 stack, receives potentially contaminated liquid wastes from the 234-5 tunnel drain sump. Dry well #2, located about 50 feet northwest of the 234-5 stack and dry well #3, located about 150 feet directly north of well #2, receive the 234-5 evaporator condenser water. These drywells are not marked above ground as radiation zones. (Sketch C, Drawing Reference 3)

WASTE BOX FIRE SOUTH OF 234-5 BUILDING

Plutonium contamination up to 10,000 d/m was caused by a fire in a waste box in June 1953. Approximately 300 square feet of ground contamination south of the 234-5 building has been covered with blacktop and posted with a sign reading "DANGER - DO NOT EXCAVATE IN THIS AREA WITHOUT SWP PERMISSION." (Sketch C, Drawing Reference 4)

231-W REVERSE WELL

This disposal unit consists of a six-inch diameter pipe encased hole sunk to a depth of 150 feet. It is located approximately 130 feet east of the 231 building and was in use for only a few months, February to June of 1945, receiving liquid

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"Z" FACILITIES (Continued)

waste from the 231 building when it became plugged with sludge. Approximately 50 grams of plutonium associated with about 260,000 gallons of liquid were released to the unit during this period. The area is designated a radiation zone by a wooden fence and radiation zone signs. (Sketch C, Drawing Reference 5)

231-W, #1 AND #2 CRIBS

This disposal unit, consisting of two cribs each 12' x 12' x 4' deep, is located approximately 160 feet northeast of the 231 building. It was put into service in June 1945 and received approximately 340 grams of plutonium associated with 7.1×10^6 gallons of wastes before it was sealed with sludge in February 1947. The area is delimited by a wooden barricade and radiation zone signs. (Sketch C, Drawing Reference 6)

200 WEST AREA GENERAL

REDOX SWAMP

This area, located about 3000 yards southwest of the 202-S building, was used for the disposal of tank cooling water. Several leaks in process tank cooling coils resulted in the release of considerable contamination to this area prior to April 1954 at which time the swamp area was abandoned and covered with clean earth. The area is posted above ground with signs stating "Underground Contamination." (Sketch G, Drawing Reference 1)

CHEMICAL SEWER TRENCHES

These two trenches are located outside and to the southwest of the 200 West area. They were first used in the spring of 1954 for the disposal of process vessel cooling water from the 202-S building. During May of 1954 one of the trenches was contaminated to a maximum observed dose rate of 800 mrad/hour. The other trench is currently being used. Both are posted with "Underground Contamination" signs. (Sketch G, Drawing Reference 2)

BURIED CONTAMINATED HEXONE

Approximately 20,000 gallons of hexone contaminated with only trace quantities of unirradiated uranium used in the initial tests of Redox was buried about 350 feet southeast of the Redox sanitary tile field in January 1952. The waste was buried in a trench eight feet by 100 feet and covered with six feet of clean earth. The area is delimited above ground with a wooden fence, posted with radiation zone and "Do Not Excavate" signs. (Sketch G, Drawing Reference 3)

DITCH - "U" SWAMP TO "S" SWAMP

This ditch became contaminated in September 1953, and was covered in the spring

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200 WEST AREA GENERAL (Continued)

of 1954 with two feet of clean soil. It has been designated a radiation zone by "Underground Contamination" signs posted at intervals on both sides of the ditch. (Sketch G, Drawing Reference 4)

216-S-5 CRIB

This crib is located outside of and to the southwest of the 200 West area and has been used since March 1954 for disposal of the 202-S process vessel cooling water and heating condensate water. The area is delimited above ground by a chain fence and "Underground Contamination" signs. (Sketch G, Drawing Reference 5)

216-S-6 CRIB

This crib is located a short distance to the southeast of 216-S-5 crib and has been used for disposal of 202-S process vessel cooling water and heating condensate water since November 1954. (Sketch G, Drawing Reference 6)

OPEN DITCH TO CHEMICAL SEWER TRENCHES

This ditch is exposed from the 200 West area perimeter fence to the chemical sewer trenches. It is posted with signs on both sides of the ditch stating "Underground Contamination." (Sketch G, Drawing Reference 7)

OPEN DITCH TO CHEMICAL SEWER TRENCHES (OVERFLOW)

The ditch to the chemical sewer trenches overflowed during May 1955 contaminating about an acre of ground between the open ditch and the east trench. The maximum dose rate detected was 1 r/hour at the ground surface. The contamination was covered and the area posted with "Underground Contamination" signs. Following this incident the ditch itself was dredged and the removed sludge was placed in low spots on both sides of the ditch and covered with two feet of clean soil. (Sketch G, Drawing Reference 8)

222-S SWAMP

This area, located outside the 200 West area and about 1000 yards south of the 222-S laboratory, is used for the disposal of drainage from the lab sinks and wall drains. In December 1953 contamination up to 200 mrad/hour at ground surface was discovered over an area approximately 300 feet long and three feet wide. The area is delimited by a chain fence and radiation zone signs. (Sketch G, Drawing Reference 9)

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200 WEST AREA GENERAL (Continued)

BURIED CONTAMINATED EQUIPMENT

Approximately fifty empty 55-gallon oil drums, contaminated as a result of the particle problem in and around Redox in 1952, were buried about 500 feet directly east of the northeast corner of the Redox exclusion area fence and were covered with six feet of clean soil. The area is not marked above ground. (Sketch G, Drawing Reference 10)

276-S CRIB

This crib, located 400 feet west of 276-S building, was built in 1951 and received contaminated organic waste from the solvent handling building. The crib is buried under ten feet of dirt and is delimited above ground with a wooden fence that is posted with radiation zone signs. (Sketch G, Drawing Reference 11)

BURIED METAL SCRAP

Contaminated metal scrap including the 211-S tank taken from Redox facilities was buried in September 1954 northwest of the Redox exclusion area. The location is designated by four corner posts marked with "Do Not Excavate" signs. (Sketch G, Drawing Reference 12)

GROUND CONTAMINATION NEAR UNH PROCESS LINE

A leak occurred in the UNH process line from Redox to "U" plant in September 1955 at a location just outside and to the north of the Redox exclusion area. This area is posted as a radiation zone by rope and a radiation zone sign. (Sketch G, Drawing Reference 13)

STEAM CLEANING PIT NORTHEAST OF 241-SX TANK FARM

This trench is about 15 feet by 100 feet and has been used since the fall of 1954 for decontaminating vehicles. It is delimited above ground by a chain fence and radiation zone signs. (Sketch G, Drawing Reference 14)

216-S-11 TEST WELL

The casing for the test well near the 216-S-2 crib apparently collapsed some time during August 1955, allowing highly contaminated wastes a direct route to the ground water. The test well was immediately sealed off by backfilling and is posted as a radiation zone by a chain fence posted with signs stating "Underground Contamination." (Sketch G, Drawing Reference 15)

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200 WEST AREA GENERAL (Continued)

241-S DIVERSION BOX

A contamination spread from 241-S diversion box occurred on September 15, 1958. This oval shaped area up to three hundred feet wide covers ground immediately south of the box toward Tenth Street in 200 West area. It lies in a north - south direction and includes the 207 basin at the south end. The soil was saturated with water and turned over with a bulldozer. (Sketch D, Drawing Reference 3)

REDOX SWAMP DIKE BREAK

A break in the dike of the Redox swamp southeast of 200 West area contaminated an area 30 feet wide for approximately 1,000 feet southwest. The ground was turned over with a bull dozer. (Sketch G, Drawing Reference 1)

