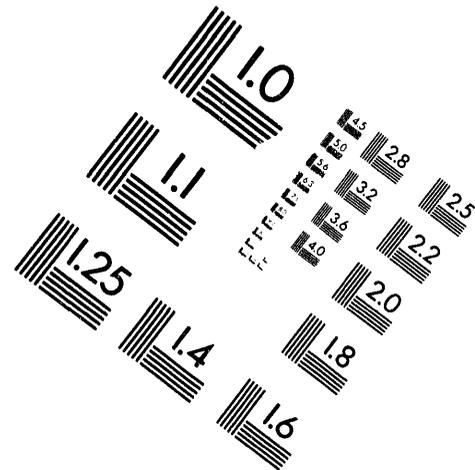
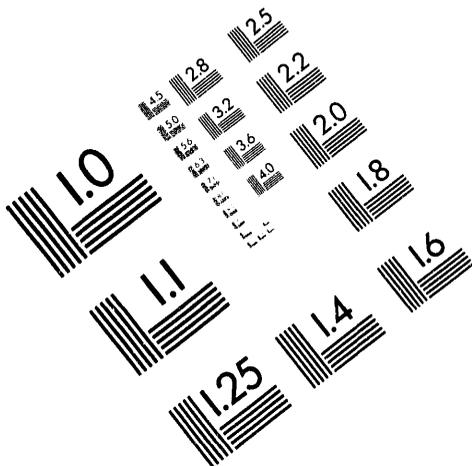




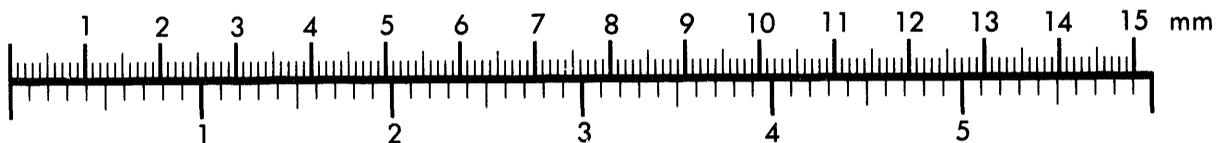
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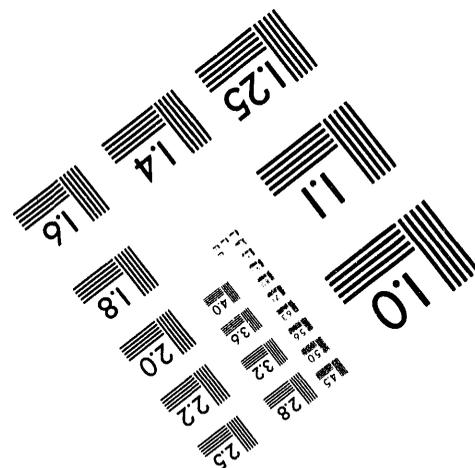
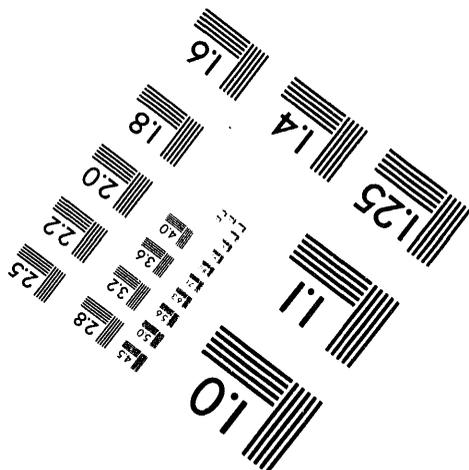
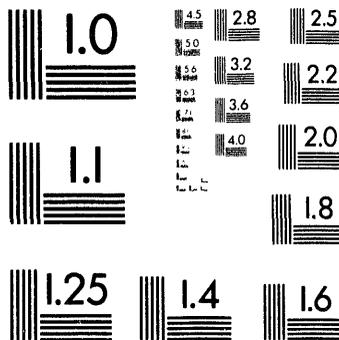
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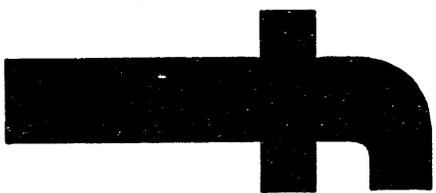
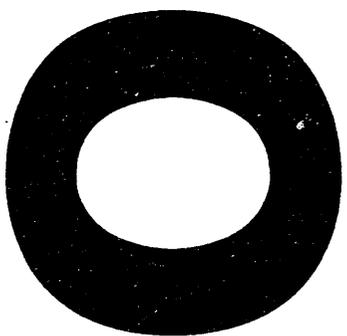
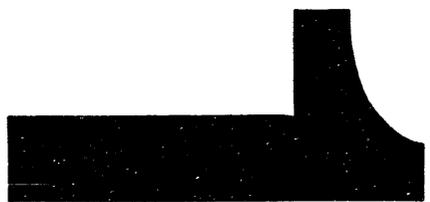
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MITIGATION ACTION PLAN

FEBRUARY 1994

**Supplemental
Environmental Impact Statement,
Petroleum Production at Maximum Efficient Rate,
Naval Petroleum Reserve No. 1 (Elk Hills),
Kern County, California, DOE/EIS-0158**

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JP- MASTER

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EXECUTIVE SUMMARY

The Supplemental Environmental Impact Statement (SEIS) for Petroleum Production at Maximum Efficient Rate, Naval Petroleum Reserve No. 1 (Elk Hills) and the Record of Decision (ROD) commits the United States Department of Energy (DOE) to mitigative actions that will minimize or avoid potential environmental impacts at the Naval Petroleum Reserve No.1 (NPR-1). As specified in DOE Order 5440.1E, "National Environmental Policy Act Compliance Program" (DOE 1992a), a mitigation action plan (MAP) is required that provides for the implementation of any commitments made in a DOE Environmental Impact Statement (EIS) and its associated ROD to mitigate adverse environmental impacts associated with an action.

This MAP focuses on mitigation commitments stated in the SEIS and ROD. Specific commitments and mitigation implementation actions are listed in Appendix A-Mitigation Actions. The comprehensive listing, presented in Appendix A-Mitigation Actions, is the central focus of this MAP and will be updated as needed to allow for organizational, regulatory, or policy changes. It is the intent of DOE, to comply with all applicable federal, state, and local environment, safety, and health laws and regulations, including those pertaining to Federal Facilities, Federal Government and, and DOE requirements, and standard industry practices.

Eighty-eight specific commitments were identified in the SEIS and associated ROD. These commitments pertain to the continued operation of NPR-1 with petroleum production at the Maximum Efficient Rate (MER). The SEIS identified both significant and unavoidable impacts associated with petroleum production at MER. The mitigation measures proposed are expected to reduce impacts as much as feasible; however, as experience is gained in actual implementation of these measures some changes may be warranted. Some flexibility is reserved, therefore, to modify mitigation measures in response to actual program or project experience.

The Naval Petroleum Reserves in California (NPRC) FY 1989-1995 Long Range Plan (LRP) is the principal basis for the proposed action in the SEIS. The LRP describes a myriad of planned operational, maintenance, and development activities over the next 25-30 years.

Questions regarding the MAP may be directed to Mr. James C. Killen, DOE, Director, Planning, Analysis, and Program Support Division. Mr. Killen can be contacted either by writing the Department of Energy, Naval Petroleum Reserves in California, P.O. Box 11, Tupman, California, 93276, Attn: James C. Killen, or by calling (805) 763-6038.

1.0 BACKGROUND AND DESCRIPTION OF THE PROPOSED ACTION

1.1 Background

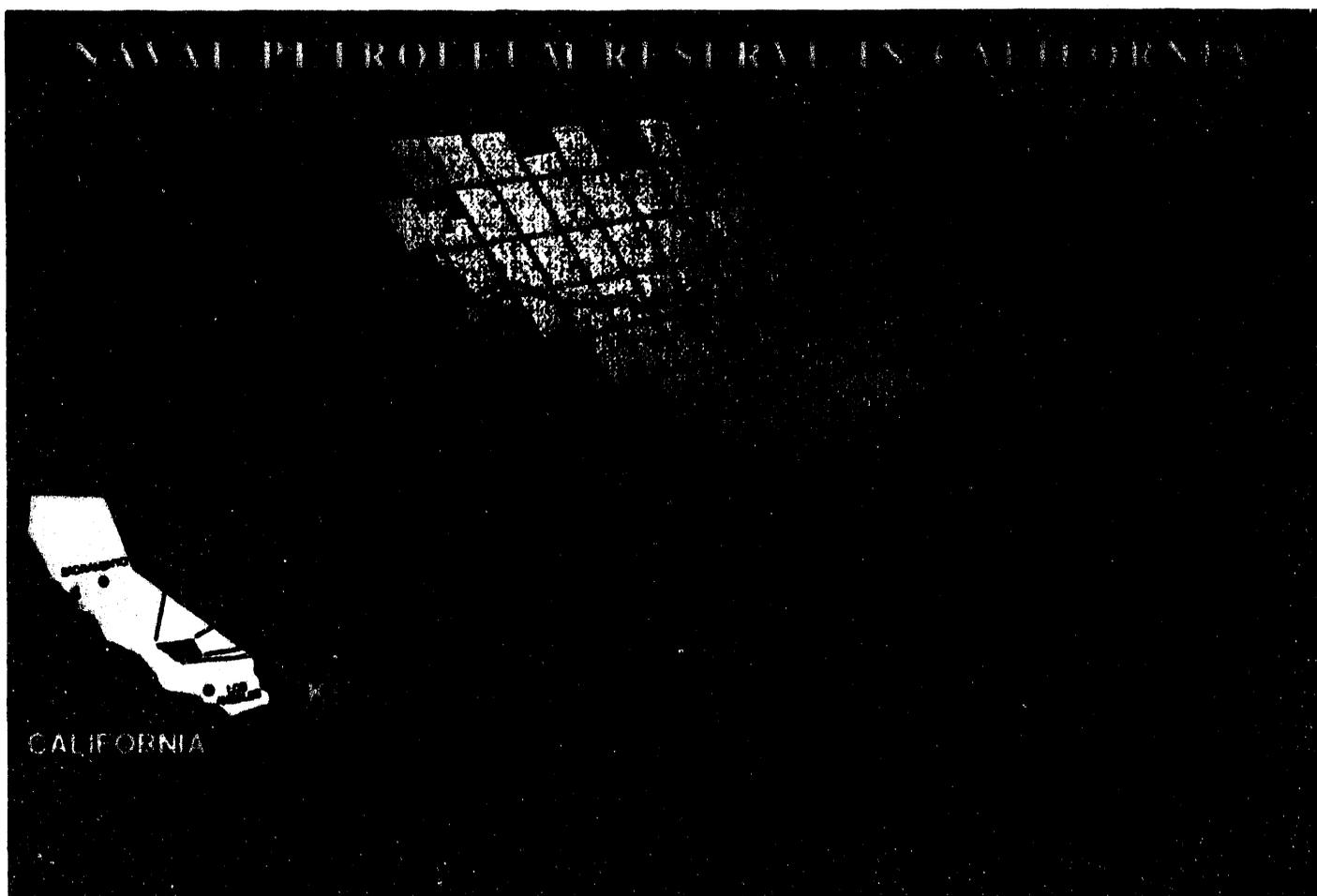
NPR-1 is a large oil and gas field jointly owned and operated by the Federal government and Chevron U.S.A. Inc. (CUSA), pursuant to a Unit Plan Contract (UPC) that became effective in 1944; the government's interest is approximately 78% and CUSA's interest is approximately 22%. The government's interest is under the jurisdiction of DOE. The Unit Operator (UO) for NPR-1 currently operates under a management and operations (M&O) contract with DOE. "UO" and "M&O" are used interchangeably throughout this document and represent the same entity. The facility is approximately 47,409 acres (74 square miles), and is located in Kern County, California, about 25 miles southwest of Bakersfield and 100 miles north of Los Angeles in the south central portion of the state (Figure 1). The environmental analysis presented in the SEIS is a supplement to the NPR-1 Final Environmental Impact Statement of NPR-1 that was issued by DOE in 1979; DOE/EIS-0012 (DOE 1979).

