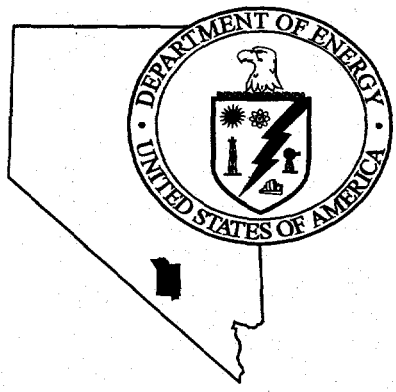
Nevada
Environmental
Restoration
Project

DOE/NV/11718-153
UC-702



Corrective Action Plan for CAU No. 426 Cactus Spring Waste Trenches Tonopah Test Range

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Revision: 0

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September1997

MASTER

Environmental Restoration
Division

U.S. Department of Energy
Nevada Operations Office

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CORRECTIVE ACTION PLAN FOR CAU 426: CACTUS SPRING WASTE TRENCHES TONOPAH TEST RANGE

Prepared for
U. S. Department of Energy
Nevada Operations Office
Under Contract No. DE-AC08-96NV11718

Controlled Copy No.:____

Revision: 0

Prepared by
Bechtel Nevada
Remediation Projects

September 1997

CORRECTIVE ACTION PLAN FOR CAU 426: CACTUS SPRING WASTE TRENCHES TONOPAH TEST RANGE

Approved by: Janet Appenzeller-Wing Date: 9/16/97
Janet L. Appenzeller-Wing, Project Manager
Industrial Sites Subproject

Approved by: Stephen A Mellington Date: 9/16/97
Stephen A. Mellington, Project Manager
Nevada Environmental Restoration Project

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ACRONYMS AND ABBREVIATIONS

CADD	Corrective Action Decision Document
CAP	Corrective Action Plan
CAS	Corrective Action Site
CAU	Corrective Action Unit
cm/sec	centimeter/second
COC	Constituent of Concern
DOE	U.S. Department of Energy
DOE/NV	U.S. Department of Energy/Nevada Operations Office
EPA	U.S. Environmental Protection Agency
ft	feet
in	inch
km	kilometer
m	meter
m^3	cubic meter
mg/kg	milligrams per kilogram
mi	mile
NDEP	Nevada Division of Environmental Protection
NTS	Nevada Test Site
PRGs	Preliminary Remediation Goals
TTR	Tonopah Test Range
yd^3	cubic yard

1.0 INTRODUCTION

This Corrective Action Plan (CAP) provides the selected corrective action alternative and proposes the closure implementation methodology for the Cactus Spring Waste Trenches Corrective Action Unit (CAU) No. 426. The site is located on the Tonopah Test Range (TTR), approximately 225 kilometers (km) (140 miles [mi]) northwest of Las Vegas, Nevada. See Figure 1 for the site location.

The U.S. Department of Energy/Nevada Operations Office (DOE/NV) verbally requested approval for the schedule to be accelerated from the Nevada Division of Environmental Protection (NDEP) in July 1997. Currently, field closure activities are anticipated to be completed by September 30, 1997. In order to meet the new schedule, NDEP agreed to review the draft document as expeditiously as possible. NDEP comments were received on August 21, 1997 (NDEP, 1997a). The comments and comment resolution are presented in Appendix B.

CAU 426 consists of one Corrective Action Site (CAS) comprised of four waste trenches (CAS No. RG-08-001-RG-CS). The trenches were excavated to receive solid waste generated in support of Operation Roller Coaster, primarily the Double Tracks Test in 1963. The Double Tracks Test involved the use of live animals to assess the biological hazards associated with the non-nuclear detonation of plutonium-bearing devices (i.e., inhalation uptake of plutonium aerosol) (DOE, 1996). The trenches were subsequently backfilled. Each trench is approximately 36 meters (m) (120 feet [ft]) long by 3 to 5 m (9 to 16 ft) wide by 3 to 4.5 m (10 to 15 ft) deep. A site map is provided in Figure 2.

Results from the 1996 characterization activities are documented in the Corrective Action Decision Document For The Cactus Spring Waste Trenches (DOE, 1997). The results indicate the following:

- Small quantities of sanitary waste were observed in the drill cores collected from the trenches. The waste materials included wood, glass, metal, animal bone fragments, and paint chips. The waste was predominantly found from 0.9 m (3 ft) to 2.1 m (7 ft) below the surface.

- No visual or radiological evidence was observed indicative of disposal of the animal shrouds in the trenches.

- No viable concentrations of constituents of concern (COCs) were detected above U.S. Environmental Protection Agency (EPA) Region IX Preliminary Remediation Goals (PRGs) (EPA, 1996). Most of the detected COCs were estimated values associated with laboratory contamination or were naturally occurring. One soil sample collected for Total Petroleum Hydrocarbon analysis (as diesel) with a result of 5,300 milligram per kilogram (mg/kg) was assessed to be a spurious data point.