216-S, #1 AND #2 CRIBS

This disposal unit consists of two standard cribs, 12 feet wide by 12 feet long by nine feet deep in series and spaced 50 feet apart. The cribs are located 200 yards southeast of the 241-S-151 diversion box. Condensate and cell drainage that was within cribbing limits was first discharged to the cribs in January 1952. The cribs are buried under ten feet of dirt and are delimited above ground with a chain fence posted with radiation zone signs. (Sketch G, Drawing Reference 16)

UNIRRADIATED URANIUM WASTE TRENCH (REDOX)

Approximately 81,500 gallons of liquid containing about 430 pounds of unirradiated uranium were discharged to this trench during the latter portion of 1951 and early in 1952. The coordinates of this trench are N-35300 and W-75400. The trench has been backfilled with six feet of clean soil and is delimited above ground with "Do Not Excavate" signs. (Sketch G, Drawing Reference 17)

110-S TANK AIR CONDENSER OVERFLOW

The cooling water supplied to the air condensers on the 110-S waste tank became contaminated in the fall of 1952 from the condensing vapors arising from within the tank. This resulted in the spread of contamination to the condenser cooling water receiving pond located just east of the 241-S tank farm. A maximum dose rate of 10 rads/hour was observed at the surface of this pond before it was covered with two feet of clean soil. The area is delimited above ground by a wooden fence and "Do Not Excavate" signs. (Sketch G, Drawing Reference 18)

216-S-3 CRIB

This crib was built in August 1953 to handle the highly contaminated condensate

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200 WEST AREA GENERAL (Continued)

from the 101-S and the 104-S tanks. It is located directly east of the 104-S tank at the edge of the 241-S area. It is enclosed within a wooden fence and is posted with "Underground Contamination" signs. (Sketch G, Drawing Reference 19)

216-SX-1 CRIB

This crib, used since November 1954 for the disposal of condensate from the 101-SX and 104-SX tank cascades of the 241-SX tank farm, is located to the west of the 241-S tank farm. The area above ground is delimited by a wooden fence posted with radiation zone signs. (Sketch G, Drawing Reference 20)

216-S-4 CRIB

This crib is located immediately west of the 241-S tank farm and has been used since August 1953 for the disposal of condensate from the 101-S and the 104-S tank cascades in the 241-S tank farm. The area is delimited above ground by a wooden barricade and radiation zone signs. (Sketch G, Drawing Reference 21)

"U" SWAMP

This swamp is located southwest of the 241-U tank farm and receives water from the power house and waste water from the laundry, 234-5, 231, and "U" facility buildings. In the summer of 1955 the swamp was enlarged to include an area outside of the 200 West area perimeter fence with the waste running through a culvert under the fence and fence-lined road. The east side of the swamp has a chain fence and is posted with radiation zone signs, while the rest of the swamp is posted at intervals with underground contamination signs. (Sketch G, Drawing Reference 22)

216-U-3 CRIB

This crib is located to the south of the 241-U tank farm and has been used since May 1954 for the disposal of condensate from the 110-U tank cascade of the 241-U tank farm. The area above ground is posted a radiation zone by a wooden barricade with radiation zone signs. (Sketch G, Drawing Reference 23)

241-UR STEAM CLEANING PIT

A steam cleaning pit within the 241-UR area, 100 feet west of the 103-UR tank, contains beta-gamma contamination up to 50 mrad/hour at ground surface. This pit is only occasionally used and is backfilled as necessary to prevent contamination spread. The trench is within the 241-UR tank farm and is also roped off to separate it from the rest of the radiation zone. (Sketch G, Drawing Reference 24)

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200 WEST AREA GENERAL (Continued)

151-U AND 152-U DIVERSION BOXES

The ground around these boxes was contaminated in the spring of 1950 to a maximum observed dose rate of 20 mrad/hour at surface. The contamination was covered with a foot of clean soil and the area above ground delimited by a rope barricade posted with radiation zone signs. (Sketch G, Drawing Reference 25)

OPEN DITCH Z-11

In reference to open ditch Z-11 from the 234-5 building to the U swamp, a new ditch was dug parallel to and approximately 10 feet east of the existing contaminated ditch which has been backfilled and staked as an underground radiation zone. (Sketch G, Drawing Reference 34)

OPEN DITCH - LAUNDRY TO "U" SWAMP

Since August 1955 approximately 150,000 gallons per day of laundry water has been running through this ditch to a point north of the "U" plant. Here the ditch was dredged until the soil became sufficiently porous to allow the water to enter the ground water table. Both sides of the ditch and the disposal site are posted with both radiation zone and "Underground Contamination" signs. (Sketch G, Drawing Reference 26)

216-UR, #1 AND #2 CRIBS

This disposal unit consisting of a concrete tank 20 feet by 20 feet and two standard cribs in series is located approximately 800 feet west of the 224-U building. Contaminated liquid wastes from the TBP solvent treatment are discharged to this unit. The area is delimited above ground with a wooden fence posted with radiation zone signs. (Sketch G, Drawing Reference 27)

OVERFLOW NEAR 361-U SETTLING TANK AND 216-UR CRIB

Organic wastes and cell drainage from the TBP and UO_3 plants overflowed to the ground by way of the tank and crib vents in the spring of 1953. Ground contamination up to 11.5 rads/hour at three inches was found over an area of approximately 50 square feet. Decontamination was attempted and the area was then backfilled, delimited with a wooden fence, and posted with radiation zone signs. (Sketch G, Drawing Reference 28)

388-U TANK DUMPING

Approximately 7000 gallons of interface crud, activated charcoal, and diatomaceous earth, containing about one curie of fission products, was transferred from the 388-U tank to a hole at coordinates N-38270 and W-73900. The hole was backfilled

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200 WEST AREA GENERAL (Continued)

and the area was delimited by a wooden fence posted with signs stating "Underground Contamination." (Sketch G, Drawing Reference 29)

216-WR, #1, #2, AND #3 CRIBS

This disposal unit consists of three standard Hanford cribs which are located about 1000 feet south of the 224-U building. Condensate wastes from the 221-U concentrators has been discharged to these cribs since the summer of 1952. The area is delimited above ground with a wooden fence posted with radiation zone signs. (Sketch G, Drawing Reference 30)

OLD BURNING GROUND

Contamination was discovered in the spring of 1950 in the old burning ground which is located approximately 1500 feet east of the "U" facility. An area of 150 square feet of ground was observed to be contaminated to a maximum dose rate of 45 rads/hour at two inches. The area was subsequently covered with about ten feet of clean earth and is posted with "Underground Contamination" signs. (Sketch G, Drawing Reference 31)

216-Z-9 CRIB

This crib, approximately 500 feet east of 216-Z-9 crib, has been used for disposal of extraction process and aqueous wastes from the Recuplex facilities since 7-18-55. The area is delimited above ground by a chain fence but is not posted as a radiation zone. (Sketch G, Drawing Reference 32)

216-Z-8 CRIB

This crib, to the east of 234-5 building, was first used on 7-18-55 for silica gel overflow from the Recuplex facilities. The area is delimited above ground by a chain fence but is not posted as a radiation zone. (Sketch G, Drawing Reference 33)