NPR-1 was created in 1912 by Presidential Executive Order for national defense purposes. Except for significant amounts of production during wartime, the facility was maintained in what was essentially a shut-in reserve status until the mid-1970's; although wells were drilled and facilities constructed, production was limited to only that needed for readiness testing. Prompted by oil shortages, Congress passed and the President signed in 1976 the Naval Petroleum Reserves Production Act (Act) providing for the production of NPR-1 at the MER, consistent with the UPC and all applicable federal, state, and local laws and regulations, including those pertaining to environment, safety and health. Under the Act, MER means the maximum sustainable daily oil or gas rate from a reservoir which will permit economic development and depletion of that reservoir without detriment to the ultimate recovery. In accordance with the Act and the UPC, CUSA's equity share of hydrocarbon product is delivered to them, and the government's share is sold by the government by competitive bid in the open marketplace and/or retained by the government. Hydrocarbon product includes crude oil, natural gas, and natural gas liquids consisting of propane, butane and natural gasoline.

1.2 Summary

The proposed action is to continue producing NPR-1 at MER in accordance with the requirements of the Act. This involves the continued operation of existing facilities plus additional future development. For the purpose of the SEIS, it has been assumed that operations and development activities would be carried out approximately as described in the FY 1989-1995 LRP for as long as the field continues to be economic (approximately 2010-2025).

FIGURE 1 - NAVAL PETROLEUM RESERVE NO. 1 SITE VICINITY MAP



Approximate maximum production quantities would be 80,000-99,000 barrels/day of oil; 181,000 barrels/day of produced water requiring disposal; 415 million cubic feet/day of natural gas; 768,000 gallons/day of natural gas liquids; 272 million cubic feet/day of gas injection; 254,000 barrels/day of waterflood injection; 37,000 barrels/day of fresh water injection as steam; and the acquisition of up to 75,000 barrels/day of fresh water for steam injection and other operational purposes. To the extent technically and economically feasible, plans are to recycle produced water for use as source water for waterflood operations. The balance of waterflood source water requirements would be withdrawn from NPR-1 groundwater aquifers in the Tulare Formation. Current groundwater withdrawals for this purpose are about 148,000 barrels/day. If proposed recycling projects become operational, groundwater withdrawals would decline. Produced water that is not recycled will continue to be disposed of into the Tulare Formation, an underground injection control (UIC) exempt aquifer. Currently, approximately 80,000-100,000 barrels/day of produced water are disposed of in this way.

Examples of specific elements of the proposed action include the continued operation and maintenance of all existing facilities; a program to drill, redrill, or deepen approximately 382 wells; a program to perform approximately 2,663 remedial well workovers (such as stimulations, recompletions, artificial-lift installations, and conversions) as needed to ensure efficient operation and maintenance of approximately 2,697 wells; a program to abandon approximately 1,080 wells; construction and operation of approximately 46,250 horsepower (37,500 horsepower gas; 8,750 horsepower electric) of additional gas compression for gas-lift projects, gas-injection projects, and the continued transportation of field gas as reservoir pressures decline; construction and operation of compression and processing facilities to compress, transport and process up to an additional 100-150 million cubic feet/day of gas on-site (fourth NPR-1 gas plant); a phased multi-year initiative to construct and operate a 148-well, 500-acre, 625 million british thermal units (BTU)/hour steamflood project which, if fully implemented, would increase steam injection by approximately 33,000-34,000 barrels/day of fresh water (implementation of individual phases of the steamflood project would be dependent on the technical and economic success of preceding phases. The need to expand the capability of the fresh water system to accommodate the project would be addressed within the scope of each phase); construction of new facilities and increased use of existing facilities as needed to expand waterflooding by approximately 106,000 barrels/day; construction and operation of a 42 megawatt cogeneration facility; and construction and operation of a 170,000-220,000 gallon/day butane isomerization facility. Various projects will continue to investigate, remediate, or otherwise manage numerous old and inactive waste sites. A program to reclaim/revegetate by the year 1998 approximately 1,045 acres of disturbed lands not needed for NPR-1 operations will continue. Various areas will be reclaimed and revegetated once they are identified as no longer needed for operations. A comprehensive environmental program is in place to address all aspects of environmental protection on NPR-1. Permits will be issued for activities by third parties to construct, operate, and maintain pipeline projects, geophysical surveys, and other projects/activities on or crossing NPR-1 lands. These permits will address NPR-1

technical, legal, environmental, safety, security, and other requirements for all on-site and off-site components of each proposed activity.

2.0 MITIGATION ACTION PLAN (MAP)

This section identifies specific commitments made by the DOE in the SEIS and ROD and discusses mitigative actions and organizations responsible for the implementation of these actions. Consistent with the Naval Petroleum and Oil Shale Reserves Strategic Plan (DOE 1993a), it is the intent of DOE to comply with all applicable federal, state, and local environment, safety and health laws and regulations (including those pertaining to Federal Facilities), Federal government and DOE requirements, and standard industry practices, unless waived by proper authority. Specific commitments and mitigation implementation actions are listed in Appendix A-Mitigation Actions. The comprehensive listing presented in Appendix A-Mitigation Actions is the central focus of this MAP and will be updated as needed to allow for organizational, regulatory, or policy changes. This MAP establishes procedures to ensure that mitigation measures identified in the SEIS and ROD are included in all program or project specific planning and execution, that the status of these measures is monitored by a responsible person(s), and that an annual progress report, summarizing the overall implementation, reporting, and monitoring of mitigation measures is prepared.

2.1 MAP Commitments

To ensure that this MAP is as complete as possible, commitments made in both the SEIS and ROD are included in this document. The SEIS and the ROD commitments specified in this document are presented in a capsulated form in Appendix A-Mitigation Actions. Appendix B contains the SEIS ROD. Commitments identified in the ROD are bracketed with the mitigation commitments category code and number shown to assist the reader (see below).

For the purposes of this document, in order to organize commitments and subsequent mitigation actions, all commitments have been grouped into 11 categories. Commitments are sequentially numbered within each category and have been coded in Appendix A-Mitigation Actions according to the listing provided below:

- Geology and Soils (GS)
- Waste Generation (WG)
- Air Quality (AQ)
- Water Resources (WR)
- Terrestrial Biota (TB)
- Cultural Resources (CR)
- Land Use (LU)
- Socioeconomics (SE)
- Risk Assessment (RA)
- Non-Federal Actions (NA)
- NEPA Compliance (NC)

Associated with each specific commitment are references which identify sections in the SEIS or ROD where the mitigation was discussed. These are listed in the references column of Appendix A-Mitigation Actions. Other sections in the SEIS or ROD where the mitigation was also discussed are provided in the cross references column of Appendix A-Mitigation Actions. Where applicable, federal, state, local, regulatory, DOE and policy requirements that apply to the commitments are also listed.

2.2 Mitigation Implementation

The Council on Environmental Quality defines "mitigation" (40 CFR 1508.20), as the following:

- a. **Avoiding the impact altogether by not taking a certain action or parts of an action;**
- b. **Minimizing impacts by limiting the degree or magnitude of the action and its implementation;**
- c. **Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;**
- d. **Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and**
- e. **Compensating for the impact by replacing or providing substitute resources or environments.**

In addition to identifying mitigation actions associated with specific commitments from the SEIS and ROD, this MAP also addresses the processes that will be established to implement these actions. Planned, ongoing, or completed mitigation actions are also presented. Where possible, the description of these actions includes titles of formal plans, UO-NPRC policies and procedures (P&P), or other documents that implement these mitigation activities. Citations for these documents can be found in the references section. Citations are provided throughout the MAP, and they should be considered as being "incorporated by reference" to this MAP in accordance with 40 CFR 1502.21. A number of mitigation actions are listed several times under specific categories; in those instances, the reader is referred back to the original mitigation commitment description. The current status and an additional comments column are also listed.

2.3 Responsibility

The DOE is ultimately responsible for the performance and completion of all mitigations in this MAP. DOE and DOE Contractor responsibilities are provided in Appendix A.