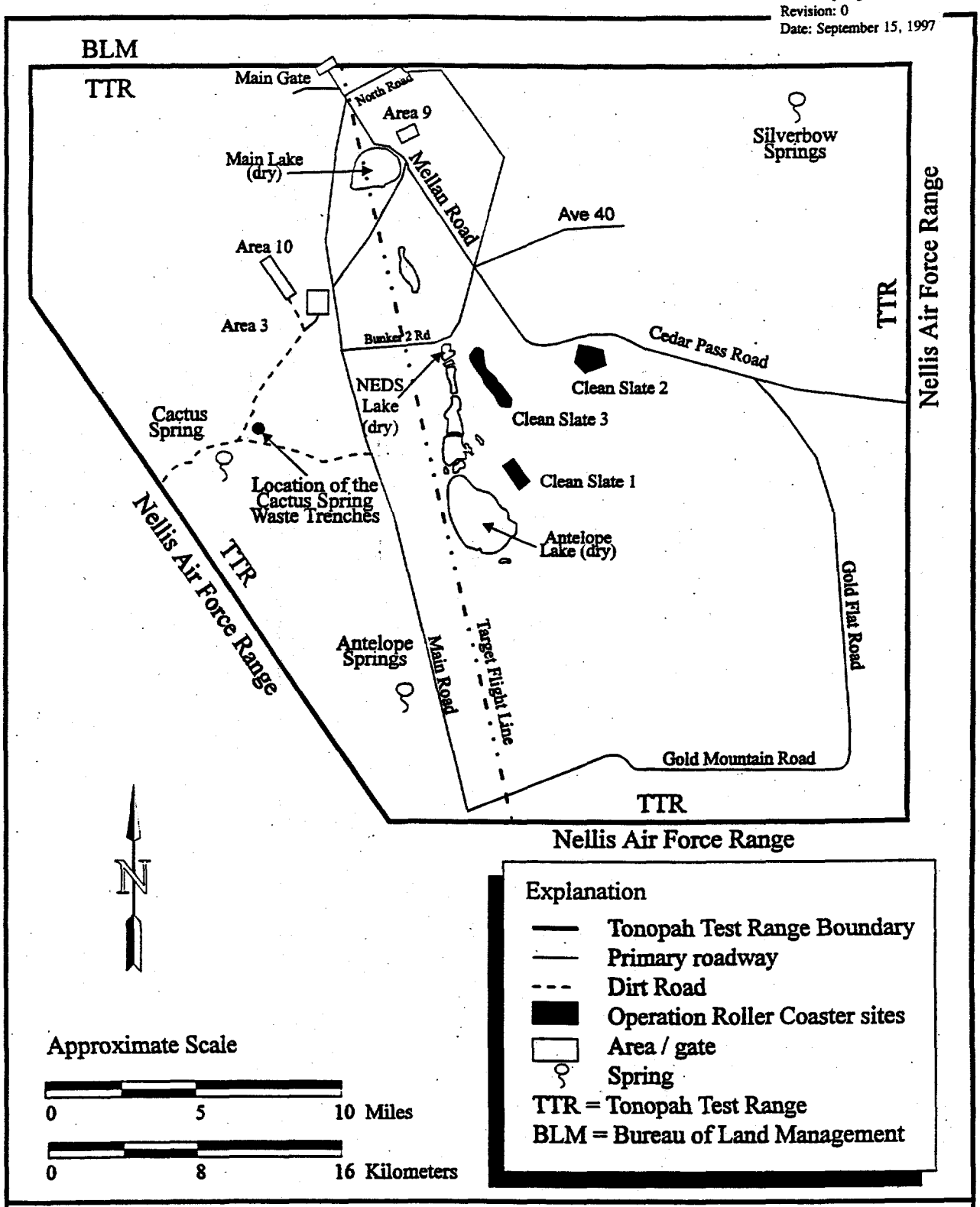
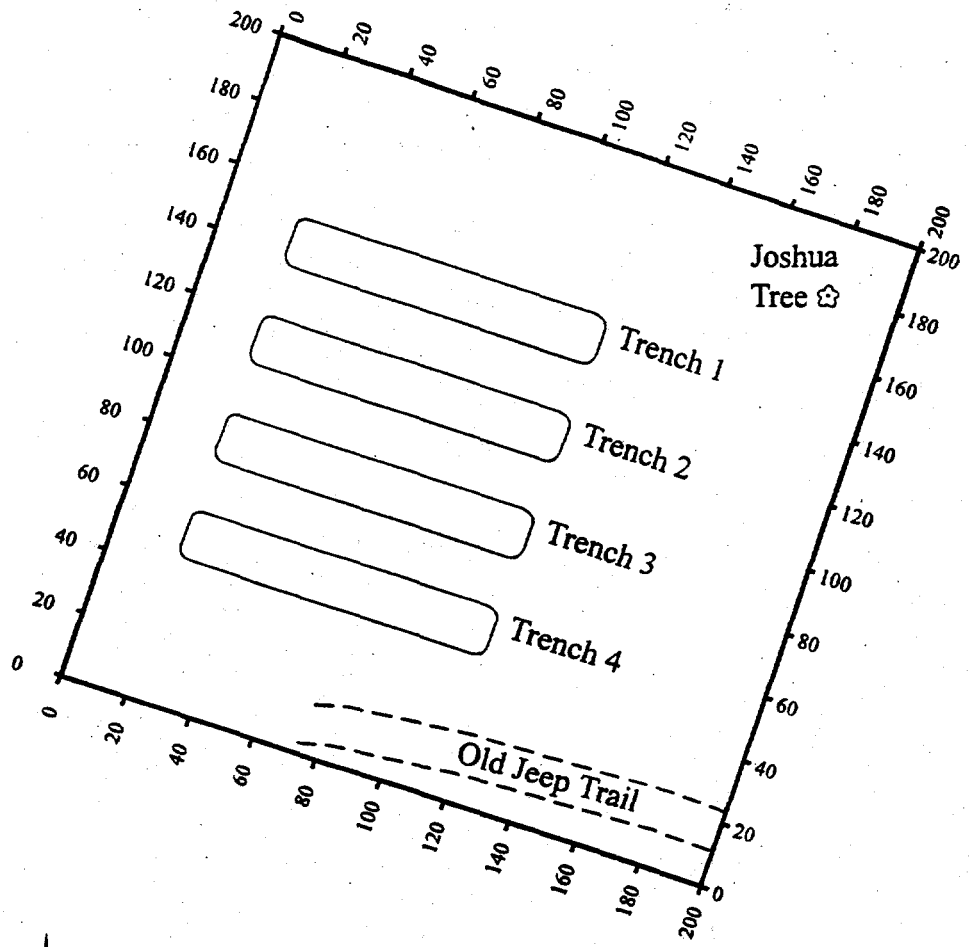


Figure 1
Location of the Cactus Spring Waste Trenches,
Tonopah Test Range



Approximate Scale

0 40 80 feet

0 12 24 meters

Explanation

Estimated perimeter of waste trench

Jeep trail

Figure 2
Site Map for the Cactus Spring Waste Trenches,
Tonopah Test Range

- The alluvial/fill material comprising the trench cover and the native material below the trenches have relatively low hydraulic conductivities 5.9×10^{-4} cm/sec (2.3×10^{-4} in/sec) to 2.5×10^{-8} cm/sec (9.8×10^{-9} in/sec).

1.1 PURPOSE

The purpose of this CAP is to provide the methodology for implementing the corrective action alternative as provided in the Corrective Action Decision Document (CADD) (DOE, 1997). Detailed information of the site history and results of the previous characterization activities are found in the Corrective Action Investigation Plan (DOE, 1996) and the CADD (DOE, 1997).

1.2 SCOPE

The scope of this plan is to provide the methods for implementing the closure of CAU 426. Based on the findings of the previous investigation, the selected corrective action alternative is:

- Install an engineered, vegetative cover over the four trenches.
- Install a fence to allow establishment of native plants/grasses.

1.3 CORRECTIVE ACTION PLAN CONTENTS

This CAP is divided into the following sections:

- Section 1.0 - Introduction: Summary of previous work and presents the purpose and scope.
- Section 2.0 - Detailed Statement of Work: Approved corrective alternative implementation methodology, construction quality assurance, and waste management.
- Section 3.0 - Schedule.
- Section 4.0 - Post-Closure Monitoring Plan.
- Section 5.0 - References.
- Appendix A - Document Review Sheet: NDEP comments and comment resolution for the Draft CAP.
- Appendix B - Engineering Drawings.

This plan was developed using information provided from the following documents:

- Corrective Action Investigation Plan: Cactus Spring Waste Trenches, Revision 0, DOE, 1996.
- Corrective Action Decision Document For the Cactus Spring Trenches, Revision 1, July 1997, DOE, 1997.
- Nevada Environmental Restoration Project, Project Management Plan, Revision 0, DOE, 1994.
- Nevada Environmental Restoration Project, Health and Safety Plan, Revision 2, DOE, 1996.
- Nevada Environmental Restoration Project, Project Management Plan, Revision 0, DOE, 1994.
- Nevada Environmental Restoration Project, Industrial Sites, Quality Assurance Project Plan, Nevada Test Site, Revision 1, DOE, 1996.

2.0 DETAILED STATEMENT OF WORK

2.1 APPROVED ALTERNATIVE IMPLEMENTATION

The NDEP approved the CADD and selected corrective action alternative in a letter dated July 30, 1997 (NDEP, 1997b). The selected alternative is to construct an engineered, vegetative cover over the four trenches. Closure activities are anticipated to consist of the following activities:

- Installing an engineered cover over the four trenches.
- Planting native plants/grasses on the engineered cover.
- Installing a fence and signs around the unit. Fencing will allow establishment of the native plants/grasses on the engineered cover by keeping out grazing animals.