ORIGINAL 231 DRAINAGE DITCH TO "U" SWAMP

This ditch with its opening beginning east of the 234-5 building (coordinates W-76000, N-39418.7) is a portion of the original ditch from the 231 building to the "U" swamp. The ditch from the 231 building to the position where it is now still open has been backfilled and an underground pipe (15" dia.) laid to the open trench. The underground pipe (also 15" dia.) from the 234-5 building empties into the ditch at a distance 125 feet south of the afore-mentioned coordinates. The ditch will be staked and posted as a radiation zone with "Underground Radiation" signs posted. (Sketch G, Drawing Reference 34)

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200 WEST AREA GENERAL (Continued)

231-W-3 CRIB

Very little information has been found concerning this disposal unit. It is believed to have been merely a hole in the ground, located approximately 100 feet northeast of the 231-W drywell, designed to receive the 231 building liquid wastes for a short period following the unexpected loss of the use of the 231 drywell in June 1945. The area has been backfilled and earth mounded up over it. It is delimited above ground by a wooden fence posted with radiation zone signs. (Sketch G, Drawing Reference 35)

231-W-4 CRIB

This crib is located approximately 100 feet southeast of the 231-W drywell and is believed to have been used similar to 231-W-3 crib. The ground has caved in over this area suggesting that it may have been constructed with a wooden top. The area is enclosed with a wooden rail fence posted with radiation zone signs. (Sketch G, Drawing Reference 36)

SOLID WASTE BURIAL GROUND

This burial ground, located northeast of the 231 building, was first used in 1944. Twenty-two filled trenches have been backfilled with six feet of clean soil and concrete posts with a "Do Not Excavate" sign placed at each end of the trenches. Two open trenches are currently being used for disposal of waste. The entire burial ground is enclosed with a wire fence posted with radiation zone signs. (Sketch G, Drawing Reference 37)

241-TX, #1, #2, #3, #4, AND #5 TRENCHES

These five trenches situated to the west of the 241-TX tank farm were used for the disposal of first cycle supernatant from the 109, 110, and 111-TX tanks and the 101 and 102-TY tanks in the summer of 1954. They are covered with eight to ten feet clean soil and are posted with "Underground Contamination" signs. (Sketch G, Drawing Reference 38)

231-W TRENCH

This trench, eight feet wide by 150 feet long, is located approximately 600 feet east of the 231 building. Liquid wastes from the 231 building have been routed to this trench since February 1947. The trench is covered with a wooden top which is, in turn, covered with dirt. The area is surrounded by a wire fence posted with radiation zone signs. (Sketch G, Drawing Reference 39)

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200 WEST AREA GENERAL (Continued)

241-TX-153 CRIB AND TILE FIELD

This disposal unit consists of a standard crib and tile field and is located in the 241-TX tank farm. It receives the condensate from the 242-T waste evaporator. Wastes with low-level activity have been discharged to this unit since September 1951. (Sketch G, Drawing Reference 40)

FRENCH DRAIN NEAR 241-TX TANK FARM

This french drain was contaminated in the fall of 1954 to a maximum observed dose rate of 50 mrad/hour by a blowout of steam going through the tank farm process lines. It is marked by a radiation zone sign secured to the cover of the french drain. (Sketch G, Drawing Reference 41)

242-T BUILDING

While jetting concentrate from the waste evaporator in the spring of 1951, a few gallons of the waste was forced up and out of an open riser located above ground on the south side of the building. A maximum dose rate of two rads/hour at two inches was observed on this contaminated area. A portion of the contamination was removed and the balance covered with a foot of clean soil.

A somewhat similar incident occurred in September 1955 only on the west side of the building. Both areas are marked by wire fence posted with radiation zone signs. (Sketch G, Drawing Reference 42)

WASTE LINE 242-T TO 207-T

In October 1952 contaminated water was observed to be rising to the ground surface above the waste line between 242-T and the 207-T retention basin. The leak was repaired and the contaminated areas covered with about a foot of clean soil and gravel. The area is posted at intervals with "Underground Contamination" signs. (Sketch G, Drawing Reference 43)

155-TX DIVERSION BOX

Contamination has been spread from this diversion box to the surrounding ground at various times during the past few years. An area on three sides of the box has been black-topped to fix the contamination and is delimited by a combination of wood, chain, and rope fence and signs. In November 1952, a contaminated nitric acid solution was pumped from the 155-TX catch tank to an excavation nearby. This waste was covered with about three feet of clean earth and the area above ground delimited by a wooden fence and posted with radiation zone signs. Again in the spring of 1954 a leak occurred from one of the jumpers in the diversion box causing the area 30 feet by 100 feet to the west of the diversion box to become contaminated. This area was covered with clean soil and temporarily posted a radiation zone; however, the fence and signs have since disappeared. (Sketch G, Drawing Reference 44)

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200 WEST AREA GENERAL (Continued)

216-TY, #1, #2, AND #3 CRIBS

These three cribs are located east of and across the road from the 241-TY tank farm. Crib 216-TY-1, first used in August 1955, has been the only one used for the disposal of first cycle scavenged waste from the 101, 103, and 104-TY tanks. The area is delimited above ground by chain fence and "Underground Contamination" signs. (Sketch G, Drawing Reference 45)

TEST CRIB FOR BUILDING SCAVENGED TBP WASTE

In November 1953 approximately 265,000 gallons of building scavenged TBP waste was pumped to a crib on a test basis. The coordinates of the crib are N-42650 and W-75270. The crib is backfilled, delimited with a permanent chain barricade, and posted with "Underground Contamination" signs. (Sketch G, Drawing Reference 46)

LEAK IN LINE FROM 105-TX TO 118-TX TANK

Leakage of first cycle waste was discovered in November 1954 with maximum dose rate of 4.5 r/hour observed at four feet over an area 100 feet wide by 125 feet long. The contamination was covered with approximately a foot of clean earth and delimited by a chain fence posted with radiation zone signs. (Sketch G, Drawing Reference 47)

STEAM CLEANING PIT NEAR 269-W GARAGE

This pit was first used during the summer of 1954 to decontaminate heavy equipment. The area is designated a radiation zone partially by a wooden fence and partially by a chain fence, both posted with radiation zone signs. (Sketch G, Drawing Reference 48)

241-T-3 CRIB AND TILE FIELD

Second cycle waste from the 221-T has been routed since start-up to tank storage in the 241-T tank farm with the supernatant overflowing into the 241-T-3 crib and tile field just west of the 110-T tank cascade in the 241-T tank farm. Supernatant did not begin to overflow until April 1948. In June 1951 the 221-T, 5-6 cell wastes were routed to this unit. In June 1952 the 224-T wastes were also routed here. This area is within the 241-T tank farm but is not otherwise designated. (Sketch G, Drawing Reference 49)

241-T, #1 AND #2 CRIBS

This disposal unit consisting of two cribs in series which received the overflow from the 201-T and the 204-T tank cascades is located in the 241-T tank farm.