ACRONYMS

AFE-	Authorization for Expenditure
AQ	Air Quality
BPOI	Bechtel Petroleum Operations, Inc.
BTU	British Thermal Unit(s)
CAP	Corrective Action Plan
CCR	California Code of Regulations
CEQ	President's Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CR	Cultural Resources
CRMP	Cultural Resource Management Plan
CUSA	Chevron U.S.A., Inc.
DOE	U.S. Department of Energy
DOGGR	Division of Oil, Gas, and Geothermal Resources
EG&G/EM	EG&G Energy Measurements, Inc.
EPA	U.S. Environmental Protection Agency
ES&CRC	Endangered Species/Cultural Resources Contractor
ETSSC	Engineering Technical Support Services Contractor
FCAA	Federal Clean Air Act
SEIS	Supplemental Environmental Impact Statement
FWS	U.S. Fish and Wildlife Service
FY	Fiscal Year
GS	Geology and Soils
KG	Kilogram(s)
LACT	Lease Automatic Custody Transfer
LRP	NPRC Long Range Plan, FY 1989-1995
LU	Land Use
MAP	Mitigation Action Plan
MER	Maximum Efficient Rate
M&O	Management and Operations Contractor
MSDS	Material Safety Data Sheets
NA	Non-Federal Actions
NC	NEPA Compliance
NEPA	National Environmental Policy Act of 1969
NGL	Natural Gas Liquid

NOx	Nitrogen Oxides
NPR-1	Naval Petroleum Reserve Number 1
NPR-2	Naval Petroleum Reserve Number 2
NPRC	Naval Petroleum Reserves in California
NPOSR	Naval Petroleum and Oil Shale Reserves
NRHP	National Register of Historic Places
OI	Operating Instruction
OSHA	U.S. Occupational Safety and Health Administration
PA/SI	Preliminary Assessment/Site Investigation
PCB	Polychlorinated Biphenyl
PEL	Permissible Exposure Limit
PM₁₀	Particulate Matter with Aerodynamic Diameters $\leq 10 \mu\text{m}$
P&P	Policy and Procedure
PWI	Produced Water Injection
RA	Risk Assessment
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
ROG	Reactive Organic Gases
SEIS	Supplemental Environmental Impact Statement
SE	Socioeconomics
SHPO	State Historic Preservation Office (California)
SJVUAPCD	San Joaquin Valley Unified Air Pollution Control District
SPCC	Spill Prevention Control and Countermeasure
SWAT	Solid Waste Assessment Test
TB	Terrestrial Biota
UIC	Underground Injection Control
UO	Unit Operator
UPC	Unit Plan Contract
WDR	Waste Discharge Requirements
WG	Waste Generation
WR	Water Resources

REFERENCES SECTION

Amimoto, P.Y., 1977 (reprinted 1981), Erosion and Sediment Control Handbook, Division of Mines and Geology, California Department of Conservation, Sacramento, California.

Bechtel Petroleum Operations, Inc., 1991, Plan of Operation of the 35R/36S Solid Waste Transfer Stations, NPR-1, BPOI, Tupman, California, September 12.

Bechtel Petroleum Operations, Inc., 1992a, CERCLA Program Plan for the Operations of the Naval Petroleum Reserve No. 1, Tupman, California, Prepared by Golder Associates, Inc., March 31.

Bechtel Petroleum Operations, Inc., 1992b, Spill Prevention Control and Countermeasure Plan (SPCC), Naval Petroleum Reserve No. 1, Elk Hills, Tupman, California, December.

Bechtel Petroleum Operations, Inc., 1992c, Waste Management Plan for Naval Petroleum Reserve No. 1, BPOI, Tupman, California, October.

EG&G Energy Measurements, Inc. 1991, Operational Guidelines for Conducting Endangered Species Preactivity Surveys on Naval Petroleum Reserve No. 1, Kern County, California, October.

EG&G Energy Measurements, Inc. 1992, Endangered Species Program, Naval Petroleum Reserves in California, Annual Report FY91, U.S. Department of Energy Topical Report, EG&G/EM Santa Barbara Operations Report No. 10617-2131.

EG&G Energy Measurements, Inc. 1993, Endangered Species Program, Naval Petroleum Reserves in California, Annual Report FY92, U.S. Department of Energy Topical Report, EG&G/EM Santa Barbara Operations Report No. 10617-2166.

Fries, K. G., 1993, Preliminary Evaluation of FWS National Wetland Inventory Maps on NPR-1 Elk Hills, California, prepared for the Department of Energy by Research Management Consultants, Inc., Naval Petroleum Reserves in California, Tupman, California, January 27.

Kato, T. T., and T. P. O'Farrell. 1987, Operational Guidelines for Conducting Endangered Species Preactivity Surveys on Naval Petroleum Reserve No. 1, Kern County, California, U.S. Department of Energy Topical Report, EG&G/EM Santa Barbara Operations Report No. 10282-2178.

O'Farrell, T. P., and D. L. Mitchell. 1985, A Habitat Restoration Plan for Naval Petroleum Reserve No. 1, Kern County, California, U.S. Department of Energy Topical Report, EG&G/EM Santa Barbara Operations Report No. 10282-2081.

Soil Conservation Service, 1985, Guides for Erosion and Sediment Control in California, U.S. Department of Agriculture, Davis, California, p. 114.

UO-NPRC, Operating Instruction 1350-002 "Operations Test Procedure," Unit Operator, October 1992.

UO-NPRC, Operating Instruction 18.1.10, "Pre-Performance Environmental Training," Unit Operator, October 1991.

UO-NPRC, Operating Instruction 18.1.11, "New Hire Environmental Training," Unit Operator, October 1991.

UO-NPRC, Operating Instruction 18.1.14, "Sampling/Monitoring of NPR-1 Water Source Wells," Unit Operator, December 1992.

UO-NPRC, Operating Instruction 18.1.17, "Radiological Surveys," Unit Operator, September 1993.

UO-NPRC, Policy and Procedure 340-003, "Processing Requests for Revocable Permits," Unit Operator, November 1989.

UO-NPRC, Policy and Procedure 1810-004, "National Environmental Policy Act (NEPA) Requirements," Unit Operator, July 1990.

UO-NPRC, Policy and Procedure 1810-009, "Training," Unit Operator, September 1991.

UO-NPRC, Policy and Procedure 1830-001, "Groundwater Protection," Unit Operator, November 1991.

UO-NPRC, Policy and Procedure 1830-002, "Oil and Chemical Spills," Unit Operator, January 1992.

UO-NPRC, Policy and Procedure 1830-003, "Sumps," Unit Operator, January 1993.

UO-NPRC, Policy and Procedure 1830-004, "Septic Tanks and Leach Fields," Unit Operator, October 1991.

UO-NPRC, Policy and Procedure 1830-005, "Surface Discharges," Unit Operator, November 1991.

UO-NPRC, Policy and Procedure 1830-006, "Waste Discharge Requirements (WDR)," Unit Operator, October 1991.

UO-NPRC, Policy and Procedure 1830-007, "Hazardous Material Releases," Unit Operator, November, 1989.

UO-NPRC, Policy and Procedure 1830-008, "Closure of Abandoned Sumps," Unit Operator, October, 1991.

UO-NPRC, Policy and Procedure 1850-001, "Cultural Resources Protection," Unit Operator, September, 1991.

UO-NPRC, Policy and Procedure 1860-001, "Chemical Containers," Unit Operator, January 1992.

UO-NPRC, Policy and Procedure 1860-002, "Lead Acid Batteries," Unit Operator, October, 1991.

UO-NPRC, Policy and Procedure 1860-004, "Disposal of Non-Hazardous Waste," Unit Operator, October 1991.

UO-NPRC, Policy and Procedure 1860-005, "Disposal of Hazardous Waste," Unit Operator, November, 1988.

UO-NPRC, Policy and Procedure 1870-001, "PCBs," Unit Operator, January, 1993.

UO-NPRC, Policy and Procedure 1870-002, "Management of Solvents," Unit Operator, November, 1991.

UO-NPRC, Policy and Procedure 1870-003, "Biocide Use," Unit Operator, November, 1988.

UO-NPRC, Policy and Procedure 1880-001, "Erosion Control Program," Unit Operator, January, 1989.

UO-NPRC, Policy and Procedure 1880-002, "Conservation of Topsoil: General," Unit Operator, November, 1991.

UO-NPRC, Policy and Procedure 1880-003, "Topsoil Conservation: Aboveground Pipeline/Pipeline Rights-of-Way & Associated Service Roads," Unit Operator, October 1990.

UO-NPRC, Policy and Procedure 1880-004, "Habitat Reclamation," Unit Operator, October, 1990.

UO-NPRC, Policy and Procedure 1880-005, "Environmental Preactivity Surveys NPR-1," Unit Operator, October 1990.

UO-NPRC, Policy and Procedure 1880-006, "Livestock Grazing," Unit Operator, October, 1991.

UO-NPRC, Policy and Procedure 1880-007, "Protection of Raptors," Unit Operator, October 1991.

UO-NPRC, Policy and Procedure 1880-008, "Endangered/Threatened Species Conservation," Unit Operator, October, 1991.

Uniform Building Code, 1991, International Conference of Building Officials, Whittier, California.

U.S. Department of Energy, 1979, Final Environmental Impact Statement, Petroleum Production at Maximum Efficient Rate, Naval Petroleum Reserve No. 1 (Elk Hills), Kern County, California, U.S. Department of Energy Report DOE/EIS-0012, Washington, DC, August.

U.S. Department of Energy, 1988, DOE Order 5400.1, General Environmental Protection Program, Washington, D.C., November 9.

U.S. Department of Energy, 1990, Waste Minimization Program, Naval Petroleum Reserves in California, May 9.

U.S. Department of Energy, 1992, DOE Notice 5480.6, Radiological Control Manual, Washington, D.C., June.

U.S. Department of Energy, 1992a, DOE Order 5440.1E, National Environmental Policy Act Compliance Program, Washington, D.C., November 10.

U.S. Department of Energy, 1992b, Cooperative Agreement and Supplement between the California Department of Food and Agriculture and the United States Department of Energy for the Beet Leafhopper Malathion Spraying Program, Naval Petroleum Reserves in California, Tupman, California, April 9.

U.S. Department of Energy, 1992c, National Environmental Policy Act (NEPA), Fossil Energy NEPA Guidance Manual, Washington D.C., December.

U.S. Department of Energy, 1993a, Naval Petroleum and Oil Shale Reserves (NPOSr) Strategic Plan, Washington D.C., January.

U.S. Department of Energy, 1993b, U.S. Department of Energy Naval Petroleum Reserves in California, Tiger Team Assessment Final Corrective Action Plan, Naval Petroleum Reserves in California, Tupman, California, April.

Woodward-Clyde Consultants, 1991, Geotechnical and Earthquake Engineering Study, Naval Petroleum Reserve No. 1, Elk Hills, California, Oakland, California, February 27.

Note: Documents included in this list may be obtained upon request from James C. Killen, Director, Planning, Analysis, and Program Support Division, U.S. Department of Energy, Naval Petroleum Reserves in California, Tupman, California 93276. Copies are also available for review in the NPRC reading room.