Coordination of the closure will include the U.S. Air Force because of the location of the site and land-use status. Future land use related to this CAU will be restricted from activities that may alter or modify the containment control as identified in the Closure Report unless appropriate concurrence is obtained in advance.

2.1.1 Installation of Engineered Cover

Soil will be excavated and transported to the site from a borrow pit approximately 9 km (5.5 mi) northeast of the site (Engineering Drawings can be found in Appendix B). The soil obtained from the borrow pit will be used for the engineered backfill and vegetative cover. Screening or size reduction is not proposed unless size distribution of materials are not similar. A visual inspection of the soils will be made by the on-site geologist to determine if the soils are similar.

Standard construction equipment will be used for excavation, compaction, and grading activities. Equipment will consist of, but will not be limited to, dozers, scrapers, graders, front end loaders, sheepsfoot compactors, vibratory rollers, end and belly dump trucks, water trucks, and light farming equipment. Water for dust suppression and construction activities will be obtained from the Roller Coaster Well located approximately 7 km (4.3 mi) east of the site (Appendix B).

Environmental monitoring or decontamination of site equipment is not proposed during the closure activities, as no hazardous or radiological constituents were found which exceeded action levels during the 1996 characterization activities.

Native, undisturbed soil densities are estimated to be between 60 and 80 percent of the maximum density (ASTM, 1997a [Modified Proctor Test]). The existing surfaces of each trench will be

compacted by "wheel rolling" or with vibratory construction equipment to minimize subsidence. Soil placed over the compacted trench areas will also be compacted to minimize subsidence and decrease the permeability relative to the native, undisturbed soils.

Currently, the existing trench surface is approximately at the existing site grade. Additional soil will be placed on each trench area in approximate 0.2 m (8 inch [in]) lifts and compacted using standard construction practices until the trench areas are at the same grade of the existing surface adjacent to the trenches. Approximately 0.2 m (8 in) of backfill is estimated to be required in each of the trenches after compaction activities to restore the grade to the adjacent and existing site grade. Engineering drawings are provided in Appendix B which provide backfill specifications.

Once the trench areas are brought to the existing site grade, additional soil will be placed on each trench area in approximate 0.2 meter (8 in) lifts and compacted until 80 percent of the maximum density (ASTM, 1997a) is achieved. Density tests (ASTM, 1997b [Nuclear Density Tests]) will be conducted on the compacted soil to verify the 80 percent compaction specification is achieved (Appendix B).

Soil will be placed in the area between the trenches in approximately 0.2 m (8 in) lifts and slightly compacted to approximately 0.2 m (8 in) above the existing site grade. Density tests are not proposed in the areas between the trenches since these areas were not previously excavated and used for disposal activities.

Approximately 921 cubic meters (m^3) (1,205 cubic yards [yd^3]) of fill is estimated to be required to construct the cover. The volume of soil required for backfilling activities assumes a 30 percent compaction ratio and will be further refined prior to construction activities and after the area is surveyed for as-built and final design purposes. The surface of the cover is to be slightly sloping with a grade elevation approximately 0.5 to 0.6 m (1.6 to 1.9 ft) above the existing site grade (Appendix B). The surface will be textured for seeding of the vegetative cover (see Section 2.1.2).

Diversion channels to direct precipitation run-off away from the site and prevent precipitation run-on to the site will be constructed. This will be done by excavation into the native soil or by construction of small berms around the perimeter of the covers.

2.1.2 Establishment of Vegetative Cover

Soil will be loosely compacted from the top of the compacted area of the trenches to approximately 0.5 to 0.6 m (1.6 to 1.9 ft) above the existing site grade as this is the vegetation seeding zone. The area will be ripped, plowed, and/or disked to a depth of approximately 0.3 m (1.0 ft) prior to seeding. Amendments to the soil may be required which may include nutrients and polyacrylamide gel to assist in the retention of soil moisture for germination and

development. Straw may be applied to the area as a mulch after broadcast-seeding. A seed mixture using native plant species and grasses will be applied during early October or late November. The seed planting time allows for dormancy breaking requirements to be met, and that the seed is in the ground prior to the winter precipitation. Species to be included in the seed mixture are:

- Budsage (*Artemisia spinescens*).
- Shadscale (*Atriplex confertifolia*).
- Winterfat (*Ceratoides lanata*).
- Fluff Grass (*Erioneuron pulchellum*).
- Galleta (*Hilaria jamesii*).
- Indian Ricegrass (*Oryzopsis hymenoides*).
- Bottlebrush Squirreltail (*Sitanion hystrix*).
- Desert Globemallow (*Sphaeralcea ambigua*).

2.1.3 Installation of Fencing and Signs

To allow the native plant species to establish and develop, the approximate area indicated in the engineering drawings (Appendix B) will be fenced to prevent damage from trampling and grazing by wild horses. The fence will be T-Post and barbed-wire because it will serve two purposes:

- prevent damage and grazing from wild horses; and
- inhibit unauthorized excavation into the cover.

The fence is anticipated to be maintained for a minimum of five years, or until the plants are determined to be established by a qualified biologist. Signs will be posted on the fence identifying the area as a vegetation establishment area. A Post-Closure Monitoring Plan will be included in the Closure Report (see Section 4.0).

2.2 CONSTRUCTION QUALITY ASSURANCE

Prior to backfilling, the trench areas will be compacted with successive passes of heavy construction equipment tires or vibratory equipment to minimize future settling. Since the trenches may contain materials that will not readily compact, field density tests (ASTM, 1997b [Nuclear Density Tests]) will not be performed after the initial compaction activities. Field density tests (ASTM, 1997b) will be conducted in the compacted fill above each trench area. The fill over each trench area will be compacted to a minimum of 80 percent of the maximum density. Proctor Density Tests (ASTM, 1997a) will be done on the backfill material to determine the maximum density. Density tests will not be conducted in the areas between the trenches since these areas were not previously excavated or used for disposal activities.

The horizon above the 80 percent compaction zone (vegetative cover) will be slightly compacted. Field density tests are not proposed in the vegetative cover since the area will be ripped and textured prior to seed planting (Section 2.1.2). A minimum of one proctor density test will be performed on the material from the borrow pit. Additional proctor density tests may be conducted if significant variability is observed or if there are difficulties in achieving the 80 percent compaction. A minimum of three field density tests will be conducted in each trench to confirm the 80 percent compaction specification is satisfied. The quality assurance data will be included in the Closure Report. Backfill specifications can be found in Appendix B.

2.3 WASTE MANAGEMENT

Petroleum hydrocarbon, hazardous, and radioactive wastes are not anticipated to be generated as a result of implementing this plan since these COCs were not detected during the 1996 characterization activities. Any waste generated at the site is anticipated to be non-hazardous construction debris associated with the installation of the cover and fencing activities (paper, plastic, wood, metal) and personal protective equipment. The construction debris and personal protective equipment will be transported to and disposed of in a TTR or Nevada Test Site (NTS) permitted landfill according to state and federal agreements and permits between the DOE/NV and NDEP, U.S. DOE Orders, and U.S. Department of Transportation requirements,.

3.0 SCHEDULE

This is an expedited closure activity. The DOE/NV plans to have field activities completed by September 30, 1997. The NDEP has verbally agreed to the expedited schedule. The following is the anticipated activities and schedule:

- Begin coordination of field closure activities within four days of the Preliminary Draft CAP submittal to the NDEP.