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200 WEST AREA GENERAL (Continued)

It received the 224-T wastes from November 1946 to June 1952 as well. Other than being within the tank farm the area is not designated. (Sketch G, Drawing Reference 50)

241-T-5 TRENCH

This trench was used during May 1955 for the disposal of second cycle supernatant from the 112-T tank. It is located in the northwest corner of the 241-T farm but otherwise is not marked above ground. (Sketch G, Drawing Reference 51)

BURIED CONTAMINATED RAILROAD TRACKS

Two sections of railroad track contaminated during the fall of 1954 to maximum dose rates of 350 mrad/hour were buried due east of and across the tracks from the new Industrial Burial Ground. Both trenches are 15 feet by 30 feet and are covered with four feet clean dirt. The area is posted with "Underground Contamination" signs. (Sketch G, Drawing References 52 and 53)

NEW INDUSTRIAL BURIAL GROUND

In March 1954 use of the new Industrial Burial Ground was begun for the disposal of process tanks, contaminated waste, etc., from Redox facilities. There are five trenches that have been filled and covered, one open trench that is currently being used and room for a seventh trench before the burial garden is filled to capacity. An area immediately north between the present burial site and the "T" swamp has been reserved for future expansion of this disposal site. A wire fence and radiation zone signs mark this area as a radiation zone. (Sketch G, Drawing Reference 54)

"T" SWAMP

This area has been in use since start-up receiving process vessel cooling water from the 221-T and 224-T buildings. The water is directed to the swamp via the 207-T retention basin and 500 feet of pipe followed by 500 feet of open ditch. The ditch and swamp are posted with signs stating "Underground Contamination". (Sketch G, Drawing Reference 55)

241-T, #1, #2, #3, AND #4 TRENCHES

These four trenches, situated to the north of the 207-T retention basin, were used for the disposal of first cycle supernatant from the 104, 105, and 106-T tanks during the first half of 1954. They are covered with eight to ten feet of clean soil and are posted with "Underground Contamination" signs. (Sketch G, Drawing Reference 56)

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200 WEST AREA GENERAL (Continued)

BURIED SLUDGE NEAR 207-T RETENTION BASIN

Contaminated sludge was removed from the 207-T basin on November 30, 1954 and buried in a 10 foot by 15 foot by 8 foot deep pit in the northeast corner of the 207-T radiation zone. An estimated curie of beta particle emitters were disposed of here and covered with three or four feet of clean soil. (Sketch G, Drawing Reference 57)

151-T AND 152-T DIVERSION BOXES

Diversion box work performed in the spring of 1950 resulted in contamination spread to the ground around both boxes. A portion of the contamination was removed and the balance covered with about a foot of clean soil. The area is delimited with rope which is posted with radiation zone signs. (Sketch G, Drawing Reference 58)

OLD INDUSTRIAL BURIAL GROUND

This burial ground, located northwest of the "T" facility, is no longer used for burial of waste. Approximately ten trenches have been filled and covered with six feet of clean soil since 1947. The area is posted with a combination of wire fence, rope, and radiation tape with radiation zone signs attached. (Sketch G, Drawing Reference 59)

361-T, #1 AND #2 CRIBS (5-6 WASTE)

Two standard cribs were constructed near the 361-T reverse well in 1946. Overflow of the 224-T and 5-6 cell wastes from the 361-T drywell to these cribs was first noted in August 1946. In November of that year, the 224-T wastes were rerouted to other disposal sites but the 5-6 cell wastes continued until June 1951. The cribs are enclosed within separate wooden fences and both are posted with radiation zone signs. (Sketch G, Drawing Reference 60)

361-T REVERSE WELL

This eight inch diameter pipe encased well is 206 feet deep and is perforated from a depth of about 104 feet to the bottom. From start-up in 1945 to August 1946 the well received the overflow from the 361-T settling tank which, in turn, was receiving waste from the 221-T, 5-6 cell drain sump and from the 224-T building. The area is delimited above ground by a chain fence posted with radiation zone signs. (Sketch G, Drawing Reference 61)

EQUIPMENT DECONTAMINATION AREA

This area consists of three covered trenches which were used to decontaminate heavy equipment. It was constructed in 1951 and is located approximately 200

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200 WEST AREA GENERAL (Continued)

yards west of the "T" facility. The trenches were last used in the spring of 1954 and are now covered and posted above ground with signs stating "Underground Contamination." (Sketch G, Drawing Reference 62)

URANIUM BURIAL TRENCH ("T" FACILITY)

Unirradiated uranium waste from test runs during the original start-up of "T" facility was buried in a trench located about 100 yards northwest of the 221-T building. The trench was backfilled with two feet of clean soil and is posted at intervals with "Underground Contamination" signs. (Sketch G, Drawing Reference 63)

216-S-7 CRIB

This crib, located at coordinates N-35100 and W-74500, was put into service 1-12-56. A build-up of beta activity in this crib prompted the rerouting of H-6 waste material. On April 12, 1959, jumper changes were completed and H-6 liquid waste has since been routed to underground salt waste storage tanks. The crib continues to receive waste from D-1 and D-2 vessels. (Sketch G)

REDOX SWAMP DIKE BREAK

In June 1958 and again in April 1959 a break occurred in the Redox cooling water swamp dike. The resultant spill affected an area approximately 150 yards from the dike in a westerly direction and 300 yards north and south. The contaminated ground area was bladed under and Underground Contamination signs posted. (Sketch G)

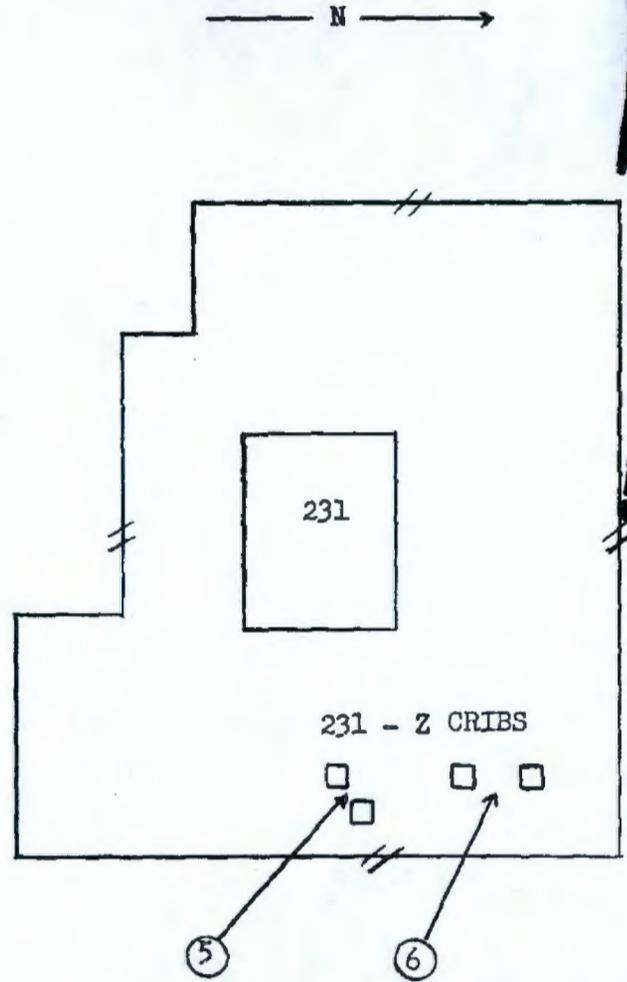
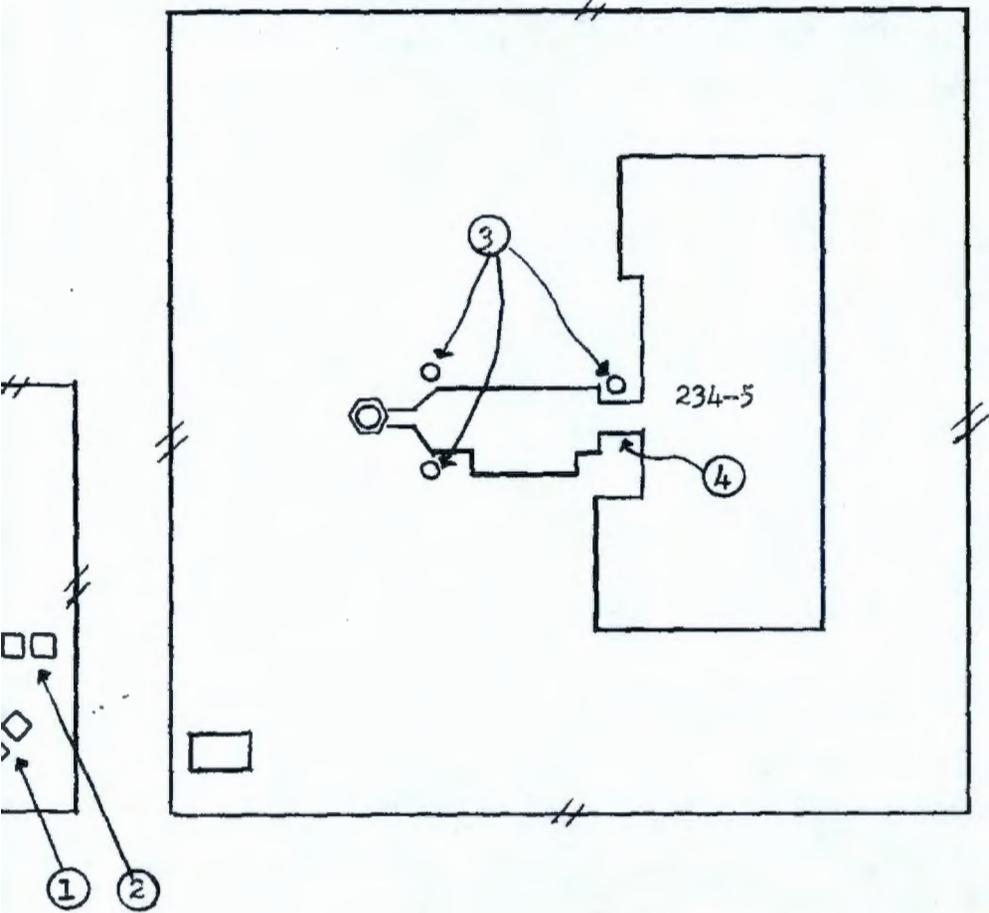
216-BC CRIBS