**APPENDIX A:
MITIGATION ACTIONS**

APPENDIX A MITIGATION ACTIONS

Mitigation Number	Mitigation Commitment	SEIS/ROD Page Reference	SEIS Cross References	Mitigation Implementation	Responsibility To Implement	Mitigation Implementation Status/Comments
GEOLOGY AND SOILS						
GS-1	Soil Conservation: Aminoto (1977) and Soil Conservation Service (1985) erosion control/site-rehabilitation measures will be implemented in planning, design, and operations activities.	4.1.1-1/ 19, 20		Soil conservation measures for site activities will be implemented pursuant to Policy and Procedures (P&P's) 1880-002, "Conservation of Topsoil: General"; 1880-003, "Topsoil Conservation: Above-Ground Pipeline/Pipeline Rights-of-way and Associated Service Roads."	UO	On-going.
GS-2	Seismic Safety: Design of NPR-1 facilities will be in accordance with the latest edition of the Uniform Building Code and the recommendations of the NPR-1 Geotechnical and Earthquake Engineering Study (Woodward-Clyde 1991).	4.1.1-2/ 20	xliv	Design criteria for NPR-1 facilities will conform to Zone 4 California Building Code requirements for new construction and renovation.	DOE UO	On-going.
WASTE GENERATION						
WG-1	Abandoned Waste Sites: A program is in place to identify, review, investigate, characterize, evaluate, remediate, and formally close all abandoned or unneeded waste disposal sites in accordance with applicable regulations and DOE Orders.	1-34 1-36	4.1.2-8 xxxviii	Sites will be managed pursuant to the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Program Plan for NPR-1 Operations (BPOI 1992a). In addition, sumps will be closed pursuant to P&P 1830-008, "Closure of Abandoned Sumps."	DOE UO	On-going; all sites have been addressed through either remediation, or Preliminary Assessments/Site Investigations (PA/SI's). Phase I sites will be reevaluated pursuant to Corrective Action Plan (CAP) EAP-020A, "Identification and Evaluation of Inactive Waste Sites" (DOE 1993b).
WG-2	Waste Minimization: NPR-1 will establish and implement a waste minimization program to reduce the volume and toxicity of all wastes.	3.2-4/ 21, 22	3.2-1 3.2-19	The present Waste Minimization Program (DOE 1990) specifies inspections and reviews to evaluate methods of reducing waste volumes and toxicity.	DOE UO	On-going; the current program is being revised and expanded to incorporate changes in technology and regulations (including Executive Order 12856) pursuant to CAP EAP-061, "Waste Minimization Program" (DOE 1993b).
WG-3	Waste Minimization: Potential increases to the site's annual volume of hazardous waste generation as a result of the proposed facilities will require careful facility planning, engineering controls, and hazardous waste minimization and management practices review.	4.1.2-7/ 21, 22		Proposed projects will be evaluated using proven waste minimization/pollution prevention techniques to reduce waste generation.	DOE UO	On-going; see WG-2 comments.

Mitigation Number	Mitigation Commitment	SEIS/ROD Page Reference	SEIS Cross References	Mitigation Implementation	Responsibility To Implement	Mitigation Implementation Status/Comments
WASTE GENERATION (continued)						
WG-4	Hazardous Waste: State regulatory programs, such as the state's Hazardous Waste Reduction and Management Review Act of 1989 (Senate Bill 14) will be complied with.	4.1.2-7/ 21, 22	3.2-4 3.2-5	A hazardous waste inventory report will be prepared pursuant to Senate Bill 14 (as amended by Senate Bill 1726). The inventory will be incorporated into NPR-1 waste minimization plans.	DOE UO	On-going; the threshold for compliance has been lowered from 12,000 kg to 5,000 kg since the SEIS was initiated.
WG-5	Waste Minimization: All drilling fluid additives utilized at NPR-1 are included on the list of approved nonhazardous drilling fluid additives issued by the California Department of Health Services in 1982.	3.1-15/ 20		Review all chemical product Material Safety Data Sheets (MSDS) for recommended usage to reduce use of hazardous and/or toxic products at NPR-1 (See also WG-18).	DOE UO	On-going; the current program will be revised to incorporate evaluations of chemicals and chemical usage to reduce hazards and toxicity.
WG-6	Spill Prevention, Control, and Countermeasure Plan (SPCC): All spills will be cleaned up immediately upon identification. Subcontractors will be required to follow the same procedures that have been adopted by Bechtel Petroleum Operations, Inc. (BPOI).	3.4-5/ 24	3.2-19 4.1.2-8 4.1.2-9 4.1.4-2 4.1.4-4	All spills will be addressed in accordance with the SPCC Plan (BPOI 1992b) and P&P 1830-002, "Oil and Chemical Spills."	DOE UO	On-going; the current SPCC Plan was revised in October 1992 to incorporate corrective actions taken on deficiencies identified in Tiger Team Audit CAP EAP-054, "Spill Prevention Control and Countermeasures Plan Amendment" (DOE 1993b). The Plan will be reviewed every 3 years and revised as required by 40 CFR Part 112.5. P&P 1830-002 is presently being revised.
WG-7	Gas Plant Cooling Tower: Debris from the demolition of the 3G gas-plant cooling tower would be considered hazardous waste and will be disposed of in accordance with applicable regulations.	4.1.2-9	1-35 1-36 3.2-15	A demolition/removal contract bid package to conduct the work will be completed.	DOE UO	On-going.
WG-8	Hexavalent Chromium: A visual program to inspect other potential hexavalent chromium spill sites will continue.	3.2-14	3.2-8 4.1.2-8	Characterization and remediation of any site discovered in the future will be managed pursuant to the CERCLA Program Plan for NPR-1 Operations (BPOI 1992a).	DOE UO	On-going; to date, 65 sites have been remediated.
WG-9	23S Saltwater Brine Sumps: These sumps will be further characterized as part of the NPR-1 sump closure program.	3.2-14		See WG-1.	UO	On-going; a draft Remedial Investigation/Feasibility Study (RI/FS) has been developed and is under internal review.
WG-10	Site 1A-6M Well Pad and Sumps: A feasibility study evaluating the alternatives in detail is planned. Based upon the results of the feasibility study, a remedial action will be selected.	3.2-14		See WG-1.	UO	On-going; a draft RI/FS has been developed and is under internal review.
WG-11	18R Drilling Fluid Tanks: Three of the four remaining tanks still contain solid non-hazardous waste materials, which will be removed.	3.2-16		See WG-1.	UO	On-going.

Mitigation Number	Mitigation Commitment	SEIS/ROD Page Reference	SEIS Cross References	Mitigation Implementation	Responsibility To Implement	Mitigation Implementation Status/Comments
WASTE GENERATION (Continued)						
WG-12	36R Abandoned Gas Plant: Additional consideration will be given to this site as part of the NPR-1 cleanup/closure program.	3.2-16		See WG-1.	UO	On-going; a PA has been completed for this site.
WG-13	Additional Sump Investigations: Wastewater sumps that have been abandoned, or are no longer needed, will be identified and reviewed, characterized, remediated, and closed in accordance with appropriate requirements, including DOE Orders.	4.1.2-8	3.2-17 4.1.2-8 4.1.2-9 4.1.4-14	All inactive sumps are scheduled for testing and closure per P&P 1830-008, "Closure of Abandoned Sumps." See also WR-9.	UO	On-going; 13 sumps have already been closed.
WG-14	Solid Waste: The characterization program for all Calderon bill regulated solid waste facilities will include site characterization and reporting of results to regulatory agencies of all active and inactive landfills, landfills, surface dumps, and any other solid waste facilities.	4.1.2-9	H-84	Solid Waste Assessment Tests (SWATs) for the four inactive landfills were submitted for regulatory review in 1992. Closure plans will be submitted for regulatory review.	UO	On-going; closure of the four landfills is anticipated no later than 1995.
WG-15	Sewage: Local Kern County ordinances govern the construction and use of septic fields will be complied with.	3.2-18		Construction and operation of septic tanks will be managed pursuant to P&P 1830-004, "Septic Tanks and Leach Fields."	UO	On-going.
WG-16	Herbicides and Pesticides: Storage containers and applicators used by subcontractors are considered hazardous waste and will be disposed of off-site by the subcontractors. Herbicides and pesticides will not be stored or disposed of on-site.	3.2-18		Disposition of all chemical storage containers are addressed in P&P 1860-001, "Chemical Containers" and 1870-003, "Biocide Use." All containers remain the property of the applicator. These P&P's will implement the mitigation.	UO	On-going; P&P 1870-003 has been revised as part of CAP EAP-055A, "Pesticide/ Herbicide Program" (DOE 1993b).
WG-17	Tank Bottoms: These sediments will be tested, and if determined to be hazardous, they will be removed from the site for disposal at a permitted hazardous waste disposal facility. If the materials are determined to be nonhazardous, they will be disposed of at the 27R landfarm.	3.2-19		The NPR-1 Waste Management Plan (BPOI 1992c) provides the sampling and analysis requirements for waste streams generated on-site. In addition, P&P 1230-003, "Confined Space Entry" provides protective measures for workers in confined spaces.	UO	On-going; the Waste Management Plan was prepared as a comprehensive document to identify existing practices. As of October, 1993, nonhazardous tank bottoms are being disposed of off-site.

Mitigation Number	Mitigation Commitment	SEIS/ROD Page Reference	SEIS Cross References	Mitigation Implementation	Responsibility To Implement	Mitigation Implementation Status/Comments
WASTE GENERATION (Continued)						
WG-18	Chemical Containers: Storage handling of hazardous chemicals will be required to be carried out in accordance with a hazard communication plan that consists of maintaining MSDSs on each chemical and employee training on chemical handling and management. As storage tanks and drums are emptied, they will be reused or disposed of off-site at permitted hazardous waste facilities.	3.2-19		Under the Hazard Communication Program, P&P 1230-001, "Hazard Communication" MSDSs are maintained by the UO Safety and Health Department. Hazard Communication training is conducted annually for all employees. All hazardous waste handlers, contractors and subcontractors are required to comply with the provisions of 29 CFR 1910.120, Hazardous Waste Operations, 49 CFR Parts 500-599 and applicable DOE Orders. These requirements will continue. P&P 1860-001, "Chemical Containers" addresses the disposition of chemical containers utilized at NPR-1. In addition, these containers will be managed pursuant to the measures described in the Waste Management Plan for NPR-1 (BPOI 1992c).	UO	On-going; reuse of containers constitutes return of the containers to the manufacturer for recycling.
WG-19	Polychlorinated Biphenyls (PCB): Transformers are not tested for PCB's while they are in service. When they are removed from service (e.g., for repairs), they will be stored in the PCB-storage area in the 2B storage yard, and they will be tested at that time. Transformer oils that test above 5 parts/million PCB, and the transformers themselves, will be disposed of off-site at a permitted hazardous waste disposal facility within 30 days. Transformers and their oils that do not test above 5 parts/million PCB will be either salvaged or returned to service depending on their condition.	3.2-19 3.2-21		PCB's are managed pursuant to P&P 1870-001, "PCBs." The PCB management program is also being addressed pursuant to CAPs EAP-059, "PCB Storage" and EAP-060A, "PCB Identification and Management" (DOE 1993b).	DOE UO	On-going.
WG-20	Asbestos: A phased program is in place to remove all asbestos from NPR-1 facilities and equipment. Until asbestos can be removed and disposed of, encapsulation of all friable and exposed asbestos will be required. Asbestos areas will be monitored to determine airborne particulate levels. Removed asbestos will be disposed of off-site at a permitted hazardous waste facility. Asbestos removal subcontractors will be licensed by the state.	3.2-20	1-36 3.2-5 4.1.2-10	Under P&P 1230-005, "Asbestos Handling and Abatement" and P&P 1230-008, "Personal Exposure Monitoring Program," asbestos handling and abatement is controlled & monitored. These P&P's incorporate the requirements of 29 CFR 1910. Disposal off-site is conducted by a licensed contractor. The asbestos management program is also being enhanced pursuant to CAP EAP-057A, "Asbestos Management" (DOE 1993b).	DOE UO	On-going.