- Complete field closure (engineered, vegetative cover and fencing) by September 30, 1997. Some minor activities such as sign installation and removal/disposal of construction debris may occur after September 30, 1997.

- Seed the vegetative cover during October/November (see Section 2.1.2 for requirements). Depending upon the closure schedule, this activity is anticipated to have a duration of approximately one week and can be done up to one year after construction of the engineered cap. If the vegetative cover is not seeded by the time that the Final Closure Report (Revision 0) is required to be reviewed by NDEP, the discussion/documentation regarding the establishment of the vegetative cover will be provided in the First Annual Post-Closure Monitoring Report.

- Prepare the Closure Report for submittal to NDEP within approximately 160 days after completion of the backfill and fencing.

Flexibility has been placed in the project schedule to account for minor difficulties (weather, equipment breakdowns, etc.). The DOE/NV will keep the NDEP apprised of any condition that may impact the project schedule.

4.0 POST-CLOSURE MONITORING PLAN

Post-closure monitoring of the cover is intended to determine if maintenance and repairs to the vegetative cover and/or fence is required. The proposed monitoring consists of biannual (twice per year) visual inspections of the cover for condition (subsidence, significant erosion, unauthorized excavation, etc.) and plant development. Additional, nonscheduled inspections may be required after severe weather events such as heavy rainfall, flash flooding, and high winds. Any identified maintenance and repair requirements will be remedied within 90 days of discovery and documented in writing at the time of repair.

The biannual inspections will be performed for approximately five years after the planting of the vegetative covers, and will be documented on inspection forms. Completion of post-closure monitoring of CAU 426 may be proposed after two consecutive years of visual inspections indicating that the need to revegetate or provide maintenance to the vegetative covers is no longer required. Completion of post-closure monitoring may be proposed within five years after the original revegetation of the site and include the removal of the fence since the plants will have attained maturity to not be significantly affected by the grazing of wild horses.

Specific details for the Post-Closure Monitoring Plan will be proposed in the Closure Report for CAU 426. An Annual Report will be prepared that will provide the observations and describe modifications and/or repairs made to the cover area. The Annual Report will be prepared following the second inspection of each year that post-closure monitoring is conducted. If the vegetative cover is not seeded by the time that the Final Closure Report (Revision 0) is required to be reviewed by NDEP, the discussion and documentation regarding the establishment of the vegetative cover will be provided in the First Annual Post-Closure Report. The annual reports will include the following information:

- Discussion of observations.
- Inspection checklist and maintenance record.
- Conclusions and recommendations.

A copy of each annual report will be submitted to the NDEP.

5.0 REFERENCES

ASTM, 1997a, Method D 1557-91: Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort, 1997 Annual Book of ASTM Standards, Volume 04.08, Soil and Rock (I): D 420 - D 4914.

ASTM, 1997b, Method D 2922-91: Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth), 1997 Annual Book of ASTM Standards, Volume 04.08, Soil and Rock (I): D 420 - D 4914.

DOE, 1996, Corrective Action Investigation Plan: Cactus Spring Waste Trenches, Rev. 0, May 1996, DOE/NV-429.

DOE, 1997, Corrective Action Decision Document For the Cactus Spring Waste Trenches, Rev. 1, July 1997, DOE/NV-474 UC-700

EPA, 1996, Region IX Preliminary Remediation Goals (PRGs), San Francisco, CA.

NDEP, 1997a, Letter from Karen K. Beckley to Stephen A. Mellington, Corrective Action Plan for CAU No. 426, Cactus Spring Waste Trenches, Tonopah Test Range, August 21, 1997 .

NDEP, 1997b, Letter from Paul J. Liebendorfer to Stephen A. Mellington, Record of Technical Change (ROTC) No.1 for the Final Revised Corrective Action Decision Document for CAU No. 426: Cactus Spring Waste Trenches, TTR, July 30, 1997

APPENDIX A

COMMENT RESPONSE FORM

DOCUMENT REVIEW FORM

1. Document Title/Number: Preliminary Draft Corrective Action Plan For CAU 426, Cactus Spring Waste Trenches, Tonopah Test Range
2. Document Date: 8/12/97
3. Revision Number: 0
4. Originator/Organization: Dave Madsen, BN/RP, M/S NTS306
5. Responsible DOE/NV ERP Task Manager: Kevin Cabble
6. Review Criteria:Technical
7. Reviewer/Organization: Karen Beckley, NDEP

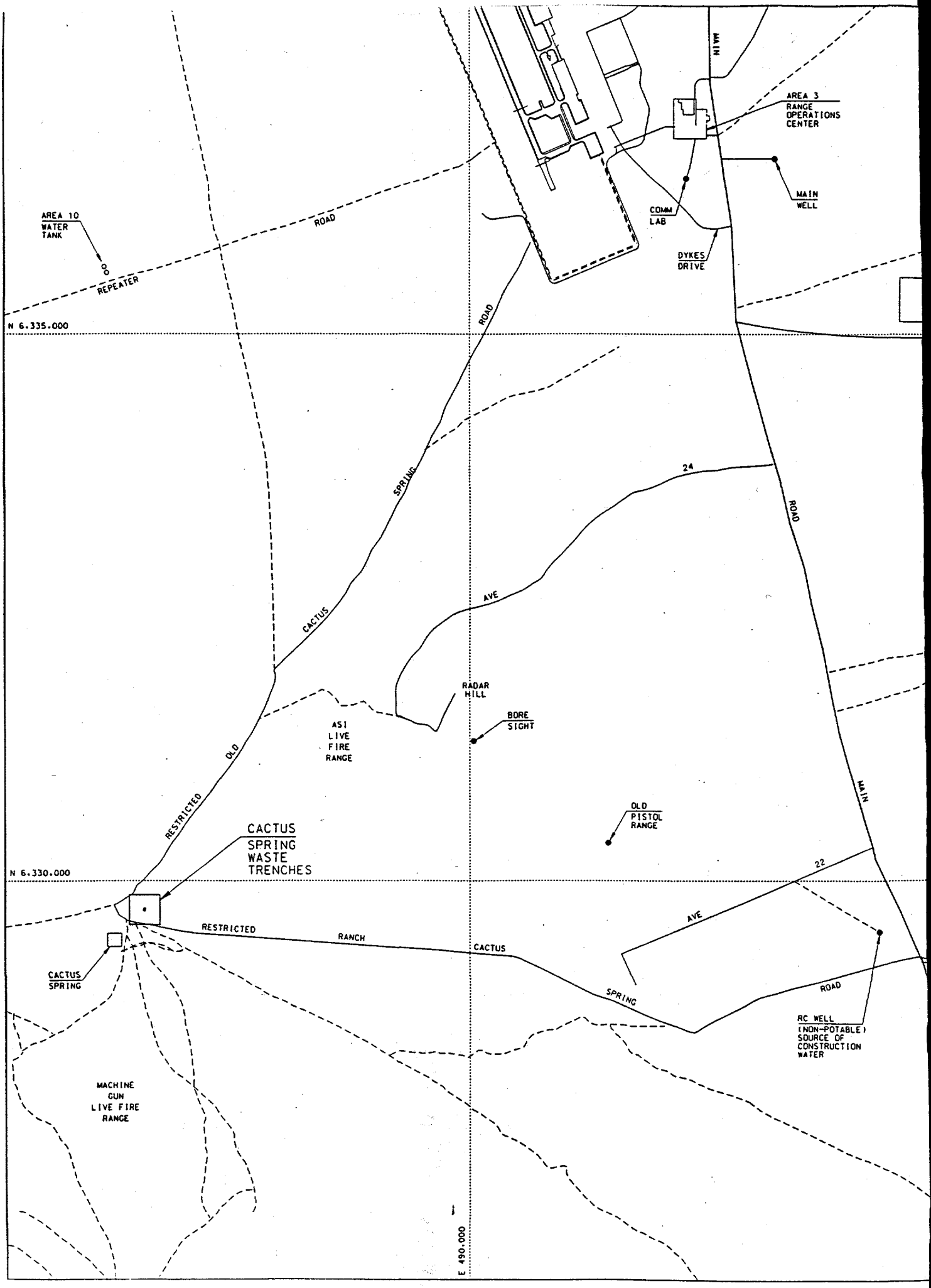
8. Comment Number/ Location	9. Type[a]	10. Comment	11. Comment Response	12. Accept
1. Page 1	M	...NDEP has agreed to review this document with approximately a one week turnaround. should be changed to NDEP has agreed to review the document as expeditiously as possible. The portion of the sentence that states Comments will be addressed after the field activities have been completed should be changed to verbiage along the lines that comments will be addressed in the subsequent document which, in this case, is the closure report.	The text was changed. The comments were addressed in the Final Corrective Action Plan (this document) rather than the Closure Report.	
2. Page 7	M	The discussion in this section should include how full the trenches are and how many lifts are anticipated to be needed to fill the trenches to existing site grade. All fill material needs to be compacted to 80 percent.	The text was changed.	