There are six cribs located south of 200 East Area at coordinates N-35700 and W-53400. These cribs were filled with scavenged metal waste beginning in January 1956 and ending in February 1958. Underground Contamination signs were posted around the area. (Sketch B)

216-BC TRENCHES

There are 16 covered trenches south of the 200 East Area. Fifteen of the trenches are 500 feet long and 15 feet wide at the bottom and about 15 feet deep. One trench is of similar depth and width and 580 feet long. The trenches are located between coordinates W-53900 to 55500 and N-34500 to 36000. The trenches were filled with scavenged metal waste beginning in July 1956 and ending in February 1958. The ditches were covered and Underground Contamination signs were posted around the area. (Sketch B)

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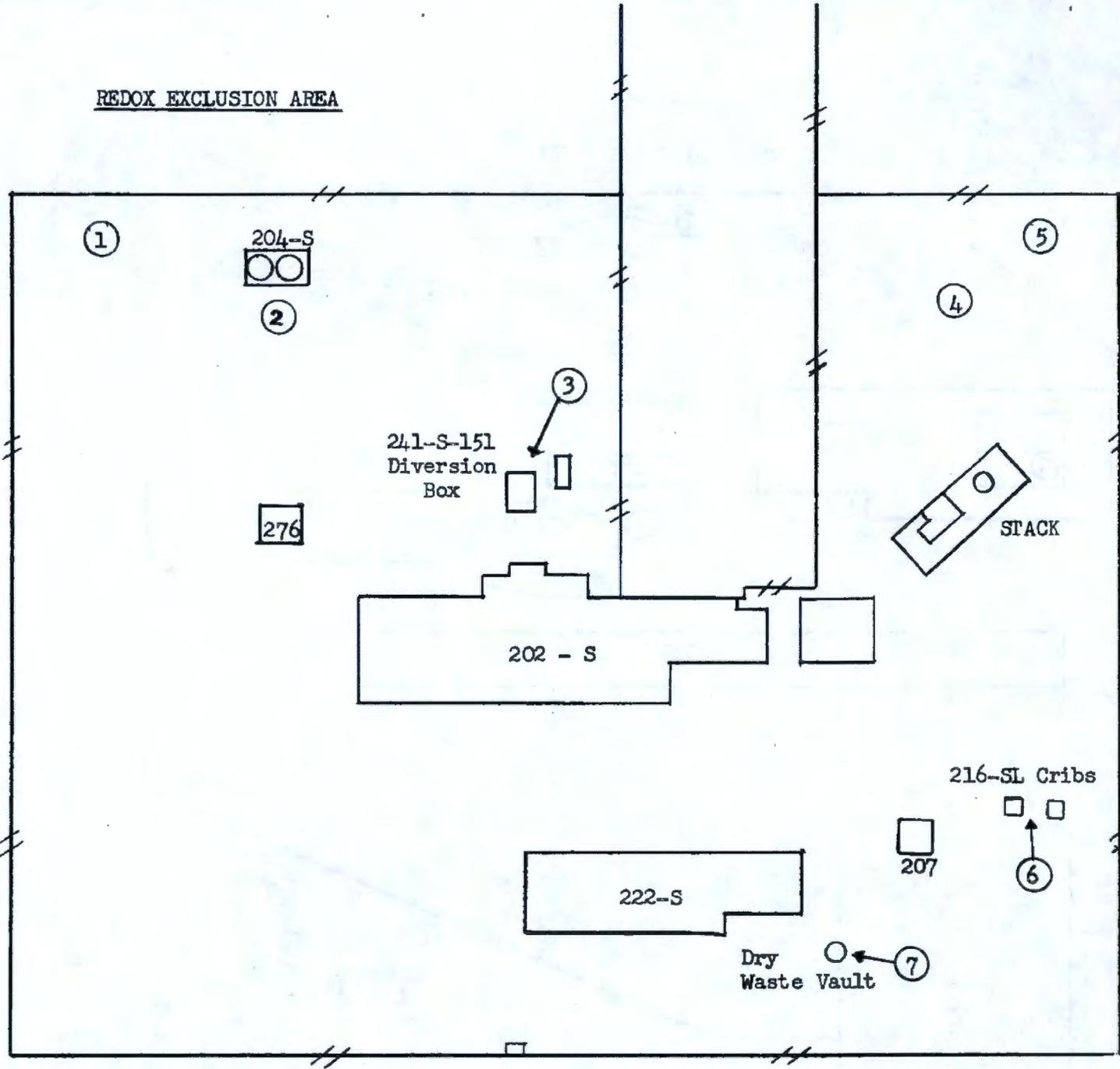
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"Z" FACILITIES