Mitigation Number	Mitigation Commitment	SEIS/ROD Page Reference	SEIS Cross References	Mitigation Implementation	Responsibility To Implement	Mitigation Implementation Status/Comments
WASTE GENERATION (Continued)						
WG-21	Solvent Wastes: Wastes containing these substances will be collected in drums and disposed of off-site at permitted hazardous waste facilities.	3-2-20		These wastes will be managed pursuant to P&P's 1860-005, "Disposal of Hazardous Waste" and 1870-003, "Management of Solvents" and the Waste Management Plan for NPR-1 (BPOI 1993b).	UO	On-going; a used solvent elimination program is also in place with solvent suppliers to recycle and reduce these waste streams.
WG-22	Used Lead-Acid Batteries: Spent batteries will be collected, stored and transported to recyclers pursuant to 22 California Code of Regulation (CCR) Section 66822.	3.2-20		These wastes will be managed pursuant to P&P 1860-002, "Lead Acid Batteries."	UO	On-going.
WG-23	Solid-Waste-Transfer Stations: Nonhazardous wastes such as wood, metal equipment parts, damaged tools, construction debris, and other refuse from field operations will be collected at two solid-waste-transfer stations - one each in Section 36S and 35R.	3.2-21		Operations will be carried out in accordance with the Plan of Operations for the 35R and 36S Solid Waste Transfer Stations, NPR-1 (BPOI 1991). Disposal of such wastes will be pursuant to P&P 1860-004, "Disposal of Non-Hazardous Wastes."	UO	On-going.
WG-24	Hazardous Waste 90-Day Storage Area: Under current practice, hazardous wastes will be stored for no more than 90 days at a waste-storage area in Section 35R; then they will be transported off-site for disposal at a permitted hazardous waste disposal facility.	3.2-21		The storage, management and disposal of hazardous wastes will be managed pursuant to the Waste Management Plan for NPR-1 (BPOI 1992c) and P&P 1860-005, "Disposal of Hazardous Waste."	UO	On-going.
WG-25	Future Use of Hazardous Drilling Fluids: If a hazardous drilling fluid is required for future NPR-1 operations, the spent fluids will be contained and disposed of off-site at a permitted facility.	H-98		Any potential future hazardous wastes would be managed and disposed of pursuant to the Waste Management Plan for NPR-1 (BPOI 1992c).	UO	None have been used on site since 1983.
WG-26	24Z/29R Closed-loop Gas-Lift: Spills and leaks of glycol will be minimized and addressed through the SPCC plan.	4.1.2-2		Requirements of the SPCC Plan for secondary containment will be implemented as necessary in the conceptual/final design process.	DOE UO	On-going; the SPCC plan will be reviewed at least every 3 years and revised to incorporate needed changes.
WG-27	Fourth Gas-Processing Plant: Potential waste-related impacts from this plant will be minimized by the following mitigation measures: (1) there will be no direct waste discharges from this plant to unlined sumps or drainages; (2) drainage from the	4.1.2-5		Prior to building a fourth gas plant, a conceptual design report will be prepared. This report will address all mitigation measures to be incorporated into the final design.	DOE UO	Pending.

Mitigation Number	Mitigation Commitment	SEIS/ROD Page Reference	SEIS Cross References	Mitigation Implementation	Responsibility To Implement	Mitigation Implementation Status/Comments
WASTE GENERATION (Continued)						
WG-27 (con't)	(continued from previous page) plant will flow through lined concrete ditches into lined collection ponds used for evaporation; (3) all process chemical and production storage will be subject to secondary containment; and, (4) waste minimization will be achieved through bulk chemical storage. Spills and leaks will be managed through the SPCC plan.					
WG-28	Cogeneration Plant: Plans for disposal of wastewater into NPR-1 Class II Wells will be proposed to the California Division of Oil Gas and Geothermal Resources (DOGGR). Disposal by injection into Class II wells will be in accordance with all applicable regulatory procedures. Waste treatment processes prior to disposal will be conducted in accordance with all applicable regulatory procedures of State of California Assembly Bill 1772, Permit by Rule Reform.	4.1.2-5 4.1.2-6		Pursuant to 40 CFR 144.6(b)(1), the cogeneration plant has been determined to be an integral part of production operations on NPR-1. Therefore, the UO will request formal concurrence from the DOGGR to inject all appropriate cogeneration fluids into the Class II injection well system currently in operation consistent with all federal, state, and local laws and regulations. All other wastes will be disposed of in accordance with all waste generation mitigation commitments found within this document.	UO	In addition, plans for utilization of the effluent as source water in production waterflood operations as a waste minimization initiative will be pursued after the plant is built to evaluate compatibility of the effluent.
WG-29	Butane Isomerization Facility: Cooling tower blowdown water and sludges containing water treatment additives will be collected and tested prior to disposal in accordance with applicable regulations. The quantities and types of water-treatment additives will be determined in the project design process. Processing and disposal will be conducted in accordance with regulated procedures. Caustics such as sodium hydroxide used in the process will be collected, tested, neutralized as required and injected into on-site Class II	4.1.2-6		Implementation of these measures will be addressed in the project's conceptual/final design process.	DOE UO	Pending.

Mitigation Number	Mitigation Commitment	SEIS/ROD Page Reference	SEIS Cross References	Mitigation Implementation	Responsibility To Implement	Mitigation Implementation Status/Comments
WG-29 (con't)	(continued from previous page) wastewater disposal wells. Spent hydrochloric acid from this process will be injected into on-site disposal wells as part of the well stimulation process. Spent catalysts will be regenerated in an on-site regeneration unit to reduce the volume of waste requiring disposal. As with the foregoing projects, secondary spill containment, bulk chemical storage and spill response in accordance with the SPCC plan will be integral parts of the project.					
AIR QUALITY						
AQ-1	Emission Control: Control programs at NPR-1 that will continue include the inspections/maintenance program, flaring of gas from LTS-1, LTS-2, and 35R/ HPI during upset conditions, inspection of tank settings equipped with vapor-recovery systems and the use of watering to control fugitive dust emissions.	3.3-7		A comprehensive emission control program has been developed and implemented by the UO and is addressed in the following P&P's: P&P 1820-006, "Fugitive Dust Control;" P&P 1820-002, "Breakdown Reporting;" P&P 1150-000, "Comprehensive Maintenance Program;" P&P 1810-002, "Audits/Inspections;" P&P , 15610-010, "Fugitive Emissions Inspections;" P&P 1560-007, "Inspection of Miscellaneous Facilities;" P&P 1820-007, "Source Testing;" P&P 1820-004, "Tank Inspections;" and P&P 15000-500, "Approval Requirements for Transfer of Equipment and Work Orders."	DOE UO	On-going; the UO currently has a comprehensive program in place to manage fugitive emissions.
AQ-2	Anode Well Beds: Anode well beds will be watered frequently to maintain a high degree of soil moisture saturation and thus minimize Reactive Organic Gases (ROG) emissions.	4.1.3-18		Anode well beds will be managed pursuant to Operating Instruction (OI) 1350-002, "Operations-Test Procedure." Periodic inspections will be conducted for all anode bed installation sites no less than every other month to identify any special safety, environmental and/or quality assurance deficiencies. Appropriate maintenance will be taken to avoid excessive emissions.	DOE UO	On-going.
AQ-3	Tank Setting Emissions: NPR-1 is committed to eliminating 80-90% of the emissions from tank settings with high release records through the addition of gas compression, facility modifications, and will conduct other activities to increase operator awareness of the importance of decreasing releases.	4.1.3-13		A comprehensive inspection program has been developed by the UO and is found in P&P 1820-004, "Tank Inspection;" P&P 1820-002, "Breakdown Reporting;" P&P 1810-002, "Administration of Environmental Permits;" and P&P 1810-009, "Environmental Training."	DOE UO	On-going; annual training of Gas/Production Operators in requirements of breakdown reporting is being conducted. Facilities Engineering projects incorporate air quality commitments into the design process. A Flare Study is currently in progress.

Mitigation Number	Mitigation Commitment	SEIS/ROD Page Reference	SEIS Cross References	Mitigation Implementation	Responsibility To Implement	Mitigation Implementation Status/Comments
AIR QUALITY (Continued)						
AQ-4	Benzene Emissions from Spills: To avoid an exposure above the benzene Permissible Exposure Limit (PEL), an oil-spill cleanup procedure has been implemented that requires oil-spill cleanup crews to begin cleanup operations from the upwind side of the spill. Protective clothing and equipment will be provided if benzene levels exceed OSHA standards.	4.1.3-20		These operational measures have been incorporated into the SPCC Plan (BPOI 1992b) and P&P 1830-002.	UO	On-going.
AQ-5	New Source Emissions: Emission increases from proposed new sources will be offset by the emission offset credits accumulated through previous emission-reduction programs at NPR-1, and the emissions offset credits to be obtained through future emissions-reduction programs at NPR-1 pursuant to the requirements of SJVUAPCD Rule 2201 (New Source Review), and the State and Federal Clean Air Acts (including the conformity provisions of the Federal Clean Air Act).	4.1.3-4/ 23, 24	4.1.3-7 4.1.3-10	All increases in emissions from new sources are currently fully offset as required by Air Pollution Control District New Source Reviews. A comprehensive program is in place to identify new source emissions and is implemented in the following P&P's consistent with DOE Order 5400.1, "General Environmental Protection Program;" P&P 1810-011, "Agency Inspections," P&P 1820-001, "Authority to Construct/Permit to Operate," P&P 1820-003, "Prevention of Significant Deterioration (PSD) Permit Application," P&P 1820-006, "Fugitive Dust Control," and P&P 1820-007, "Source Testing."	DOE UO	On-going.
AQ-6	New Source Emissions: To meet emission-control technology requirements, new compressor engines will be equipped with low Nitrogen Oxides (NO _x) emission precombustion chambers, and steam generators, heaters, and cogenerators also will be equipped with appropriate low NO _x combustion technology (i.e., low NO _x burners and flue gas recirculation for steam generators and heaters and selective catalytic reduction system for the cogenerators).	4.1.3-10		These actions are required by the APCD New Source Review process. A comprehensive program is in place to manage new source emissions and is detailed in AQ-1 and AQ-5.	DOE UO	On-going; future APCD/EPA requirements will be more stringent and require additional control technology such as electrification of internal combustion engines or use of selective catalytic reduction for NO _x with ammonia injection. Therefore, future actions will exceed the existing program in place.
AQ-7	Particulate Matter (PM₁₀) Emissions: Initiatives at NPR-1 to comply with air quality regulations are in various stages of planning and implementation, and they include instituting an employee van pool program, improving on-site roads, modifying vehicles, and addressing on-site ridership. These	4.1.3-19/ 22	1-38	A comprehensive program is currently in place and being further developed to manage PM-10 emissions. P&P 1820-006, "Fugitive Dust Control" currently is utilized to manage PM-10 requirements along with standard subcontract language	DOE UO	Development of Transportation Management and PM-10 Plans are in progress pursuant to regulatory requirements.