8. Comment Number/ Location	9. Type[a]	10. Comment	11. Comment Response	12. Accept
3 Page 9	M	The fence is anticipated to be maintained for a minimum of five years .... A post closure plan needs to be included in the closure report to define any site evaluations that are to be conducted.	A Post-Closure Monitoring Plan will be included in the Closure Report. The text was changed to indicate including the plan in the Closure Report.	
4. Appendix B	M	The last engineering drawing, which shows the design specification of the fill/capping activities, suggests that the caps on the trenches do not exceed the actual trench. While this drawing clearly states, Not for Construction the implication is that the appropriate minimum cap dimensions in excess of the trench dimensions has not been considered. Minimum dimensions must be shown on the drawings.	The engineering drawings were changed to illustrate the cap coverage of the trench areas and minimum dimensions were added. The Title III drawings (Approved for Construction) are included in the Final Corrective Action Plan (this document).	

Notes: [a] Comment Types: M = Mandatory, S = Suggested
NDEP comments were provided in an August 21, 1997 letter from Karen K. Beckley, NDEP to Stephen A. Mellington, DOE/NV

APPENDIX B

ENGINEERING DRAWINGS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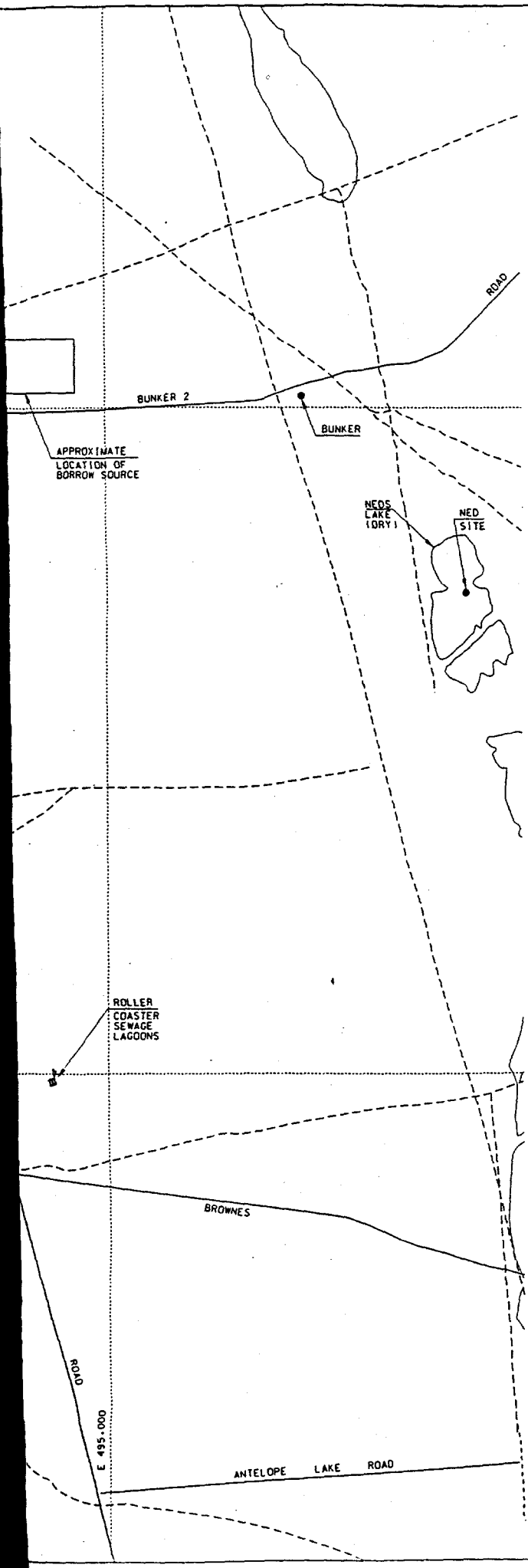

GENERAL NOTES:

1. CAP OVER EACH TRENCH (4) SHALL BE CONSTRUCTED OF BORROW MATERIAL PLACED IN 8" LIFTS AND COMPACTED TO 80% OF MAXIMUM DENSITY PER ASTM D1557.
2. REVEGETATION SHALL BE PERFORMED IN ACCORDANCE WITH RECOMMENDATIONS CONTAINED IN THE TONOPAH TEST RANGE CLOSURE SITES REVEGETATION PLAN. BECHTEL NEVADA. MAY 1997. SEED MIX REQUIRES MODIFICATION TO INCLUDE ONLY PLANTS AND GRASSES WITH ROOT DEPTHS TO MAXIMUM OF 3 FEET.
3. ALL MEASURED VALUES TO BE BASED ON THE NORTH AMERICAN DATUM OF 1983. NEVADA STATE PLANE COORDINATE SYSTEM. CENTRAL ZONE. METERS.