SKETCH C

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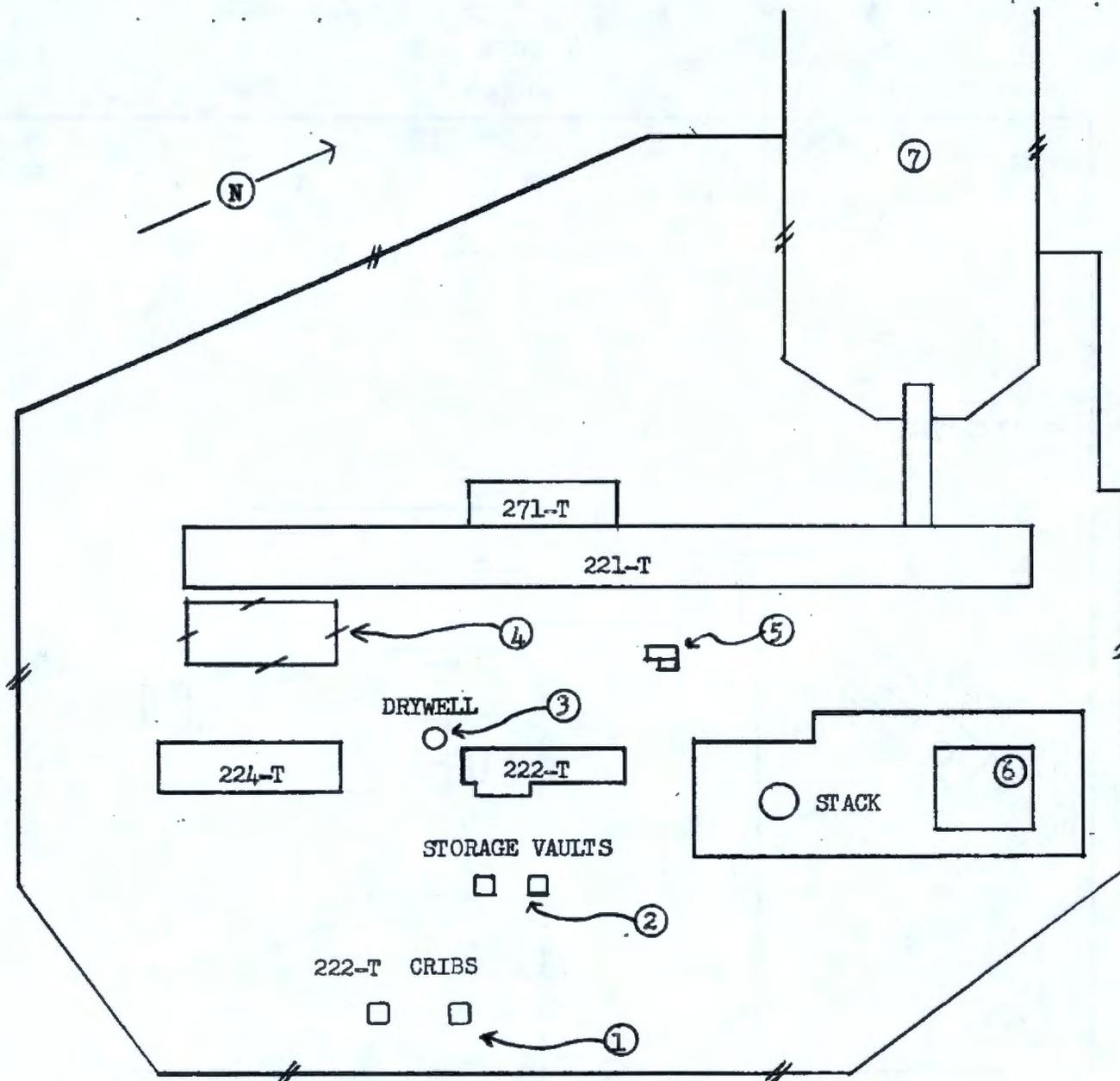
REDOX EXCLUSION AREA