Mitigation Number	Mitigation Commitment	SEIS/ROD Page Reference	SEIS Cross References	Mitigation Implementation	Responsibility To Implement	Mitigation Implementation Status/Comments
AIR QUALITY (Continued)						
AQ-7 (cont)	(continued from previous page) and other initiatives will be included in a Transportation Management Plan and PM ₁₀ Control Plan which will specifically address long term compliance with the State and Federal Clean Air Acts.			incorporated into all contracts on NPR-1. An employee based trip reduction program has been instituted utilizing low-emitting natural gas fired vans for the majority of the transportation requirements on NPR-1. Additionally, Unit vehicles have been replaced with natural gas fired vehicles. Several projects are scheduled for completion in FY 1993 to repair roads at NPR-1. An Authority for Expenditure (AFE) is currently being prepared to determine additional actions to reduce PM-10.		
WATER RESOURCES						
WR-1	Produced Water Disposal: Wastewater quantities will be minimized pursuant to the requirements of applicable DOE Orders.	4.1.4-13/ 21	4.1.4-11 4.1.4-12	Wastewater quantities will be controlled and minimized based on MER strategies which will optimize oil and gas production.	DOE UO	On-going.
WR-2	Produced Water Injection (PWI) Projects: To the extent technically and economically feasible, plans are to recycle produced water for use as source water for waterflood operations.	xxxvii/ 21	4.1.2-10 4.1.4-8 4.1.4-10 4.1.4-13	A filtration plant with a design capacity of 50,000-72,000 barrels of water per day has been built to treat produced wastewater for use in waterflood operations.	DOE UO	On-hold; the PWI plant is awaiting a decision by the owners as to operational status.
WR-3	Groundwater Protection: Development and implementation of a Groundwater Protection Management Plan is included in the proposed action. A draft groundwater monitoring plan has recently been developed for NPR-1 and is currently being reviewed. Local water interests, including the Department of Water Resources and Kern County Water Agency, will be afforded an opportunity to participate in the Groundwater Monitoring Plan's development.	4.1.4-14/ 9, 18, 19	4.1.4-11 H-68 H-80 H-86	The groundwater protection management program is presently being developed and is scheduled for completion in February 1994, pursuant to CAPs EAP-012A, "Groundwater Monitoring Plan-NPR-1" and EAP-013, "Characterization of the Hydrologic Regime" (DOE 1993b).	DOE UO	On-going.
WR-4	Groundwater Monitoring: The Tulare source water wells will be monitored monthly for water quality.	3.4-23/ 18, 19		OI 18.1.14, "Sampling/Monitoring of NPR-1 Water Source Wells" was prepared to provide guidance on the sampling/monitoring of the source wells. Monitoring will be conducted in accordance with the OI.	UO	On-going; sampling was initiated in July 1992.

Mitigation Number	Mitigation Commitment	SEIS/ROD Page Reference	SEIS Cross References	Mitigation Implementation	Responsibility To Implement	Mitigation Implementation Status/Comments
WATER RESOURCES (Continued)						
WR-5	25S Dehydration/Lease Automatic Custody Transfer (LACT): The proposed action includes projects to appropriately repair, replace, relocate, remove the components of the 25S dehydration/LACT and tank setting facilities.	4.1.4-7		A demolition/removal contract to conduct the work will be completed.	DOE UO	Project P41302.
WR-6	Secondary Containment: Inadvertent spills will be contained through the use of proper secondary containment. The proposed action includes a site-wide project, which is in progress, to enhance secondary containment facilities; this will provide additional protection for groundwater resources.	4.1.4-7	3.2-10 3.9-3 4.1.4-11 4.1.4-12	The SPCC plan (BPOI 1992b) was amended to incorporate existing secondary containment requirements. The secondary containment program is being managed under this plan.	DOE UO	On-going; Phase I, II, and III of this program have been completed. Remaining facilities have been inventoried and projects have been identified to complete the secondary containment program.
WR-7	Sumping of Produced Water: Releases of wastewater to sumps will be restricted to off-normal situations. Off-normal situations will be minimized through contingency initiatives that minimize the need to resort to surface disposal.	4.1.4-14	4.1.4-13 D-11, 12 H-109	Produced water is only sumped during system shut downs following the guidance in P&P's 1830-003, "Sumps", 1830-005, "Surface Discharges" and 1830-006, "Waste Discharge Requirements (WDRs)".	UO	On-going.
WR-8	Sensitive Sump Locations: Wastewater sumps at facilities located near the Tulare/ Alluvium contact will continue to be lined.	4.1.4-14/ 18	4.1.4-13 D-11, 12 H-109	See WR-7.	UO	There are no wastewater discharges to unlined sumps located in alluvial areas. Sumps have been lined at 18G and 25S.
WR-9	Sump Closure Program: Inactive wastewater sumps that are no longer required will be formally closed. Formal closure includes testing for contamination, remediation if necessary, regrading and revegetation.	4.1.4-14/ 18	H-109	All inactive sumps at NPR-1 are scheduled for testing and closure per P&P 1830-008, "Closure of Abandoned Sumps."	DOE UO	On-going; 13 sumps have already been closed. In addition, coordination of the program's progress will be accomplished with the U.S. Environmental Protection Agency (EPA).
WR-10	Hydrostatic Testing: Hydrostatic test activities will be designed to minimize wastewater requiring disposal. To the maximum extent possible, only fresh water will be used for tests, and equipment will be cleaned beforehand. Wastewater will not be released to alluvial soils.	4.1.4-12		P&P 1830-005, "Surface Discharges" will be revised to address surface discharges associated with hydrostatic testing (see also TB-5).	UO	Pending; it is anticipated the revision will be completed within 3 months of MAP approval.

Mitigation Number	Mitigation Commitment	SEIS/ROD Page Reference	SEIS Cross References	Mitigation Implementation	Responsibility To Implement	Mitigation Implementation Status/Comments
WATER RESOURCES (Continued)						
WR-11	Wells: Well completions, operations, maintenance, monitoring, and abandonments will be carried out in strict conformance with all requirements.	4.1.4-11/9	3.4-14 3.4-15 3.4-18 4.1.4-3 4.1.4-11 4.1.4-12 4.1.4-13	Well completions, remedials, conversions and abandonments will continue to be carried out in strict compliance with California DOGGR rules and regulations.	DOE UO	On-going.
WR-12	Well Cellars: Producing well cellars on or near the Alluvium will be monitored daily, and no less often than weekly. If cellars are observed to contain fluids, they will be disposed of expeditiously in accordance with the SPCC plan. In addition, corrective actions would be implemented to prevent reoccurrences.	4.1.4-11	3.4-14	Production operator personnel will continue to regularly inspect well cellars. If accumulation of fluid are observed, they will be reported according to P&P 1170-004, "Work Order System". Spills will be cleaned up pursuant to the SPCC plan (BPOI 1992b).	UO	On-going.
WR-13	Historical Waste Sites: Projects are in progress, and others are planned, to identify, clean, and formally close all historical inactive waste sites.	4.1.4-11		See WG-1.	DOE UO	On-going.
WR-14	Hydrocarbon, Equipment Lubricant, and Fuel Spills: Spills will be minimized, cleaned up and disposed of in accordance with the site's approved SPCC plan, which incorporates legal and regulatory requirements, as well as applicable DOE Orders.	4.1.4-11	4.1.4-12	See WG-6	DOE UO	On-going.
WR-15	Potential Wetland Resources: Several small widely scattered areas have been identified as potential wetland sites. These sites will be evaluated further for designation as wetlands, and will be avoided unless they are determined to not meet wetland criteria.	3.4-4 4.1.4-1/ 17	x1 H-107	Detailed on-site evaluations of 7 natural and 9 man-made potential wetland sites will be conducted by qualified professionals. The results of the evaluations will be forwarded to the U.S. Army Corps of Engineers, the EPA and the U.S. Fish and Wildlife Service (FWS) for their concurrence. Any site meeting the regulatory definition of a wetland will receive appropriate protection. In the interim, the maps of locations of the potential sites identified in Fries 1993, will be provided to the UO for use in future project reviews.	DOE UO ES&CRC	A miscellaneous unscheduled project package will be prepared in FY 94 to conduct these evaluations.