N

GRAPHIC SCALE

0 500 1000 1500 2000 2500

SCALE: 1:20,000 METERS

ISSUE FOR CONSTRUCTION

NO	DATE	REVISIONS	DESIGN	CHECK	SAFETY	PLANS	ENG

U.S. DEPARTMENT OF ENERGY

NEVADA OPERATIONS OFFICE — LAS VEGAS, NEVADA

TONOPAH TEST RANGE — AREA 52

CACTUS SPRING WASTE TRENCHES CAU 426

CLOSURE

VICINITY MAP

DESIGNED	DRAWN
FIE	FIE
CHECKED	ENVIR
JAS	
SAFETY	QA
KRK	

SUBMITTED (PE/CHIEF ENGINEER) BECHTEL NEVADA — USER

APPROVAL BLOCK

DEPT OF ENERGY PROJ ENGR — DATE 2/11/97

Bechtel Nevada

P.O. BOX 3936 NORTH LAS VEGAS, NV 89036

P.A. NO. N/A

ACTIVITY CODE C4PB100E

PROJ. NO. 97096TTR

DRAWING NUMBER JS-052-133-C4

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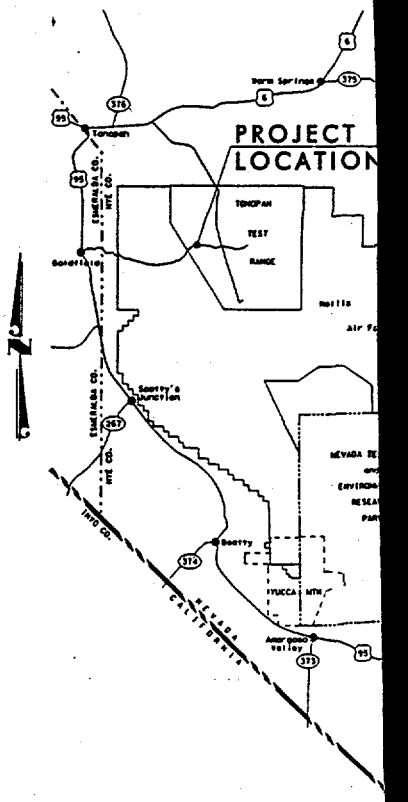
TITLE			
JS-052-133-T2	TITLE SHEET	STD TI	STANDARDS INDEX GENERAL NOTES. DRAFTING SYMBOLS & ANSI STANDARDS
CIVIL			
JS-052-133-C4	VICINITY MAP	STD C100	NOTES. LEGEND & SYMBOLS
JS-052-133-C5	SITE & GRADING PLAN	STD C101	ABBREVIATIONS
JS-052-133-C6	SECTIONS		



LOCAT

NOT

SCOPE OF WORK

THIS PROJECT SHALL CONSIST OF PLACING NATIVE FILL TO CLOSE THE CACTUS SPRING WASTE TRENCHES. WORK WILL ALSO INCLUDE REVEGETATION OF THE SITE.

WORK SHALL BE PERFORMED IN ACCORDANCE WITH DOE/NV STD SPECIFICATIONS DATED DECEMBER 1994.