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SKETCH D

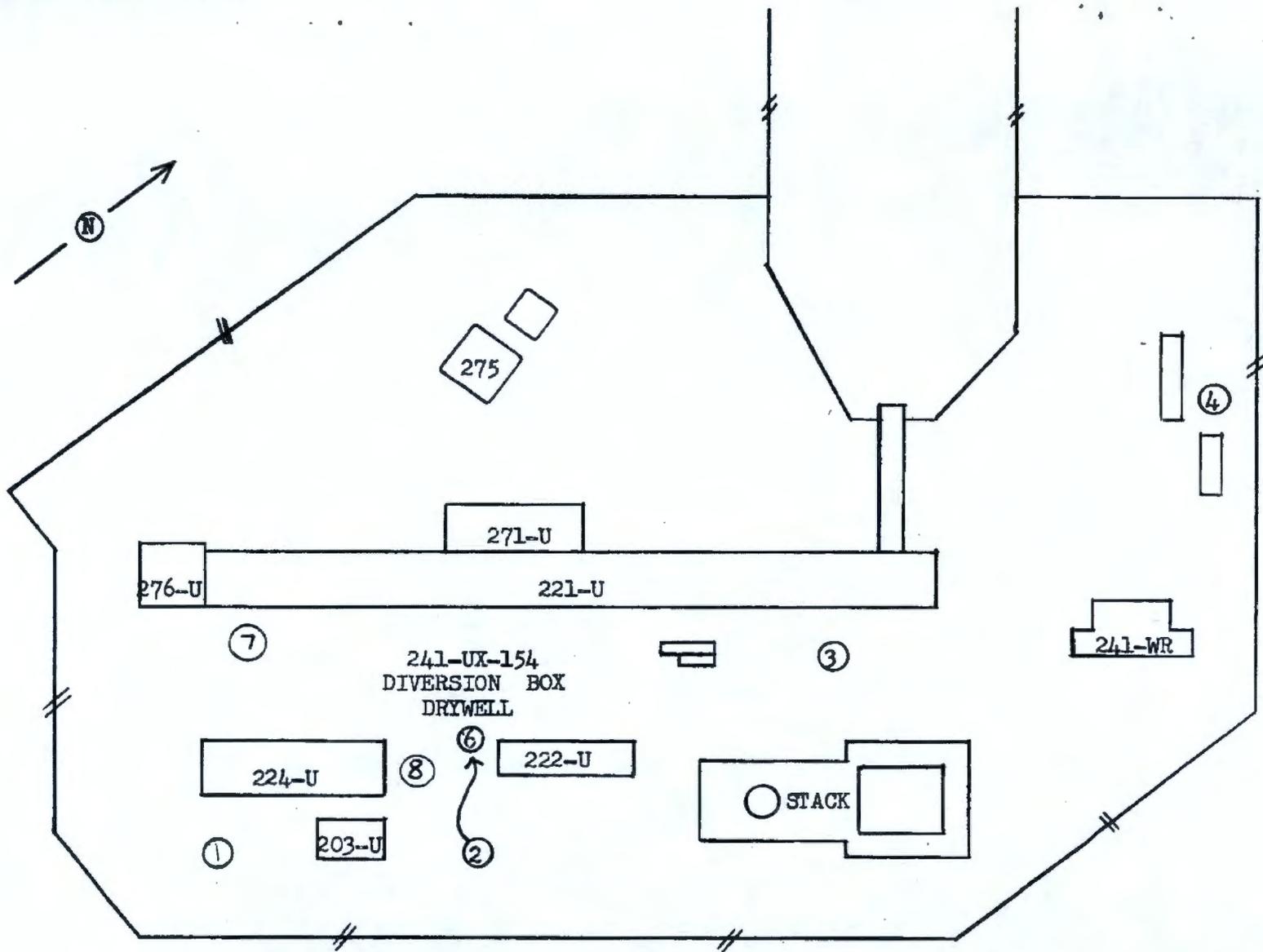


221-T EXCLUSION AREA

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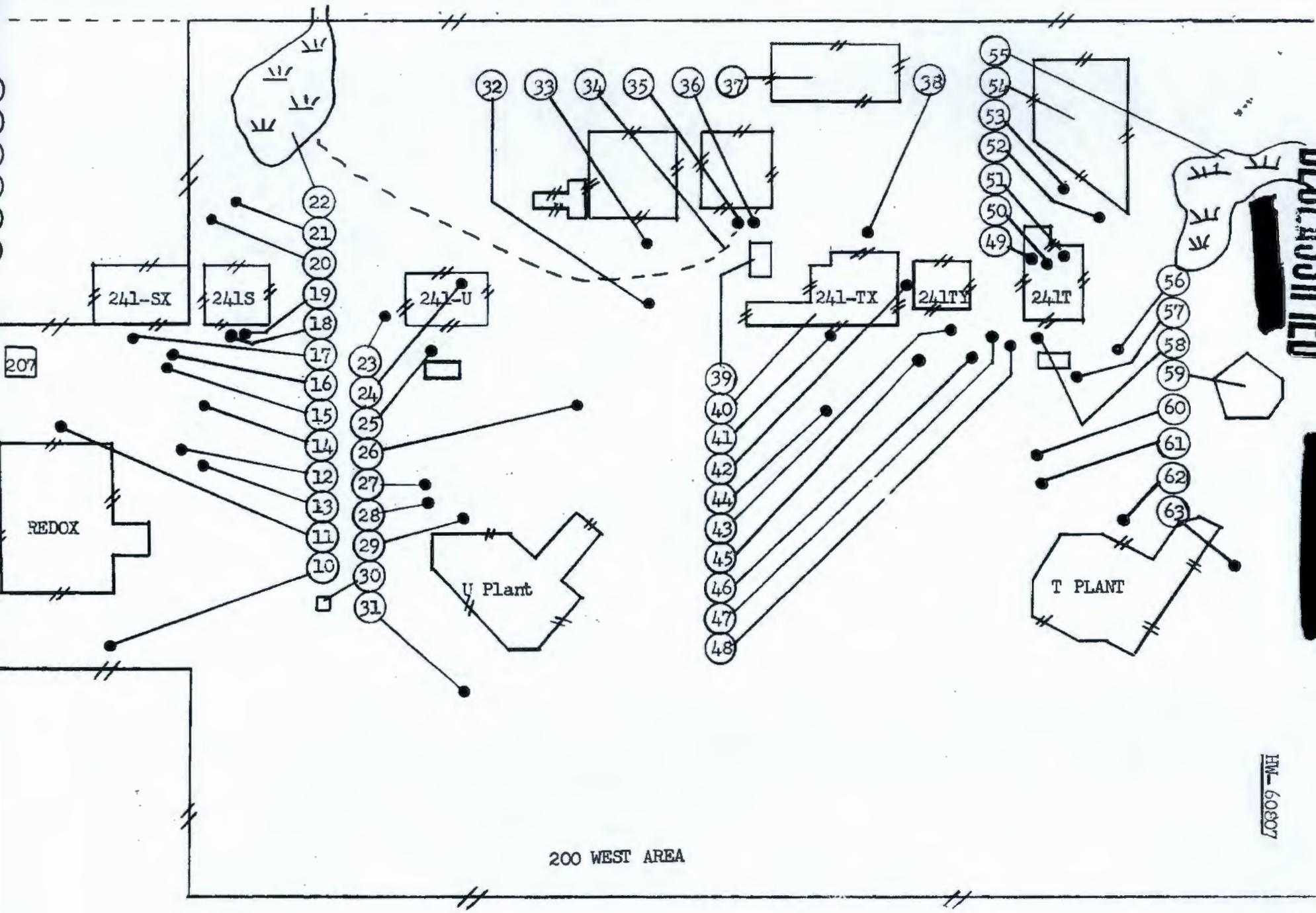
221-U EXCLUSION AREA

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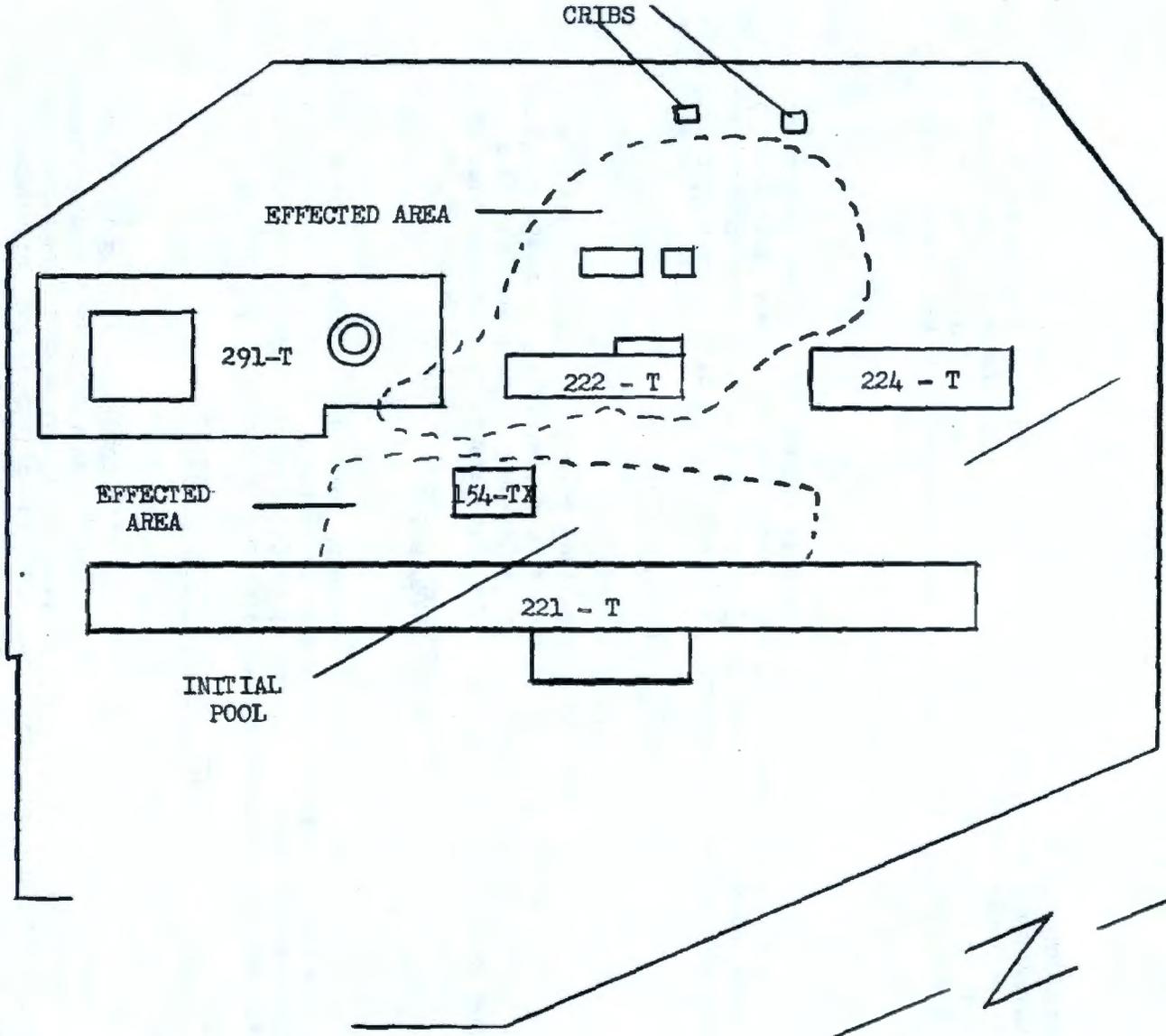