Mitigation Number	Mitigation Commitment	SEIS/ROD Page Reference	SEIS Cross References	Mitigation Implementation	Responsibility To Implement	Mitigation Implementation Status/Comments
WATER RESOURCES (Continued)						
WR-16	Drainage Reclamation Program: A drainage reclamation program is planned, to address historical inactive drilling fluid sumps that might have been abandoned in natural drainages and brea deposits in several stream channels along the Northeast flank of NPR-1.	4.1.2-9 H-107	4.1.4-1 3.4-5	This program will be managed in accordance with 14 CCR Section 1716, 40 CFR Part 110 and 33 CFR Parts 320, 329.	UO	Pending.
TERRESTRIAL BIOTA						
TB-1	Section 7 Consultations: DOE intends to continue complying with all Biological Opinion requirements in effect as well as related DOE commitments. The mitigation measures described below are based on requirements described in existing biological opinions and commitments DOE has made during formal consultations with FWS. Any additional mitigation measures committed to by DOE as a result of ongoing/future section 7 consultations will be incorporated into this MAP.	H-103/ 24, 25, 26	3.5-14 4.1.5-14	All required mitigation and commitments are being implemented at this time. A formal consultation pursuant to section 7 of the Endangered Species Act was initiated with FWS in October 1991. That consultation is on-going; additional mitigation requirements or revisions to the requirements discussed below that result from that consultation (or future consultations) will be incorporated into this MAP.	DOE UO ES&CRC	On-going.
TB-2	Preactivity Surveys: Preactivity surveys will continue to be conducted for all potential and planned construction, maintenance and operation sites and other ground disturbing activities. Recommendations will be made to minimize habitat loss, including erosion control measures.	4.1.5-4 4.1.5-12 4.1.5-13/ 24, 27	1-38 4.1.5-2 4.1.5-5 4.1.5-6 4.1.5-7 4.1.5-8 4.1.5-9	Preactivity surveys will be conducted by qualified personnel prior to any construction, maintenance, cleanup, or other ground disturbing activity. Surveys will be performed in accordance with the procedures outlined in "Operational Guidelines for Conducting Endangered Species Preactivity Surveys on Naval Petroleum Reserve No. 1, Kern County, California" (Kato and O'Farrell, 1987) and an informal update to that document contained in a letter sent from EG&G Energy Measurements, Inc. (EG&G/EM) to DOE/NPRC dated October 30, 1991 (EG&G/EM, 1991). In general, kit fox dens, giant kangaroo rat burrows, broad washes that are preferred habitat for blunt-nosed leopard lizards, and populations of Hoover's woolly-star will be avoided. Post- construction (or follow-up) surveys will be performed as appropriate to ensure that	UO ES&CRC	On-going.

Mitigation Number	Mitigation Commitment	SEIS/ROD Page Reference	SEIS Cross References	Mitigation Implementation	Responsibility To Implement	Mitigation Implementation Status/Comments
TERRESTRIAL BIOTA (continued)						
TB-2 (cont)				(continued from previous page) recommendations made during preactivity surveys are followed. Direct impacts to candidate species will be avoided to the greatest extent possible. UO preactivity survey procedures are performed pursuant to P&P 1880-005, "Environmental Preactivity Surveys-NPR-1" and OI 18.8.1, "Coordination of Environmental Preactivity Surveys."		
TB-3	Wildlife Protection: Current operating guidelines on NPR-1 for wildlife protection include the following and will continue: (1) controlling speed limits and minimizing night driving to reduce the incidence of road kills; (2) prevention and cleanup of oil and other spills; (3) restriction of off-road vehicle travel; (4) netting of sumps that may receive oil; (5) fire protection program to prevent and suppress accidental and naturally occurring fires; (6) prohibition of hunting, trapping, livestock grazing, agricultural activities, and casual public access; (7) restriction of the use of insecticides, rodenticides, and other potentially toxic substances; and (8) utilizing design specifications for electric power poles to reduce bird electrocutions.	4.1.5-13/ 26	3.5-32 4.1.5-3 4.1.5-6 4.1.5-13 4.1.5-14	The following UO policies and procedures will continue to be implemented: (1) P&P 1880-008, "Endangered/Threatened Species Conservation;" (2) "P&P 1880-007, "Protection of Raptors;" (3) P&P 1880-005, "Livestock Grazing;" (4) P&P 1880-001, "Erosion Control Program." In addition, spill response actions are managed in accordance with the SPCC plan (BPOI 1992b) and P&Ps 1830-002, "Oil and Chemical Spills;" and 1830-007, "Hazardous Material Releases."	UO	On-going.
TB-4	Habitat Reclamation/Revegetation Program: To mitigate the impacts of disturbances, a habitat reclamation/revegetation program has been implemented and will continue.	xlii 1-38 1-39 4.1.5-10/ 24, 27	xxxviii 1-38 1-39 3.5-5 3.5-14 4.1.5-3 4.1.5-6 4.1.5-10 4.1.5-11	Reclamation activities are conducted by the ES&CRC on an annual basis as detailed in the Annual Reclamation Specifications for Site Preparation and Revegetation on NPRC. Specific techniques and procedures that will be used are described in "A Habitat Restoration Plan for Naval Petroleum Reserve #1, Kern County, California" (O'Farrell and Mitchell, 1985), and "Endangered Species Program Naval Petroleum Reserves in California, Annual Report FY 91" (EG&G/EM 1992). In general, annual reclamation plans will be prepared for abandonment of access roads, well pads, and other facilities. Sites where reclamation	UO ES&CRC	On-going.

Mitigation Number	Mitigation Commitment	SEIS/ROD Page Reference	SEIS Cross References	Mitigation Implementation	Responsibility To Implement	Mitigation Implementation Status/Comments
TERRESTRIAL BIOTA (Continued)						
TB-4 (con't)				(continued from previous page) activities have occurred will be monitored over a 5-year period to document that vegetation has been reestablished successfully. Sites meeting reclamation success criteria after five growing seasons will be released from monitoring and considered reclaimed. Sites unlikely to meet the success criteria in the 5th year will receive remedial revegetation work or will be deferred for reevaluation in 5 more years. In addition, UO reclamation activities will be conducted pursuant to P&P 1880-004, "Habitat Reclamation."		
TB-5	Used Hydrostatic Test Water Disposal: To reduce impacts to blunt-nosed leopard lizards and their habitat, used pipeline hydrostatic test water will be released very slowly to minimize the possibility of flooding washes; washes will be monitored during releases to ensure the effectiveness of this measure.	4.1.5-8/		P&P 1830-005, "Surface Discharges," will be revised to incorporate these measures within 3 months of MAP approval. DOE will direct ES&CRC to prepare similar guidelines within 3 months of MAP approval. (See also WR-10).	DOE UO ES&CRC	Pending.
TB-6	Listed Species Monitoring Program: Monitor the status of endangered and threatened species by gathering information on population trends, reproduction, mortality, movements and dispersal, abundance of prey and predators, and gather similar information about some candidate species.	4.1.5-12	1-39 3.5-21 4.1.5-9 4.1.5-11 4.1.5-13	Endangered and threatened species, their prey and predators, and candidate species will be monitored on NPR-1, NPR-2, and some adjacent lands to meet program goals and objectives. Demographic data will be collected mostly in winter (kit fox population size) to spring and summer (most other species) analyzed and reported. Data will be gathered during specified periods using a variety of techniques including live-trapping and release, observations on transects, scent station surveys, vegetation measurements, and ocular estimates. Monitoring activities are described in more detail in "Endangered Species Program Naval Petroleum Reserves in California, Annual Statement of Work."	ES&CRC	On-going.

Mitigation Number	Mitigation Commitment	SEIS/ROD Page Reference	SEIS Cross References	Mitigation Implementation	Responsibility To Implement	Mitigation Implementation Status/Comments
TERRESTRIAL BIOTA (Continued)						
TB-7	Worker Education/Training Program: A worker education/training program has been implemented and will continue to promote worker awareness of the requirements of the NPR-1 endangered species and wildlife conservation programs. This program will be given to all permanent NPR-1 employees; subcontractor supervisory personnel, and appropriate third-party contractor personnel.	4.1.5-14/ 27		The UO Training Plan will reference existing P&Ps and OIs addressing training (P&Ps 1810-009, "Training" and 1880-008, "Endangered/Threatened Species Conservation;" OIs 18.1.10, "Preperformance Environmental Training" and 18.1.11, "New Hire Environmental Training." Training requirements for each UO job classification are being developed and will include knowledge of NPR-1 endangered species and wildlife conservation programs. In addition P&P 340-003, "Processing Requests for Revocable Permits" will be updated to require equivalent worker education programs be provided by third party contractors.	DOE UO	On-going; a draft training video on endangered species was completed in 1988, Revisions to the draft will be completed in 1993. The draft video will be used in the NPR-1 employee training program. The video will be reviewed annually and updated as needed.
TB-8	Endangered Species Program Coordination: The endangered species program will continue to be coordinated with the applicable regulatory agencies and other industry organizations or representatives with endangered species expertise through the Endangered Species Advisory Committee (ESAC), or by other appropriate means.	xlviii/ 28		Current plans are to implement coordination by continuing ESAC meetings as needed (approximately quarterly), one of which would be an Annual Program Review, or by other appropriate equivalent means.	DOE ES&CRC	On-going.
CULTURAL RESOURCES						
CR-1	Cultural Resource Management Plan: Management of NPR-1's cultural resources will be determined through the development of a comprehensive management plan in consultation with the State Historic Preservation Office (SHPO).	4.1.6-1/ 28		A draft Cultural Resource Management Plan (CRMP) was completed in December 1991. It is being revised based on comments from SHPO and will be based on DOE guidelines for writing cultural resource management plans. P&P 1850-001, "Cultural Resources Protection" addresses the M&O's current cultural resource protection program. This P&P will be revised pursuant to the CRMP upon the CRMP's completion.	DOE UO ES&CRC	A draft outline for the CRMP based on previous comments from SHPO and in accordance with DOE guidelines was presented to SHPO on February 1, 1993. A revised plan has been prepared and is currently being reviewed. A final CRMP is expected by the end of FY 94.

Mitigation Number	Mitigation Commitment	SEIS/ROD Page Reference	SEIS Cross References	Mitigation Implementation	Responsibility To Implement	Mitigation Implementation Status/Comments
CULTURAL RESOURCES (Continued)						
CR-2	Impact Mitigation: Adverse impacts from NPR-1 undertakings will be mitigated in accordance with a comprehensive cultural resource management plan which is currently being developed in consultation with SHPO.	4.1.6-1		See CR-1.	DOE UO ES&CRC	See CR-1.
CR-3	Subsurface Resources: The cultural resource management plan will address the protection of subsurface cultural resources.	H-72		See CR-1.	DOE UO ES&CRC	See CR-1.
CR-4	Historic Sites: The management and evaluation of the 101 recorded historic site on NPR-1 will be addressed in the course of developing the cultural resource management plan.	H-72		See CR-1.	DOE UO ES&CRC	See CR-1.
CR-5	Eligibility Determination: Twelve prehistoric sites on NPR-1 will be tested to determine eligibility for listing on the National Register of Historic Places (NRHP).	xlviii		Testing of 12 prehistoric sites on NPR-1 was completed in the spring of 1992. It was determined by the archaeologists conducting the testing that 5 of the 12 sites are eligible for listing to the NRHP. The nomination of these sites to the NRHP will be addressed in the CRMP.	DOE ES&CRC	See CR-1.
CR-6	Nomination of Eligible Sites: The potential nomination of NPR-1 sites to the NRHP will be addressed in the course of developing a comprehensive cultural resource management plan in consultation with the SHPO.	3.6-3		See CR-1, CR-5	DOE ES&CRC	See CR-1.
CR-7	Paleontological Resources: The NPR-1 cultural resource management plan will also address paleontological resources.	H-72		See CR-1.	DOE UO ES&CRC ETSSC	See CR-1.