PARTMENT OF ENERGY

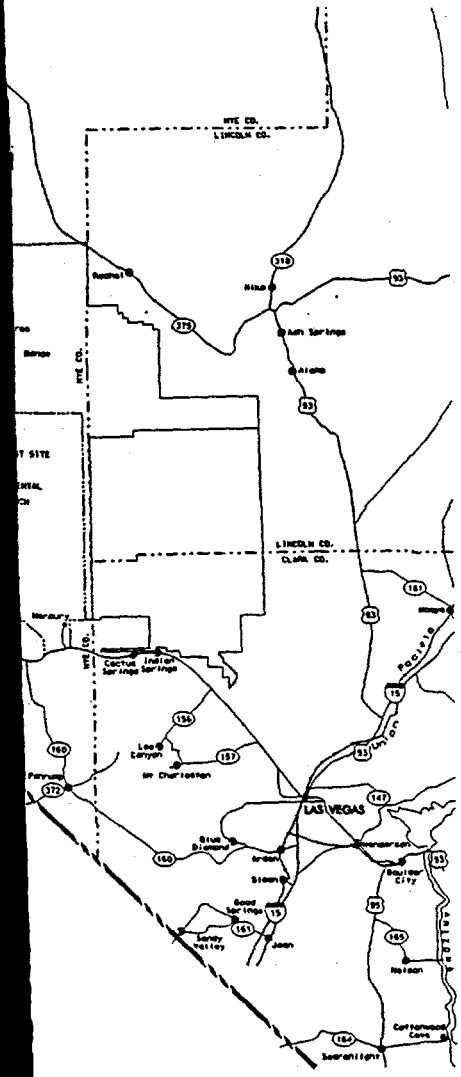
RATIONS OFFICE

ST RANGE, NEVADA

STE TRENCHES CAU 426

OSURE

EA 52



ION MAP

TO SCALE

ISSUE FOR CONSTRUCTION

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U.S. DEPARTMENT OF ENERGY

NEVADA OPERATIONS OFFICE — LAS VEGAS, NEVA

DESIGNED	DRAWN
FIE	FIE
CHECKED	LDWR
JAS	
SAFETY	QA
KAK	

TONOPAH TEST RANGE — AREA 52

CACTUS SPRING WASTE TRENCHES CAU 426

CLOSURE

TITLE SHEET

SUBMITTED (PE/CHIEF ENGINEER) — BECHTEL NEVADA

USER

APPROVAL BLOCK

DEPT OF ENERGY PROJ ENGR — DATE

Bechtel Nevada

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P.A. NO. N/A

ACTIVITY CODE C4PB10DE

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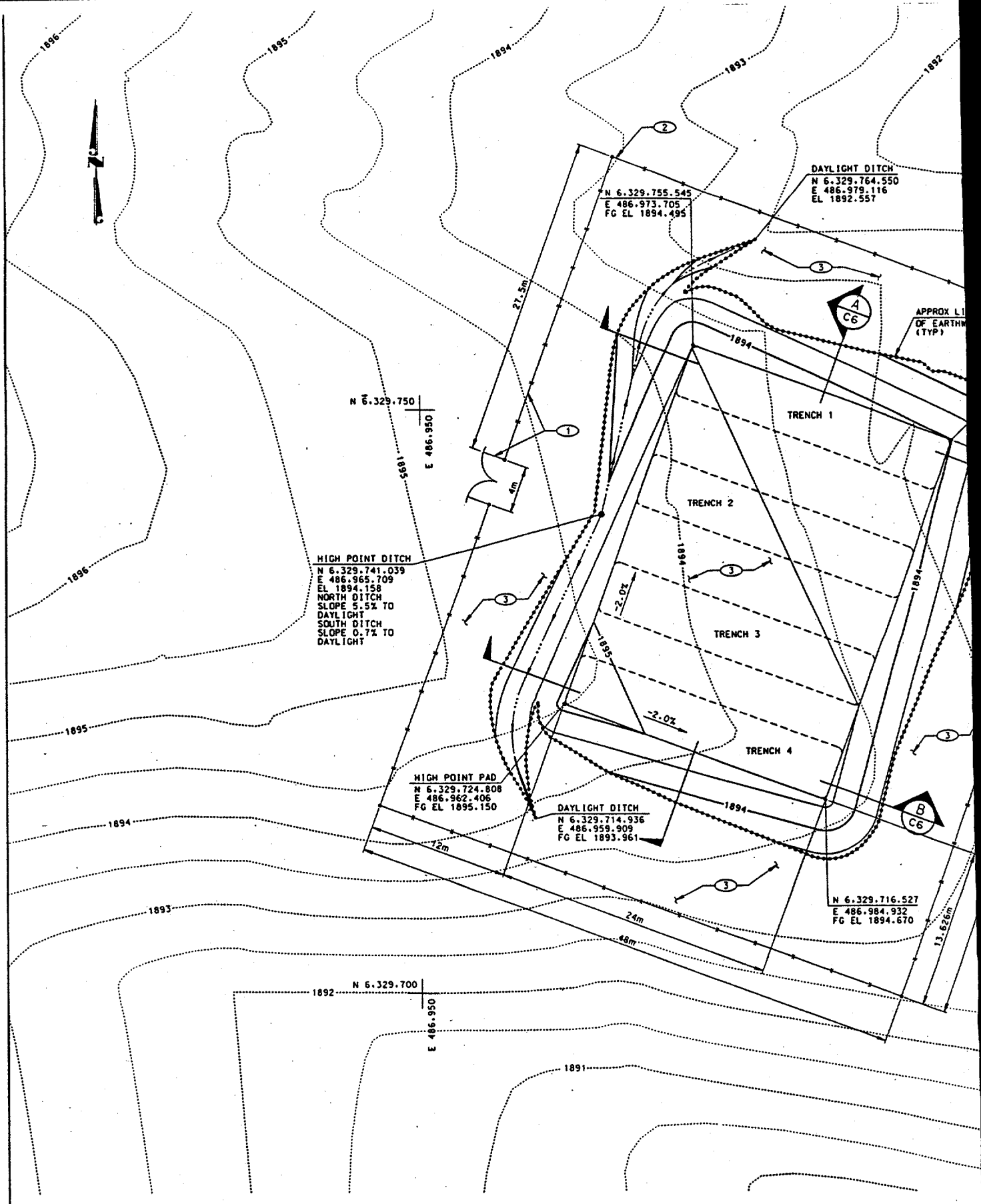
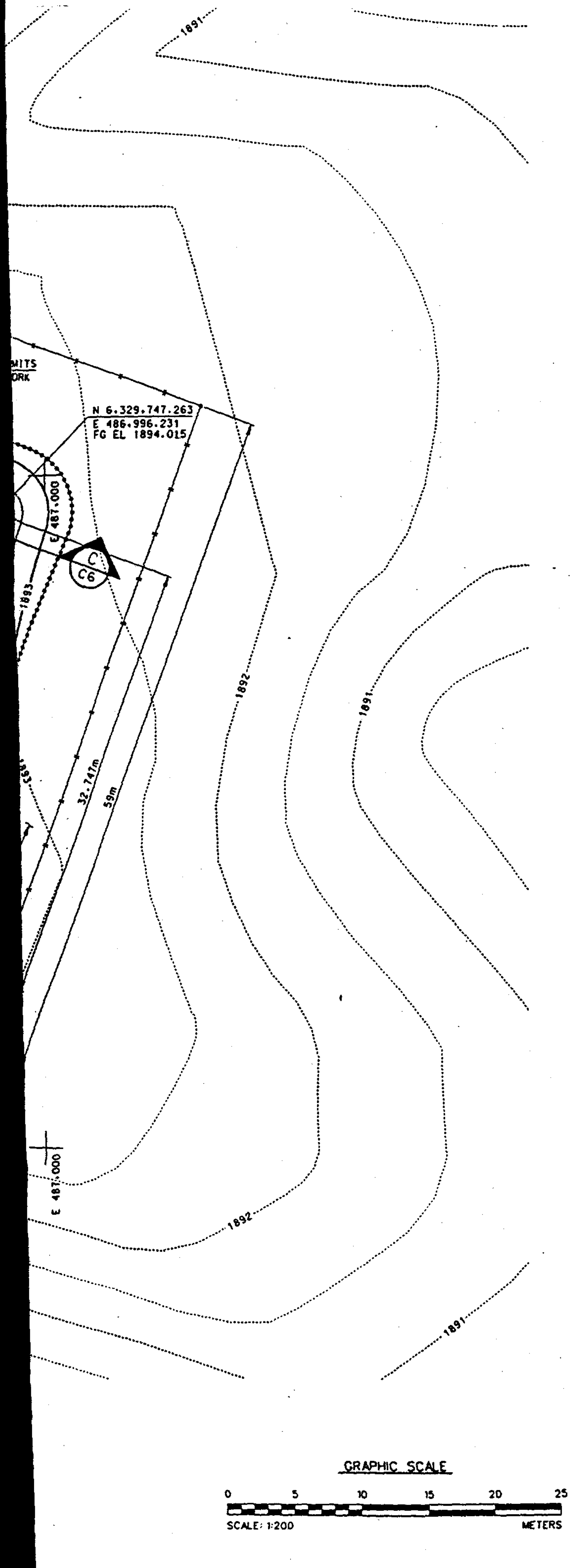


SITE & GRADING PLAN

SCALE : 1:200
CONTOUR INTERVAL = .5 METERS



NOTES

1. CONSTRUCTION QUALITY ASSURANCE SHALL BE PERFORMED IN ACCORDANCE WITH SECTIONS 2.1 AND 2.2 OF THE CORRECTIVE ACTION PLAN DOCUMENT FOR THE CACTUS SPRING WASTE TRENCHES, CAU 426 REV 0, TONOPAH TEST RANGE.

KEY NOTES

(1) A THREE STRAND, BARBED WIRE FENCE SHALL BE INSTALLED AROUND THE TRENCHES. PROVIDE A 4 METER DOUBLE SWING VEHICLE ACCESS GATE AS SHOWN. SIGNS INDICATING REVEGETATION AREAS ARE TO BE MOUNTED ON NEW FENCE.

(2) WARNING SIGNS AGAINST EXCAVATION ARE TO BE INSTALLED ON THE CORNERS OF THE BARBED WIRE FENCING.

(3) ENTIRE AREA WITHIN NEW FENCING SHALL BE REVEGETATED.

LEGEND

[ ] APPROXIMATE PERIMETER OF WASTE TRENCH

ESTIMATED QUANTITIES		
DESCRIPTION	QUANTITY	UNIT
EXCAVATION	33.81	$METER^3$
EMBANKMENT	921.53	$METER^3$
BORROW	887.72	$METER^3$

NO CUT AND FILL FACTORS APPLIED. QUANTITIES SHOWN ARE FOR ESTIMATING PURPOSES ONLY. PAYMENT SHALL BE MADE BY ACTUAL INSTALLED QUANTITIES.

REFERENCES

TITLE SHEET	JS-052-133-T2
VICINITY MAP	JS-052-133-C4
SECTIONS	JS-052-133-C6

ISSUE FOR CONSTRUCTION

NO	DATE	REVISIONS	DESIGN	DRAWN	CHECK	ENVIR	SAFETY	QA	PLANG	USER	BNE

U.S. DEPARTMENT OF ENERGY

NEVADA OPERATIONS OFFICE — LAS VEGAS, NEVADA

TONOPAH TEST RANGE — AREA 52

CACTUS SPRING WASTE TRENCHES CAU 426

CLOSURE

SITE & GRADING PLAN

DESIGNED: FIE | DRAWN: FIE | CHECKED: JAS | ENVIR: [illegible] | SAFETY: KAK | QA:

SUBMITTED (PE/CHIEF ENGINEER) — BECHTEL NEVADA | USER

APPROVAL BLOCK — DEPT OF ENERGY PROJ ENGR | DATE

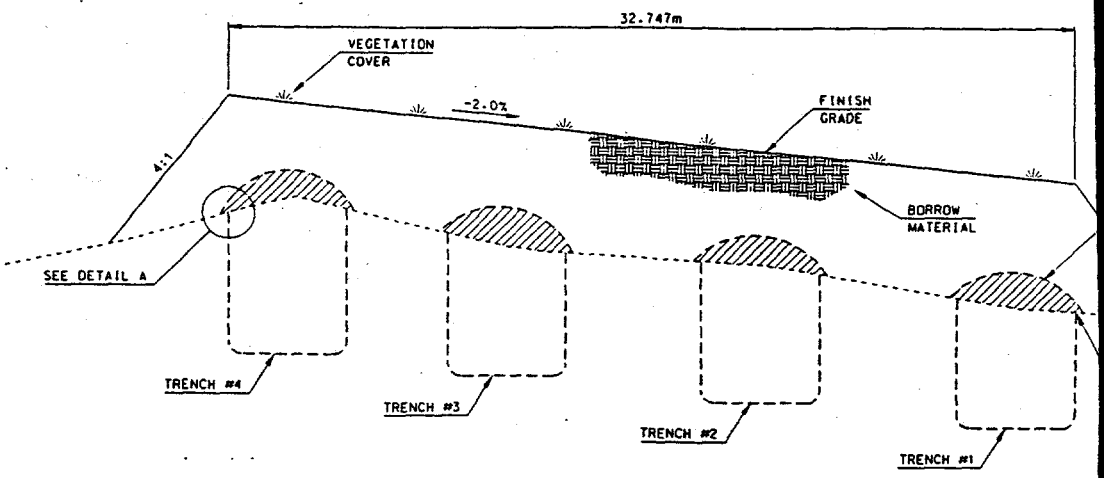
Bechtel Nevada

P.O. BOX 3936 NORTH LAS VEGAS, NV 89036

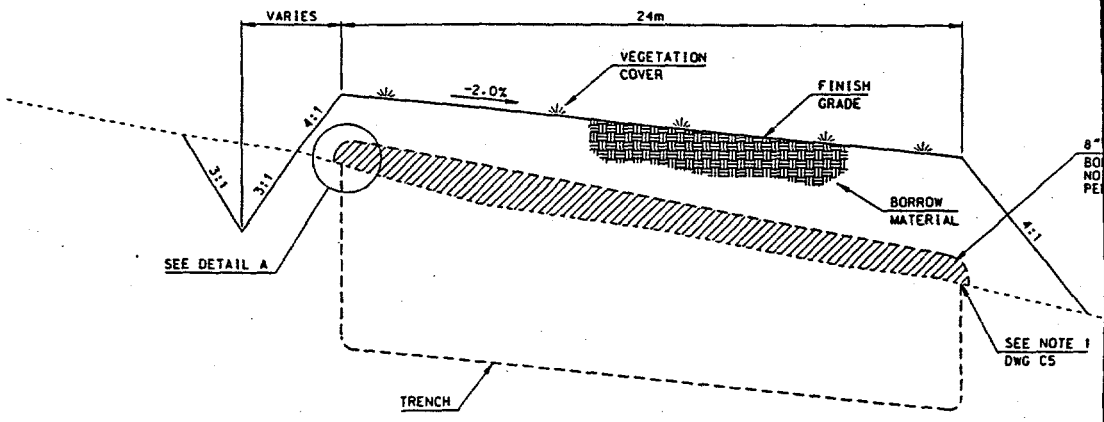
P.A. NO. N/A | ACTIVITY CODE C4PB10DE | PROJ. NO. 97096TTR

DRAWING NUMBER JS-052-133-C5

SHEET ___ OF ___ | REVISION 0



SECTION
NOT TO SCALE
A C5



SECTION
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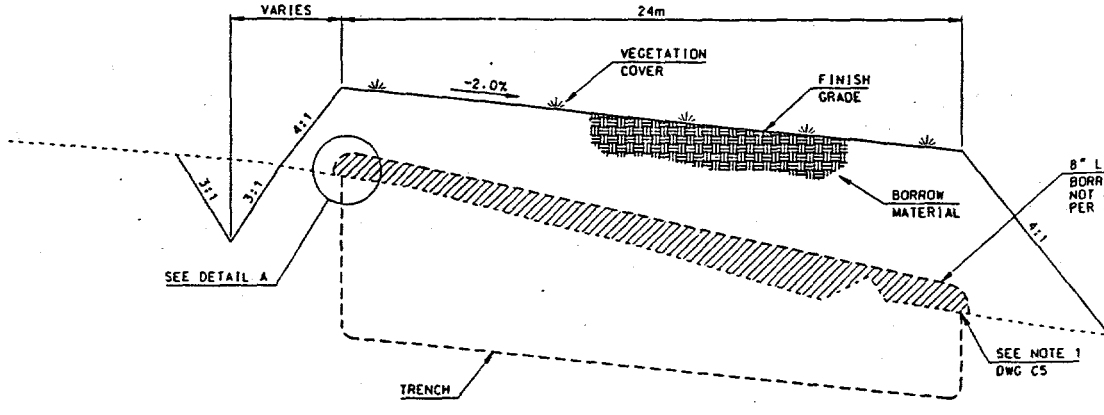
B C5



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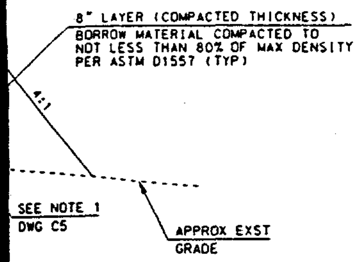
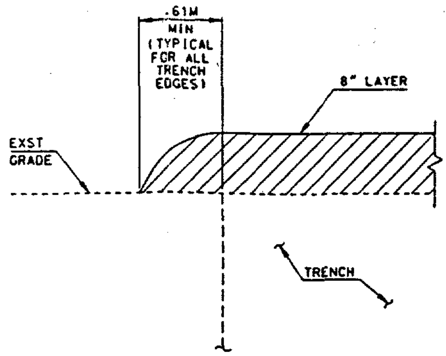
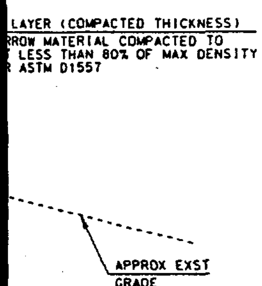
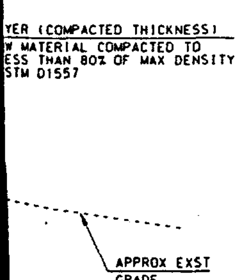
C C5





DETAIL (A)
NOT TO SCALE





REFERENCES

TITLE SHEET	JS-052-133-T2
SITE & GRADING PLAN	JS-052-133-C5

ISSUE FOR CONSTRUCTION

NO	DATE	REVISIONS	DESIGN/DRAWN	CHECK/ENVIR	SAFETY/QA	PE/CHIEF ENGR/USER	DOE

U.S. DEPARTMENT OF ENERGY
NEVADA OPERATIONS OFFICE — LAS VEGAS, NEVADA

TONOPAH TEST RANGE — AREA 52
CACTUS SPRING WASTE TRENCHES CAU 426
CLOSURE
SECTIONS

DESIGNED: FIE — DRAWN: FIE
CHECKED: JAS — ENVIR: [illegible]
SAFETY: KRK — QA:
SUBMITTED (PE/CHIEF ENGINEER) BECHTEL NEVADA — USER
APPROVAL BLOCK — DEPT OF ENERGY PROJ ENGR — DATE

Bechtel Nevada
P.O. BOX 3936 NORTH LAS VEGAS, NV 89036

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