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200 NORTH AREA

212-N STORAGE BASIN CRIB NO. 1

This crib was built in 1947 to receive all the basin water when it was drained in preparation for special tests that were to be conducted in the basin. It is covered with approximately six feet of clean earth and is enclosed above ground with a single rail wooden fence that is posted with radiation zone signs. (Sketch H, Drawing Reference 1)

212-N STORAGE BASIN CRIB NO. 2

This crib was built to receive the water remaining in the storage basin when the area was shut down in June 1952. It is covered with approximately six feet of clean earth and is delimited by a rope fence and posted with radiation zone signs. (Sketch H, Drawing Reference 2)

212-P STORAGE BASIN CRIB

This crib was built to receive the water remaining in the storage basin when the area was shut down in June 1952. It is covered with approximately six feet of clean earth and is delimited by a rope fence and is posted with radiation zone signs. (Sketch H, Drawing Reference 3)

212-R STORAGE BASIN CRIB

This crib was built to receive the water remaining in the storage basin when the area was shut down in June 1952. It is covered with approximately six feet of clean earth and is delimited by a rope fence and is posted with radiation zone signs. (Sketch H, Drawing Reference 4)

212-N SWAMP

This area received the normal overflow from the basin from startup in 1944 to shutdown in June 1952. Contamination with a dose rate up to 50 mrad/hour was observed in this swamp. The area was subsequently backfilled with clean earth to a depth ranging from two to six feet. It is posted with radiation zone signs though it is not delimited in any other way. (Sketch H, Drawing Reference 5)

212-P SWAMP

This area received the normal overflow from the basin from startup in 1944 to shutdown in June 1952. Contamination with a dose rate up to 50 mrad/hour was observed in this swamp. The area was subsequently backfilled with clean earth to a depth ranging from two to six feet. It is posted with radiation zone signs though it is not delimited in any other way. (Sketch H, Drawing Reference 6)

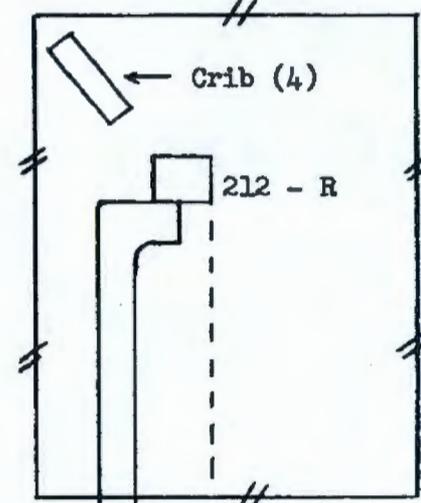
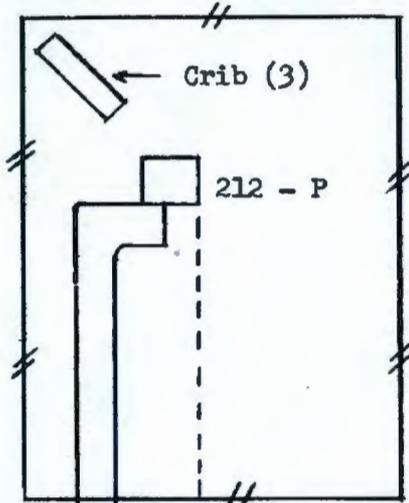
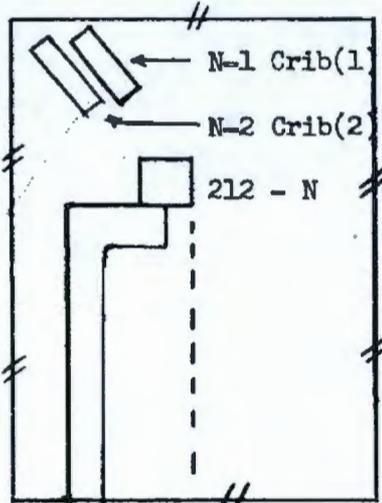
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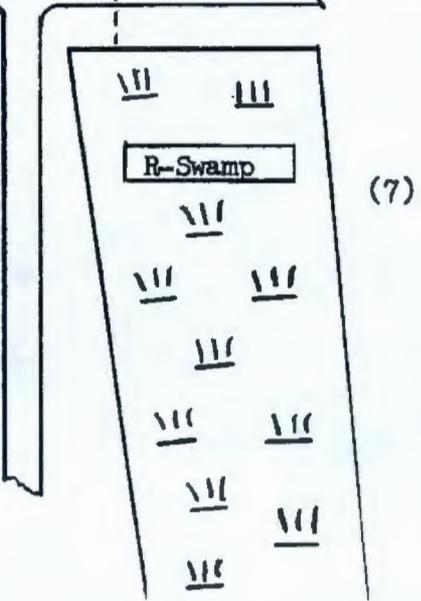
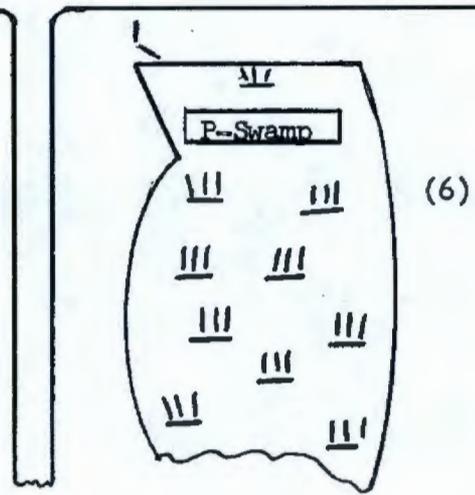
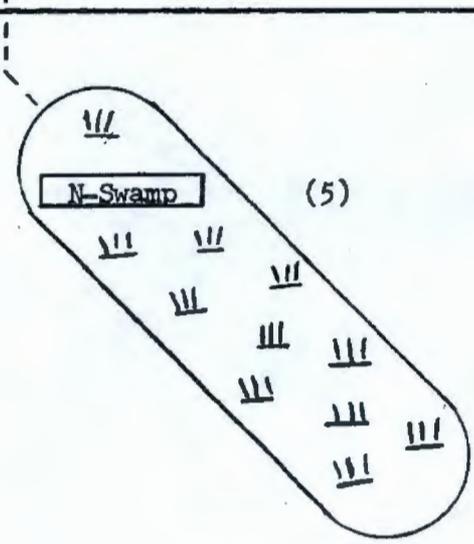
212-R SWAMP

This area received the normal overflow from the basin from startup in 1944 to shutdown in June 1952. Contamination with a dose rate up to 50 mrads/hour was observed in this swamp. The area was subsequently backfilled with clean earth to a depth ranging from two to six feet. It is posted with radiation zone signs though it is not delimited in any other way. (Sketch H, Drawing Reference 7)

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SKETCH H

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