Mitigation Number	Mitigation Commitment	SEIS/ROD Page Reference	SEIS Cross References	Mitigation Implementation	Responsibility To Implement	Mitigation Implementation Status/Comments
LAND USE						
LU-1	Fire Protection: The maintenance of a 12- to 20-foot wide fire break around the periphery of the site will be conducted on an annual basis or as needed to prevent the spread of fires.	1-38		Routine maintenance for the NPR-1 firebreak will be accomplished on a yearly basis if needed. Routine maintenance of the firebreak is done in compliance with all Federal, State, and local laws and regulations, (i.e., special attention is devoted to the endangered species concerns associated with the action).	DOE UO	On-going; annually if conditions warrant. Any additional endangered species mitigation requirements that result from ongoing/future section 7 consultations will be incorporated into this MAP (see also TB-1).
LU-2	Road Network: Abandoned roadways will be reseeded and reclaimed as part of the sitewide reclamation.	A-16		See TB-4	DOE UO ES&CRC	On-going.
LU-3	Facility Abandonment: Facilities or equipment that becomes unnecessary or inoperable will be abandoned. Abandoned wells will be plugged in accordance with appropriate state regulations.	A-19		As facilities become unnecessary, they will be scheduled for demolition. Unsalvageable materials will be removed from the site and recycled/disposed of according to regulations. (See also WR-11).	DOE UO	On-going; facilities to be abandoned in FY 93 include the 3G gas plant and various tanks and idle equipment throughout the field.
SOCIOECONOMICS						
No mitigations are required in this area.						
RISK ASSESSMENT						
RA-1	Naturally Occurring Radioactive Materials (NORM) - Radon: The results of the NORM surveys are being evaluated for appropriate action. It is anticipated that within the next 1-2 years, among other protective measures, a monitoring program will be established, signs will be posted, and storage times of liquified petroleum gas will be monitored/controlled.	3.9-5		A comprehensive program is in place to meet the requirements of DOE Notice 5480.6, "Radiological Control Manual." A Rad Con Manual has been submitted to DOE Headquarters; a monitoring procedures manual has been developed and implemented; a designated storage area has been assigned; a radiation protection plan has been developed and implemented; and a full scale training program has been developed and implemented. In addition, the programs will comply with current State of California Department of Health Services Radon Regulations.	DOE UO	On-going; the Rad Con Manual will be continually reviewed and updated as required. P&P 1820-009, "Radiological Control" and OI 18.1.17, "Radiological Surveys" have been completed. 75% of employees have received awareness training.

Mitigation Number	Mitigation Commitment	SEIS/ROD Page Reference	SEIS Cross References	Mitigation Implementation	Responsibility To Implement	Mitigation Implementation Status/Comments
RISK ASSESSMENT (Continued)						
RA-2	Risk Assessment: Some of the primary programs that are in-place to mitigate risks.	4.1.9-1		See WG-6.	DOE UO	On-going.
RA-2a	• The SPCC program.					
RA-2b	• DOE Orders and other requirements providing for formal reporting systems, internal investigations, and development and implementation of corrective actions for occupational accidents and near misses, vehicle accidents, fire/explosions, and unusual occurrences.	4.1.9-1		Comply with applicable DOE requirements for occupational accidents and near misses, vehicle accidents, fire/explosion, and unusual occurrences.	DOE UO	On-going.
RA-2c	• DOE Orders and other requirements providing for formal independent investigations, and development and implementation of corrective actions for any of the foregoing incidents that are particularly significant.	4.1.9-1		Comply with applicable DOE requirements for formal independent investigations, and development and implementation of corrective actions for any of the foregoing incidents that are particularly significant.	DOE UO	On-going.
RA-2d	• DOE Orders and other requirements providing for periodic formal Technical Safety Appraisals, Environmental Surveys, and Tiger Team Assessments (safety and environmental) sponsored by DOE Headquarters, and development and implementation of corrective actions.	4.1.9-1/ 28		Comply with applicable DOE requirements for periodic formal Technical Safety Appraisals, Environmental Surveys, and Tiger Team Assessments (safety and environmental) sponsored by DOE Headquarters, and development and implementation of corrective actions.	DOE UO	On-going.
RA-2e	• DOE Orders and other requirements providing for internal inspections, audits, and vulnerability assessments of all operational, safety, and environmental activities to determine the level of compliance with requirements and to develop and implement appropriate corrective actions.	4.1.9-1/ 28		Comply with applicable DOE requirements for internal inspections, audits, and vulnerability assessments of all operational, safety, and environmental activities to determine the level of compliance with requirements and to develop and implement appropriate corrective actions.	DOE UO	On-going.
RA-2f	• Comprehensive quality assurance and quality control programs, pursuant to DOE Orders, including, among other things, a Performance Indicator System which tracks/trends safety and environmental performance indicators. A Comprehensive Corrective Action System (CCAS) to track completion of all identified corrective actions is also in place.	4.1.9-2		Comply with applicable DOE requirements for comprehensive quality assurance and quality control programs, pursuant to DOE Orders, including, among other things, a Performance Indicator System which tracks/trends safety and environmental performance indicators. A Comprehensive Corrective Action System (CCAS) to track completion of all identified corrective actions is also in place.	DOE UO	On-going; the CCAS which has been developed will be fully implemented by the fourth quarter of 1993.

Mitigation Number	Mitigation Commitment	SEIS/ROD Page Reference	SEIS Cross References	Mitigation Implementation	Responsibility To Implement	Mitigation Implementation Status/Comments
NON-FEDERAL ACTIONS (THIRD-PARTY)						
NA-1	Project Reviews and Permitting: Third-party projects on NPR-1 will undergo environmental, safety, and engineering review prior to receiving NPR-1 permit approval. Third-party activities will be spot monitored to determine if they are in compliance with applicable laws and regulations and permit requirements. If third parties are determined not to be in compliance, appropriate enforcement actions will be taken pursuant to the terms of the permits, including DOE's right of revocation, if necessary.	1-40	xxxviii 1-11 4.1.4-13	All third-party projects (actions) will be processed in accordance with P&P 340-003, "Processing Requests for Revocable Permits." In addition, DOE will develop specific P&Ps for the review and processing of third-party permit requests to ensure compliance with applicable laws and regulations.	DOE UO	On-going; P&P 340-003, is currently under review for revision to incorporate NEPA guidance procedures and protocols.
NA-2	Spill Prevention: Hydrocarbon spills from pumping stations and leaking valves must be managed and cleaned up in accordance with the appropriate SPCC plan.	3.2-19		If applicable, third-party projects (actions) on NPR-1 will be required to have an approved SPCC plan in place or incorporate compliance with the NPR-1 SPCC plan into their permit prior to initiation of the action.	DOE UO	On-going; currently reviewing P&Ps and SPCC Plan for adequacy of documents to cover third party actions. Appropriate revisions will be made if above documents are found to be inadequate for third party actions in this regard.
NA-3	Habitat Reclamation/Revegetation: All disturbed areas not needed for future operations and maintenance activities will be contemporaneously revegetated by the third party.	1-42		If applicable, third-party project (actions) on NPR-1 will be required to reclaim and revegetate disturbed lands in accordance with P&P 340-003, "Processing Requests for Revocable Permits."	DOE UO	On-going; currently reviewing and updating P&P 340-003 to incorporate recent revisions to the habitat reclamation program.
NA-4	Curly Top Virus Control Program: Annual aerial applications of the insecticide malathion on portions of NPR-1 shall be in accordance with the terms of the Cooperative Agreement between DOE and California Department of Food and Agriculture (CDFA).	1-40		The CDFA is required to coordinate with DOE and M&O all annual spraying operations in accordance with the terms of the Cooperative Agreement between DOE and CDFA (DOE 1992b).	DOE UO	On-going; the current NEPA documentation and cooperative agreement for the Curly Top Virus Control Program will expire in 1996; CDFA will inform DOE early in the planning stages of the next NEPA document to enable DOE to become a cooperating agency on the NEPA document and issue a new agreement for continuation of the program beyond 1996.

Mitigation Number	Mitigation Commitment	SEIS/ROD Page Reference	SEIS Cross References	Mitigation Implementation	Responsibility To Implement	Mitigation Implementation Status/Comments
NATIONAL ENVIRONMENTAL POLICY ACT (NEPA COMPLIANCE)						
NC-1	Section 7 Consultation: Additional NEPA documentation will be prepared in the event the final Biological Opinion requires modified operations not evaluated in the SEIS.	25, 26		Once the final Biological Opinion is issued, the terms and conditions and reasonable and prudent measures will be reviewed to determine if modifications to operations will be necessary. Should any modifications be necessary to comply with the Opinion, they will be reviewed against the SEIS to determine if additional NEPA documentation is appropriate. Appropriate assessment will be conducted for those actions determined to be outside the SEIS.	DOE UO ES&CRC	
NC-2	Project Reviews: In the course of planning, designing, approving, funding, and implementing site activities, the impacts of activities will be reviewed to ensure they are within the impact scope of the SEIS.	4.1.2-7		Interim P&P 18100-004, "NEPA Requirements" are being developed to address NPRC NEPA compliance in accordance with CAP EAP-023 "National Environmental Policy Act Review and Determination" (DOE 1993b). Completion and implementation of a NEPA Compliance Manual pursuant to CAP EAP-023 will provide the specific details to conduct such project reviews. Implementing the Interim P&P and complying with the Fossil Energy NEPA Guidance Manual (DOE 1992c) will guide compliance in the short term.	DOE UO	Implementation of CAP EAP-023 is in progress.
NC-3	Fresh Water Activities: If fresh water requirements exceed the current West Kern Water District's contract limit of 48,000 barrels/day, additional NEPA assessments will be completed as appropriate.	4.1.4-10		Water usage forecasts in the Internal Review Budgets and Annual Operations Plans will be monitored against contract limits with West Kern Water District. Should the need for additional water supplies be identified, an appropriate NEPA review will be initiated.	DOE UO	On-going.
NC-4	Endangered Species Program: Endangered species program impacts outside the scope of the SEIS that may be implemented in future years will receive a full environmental review prior to implementation.	4.1.5-13		As the annual scopes of work for endangered species program activities are developed, their impacts will be compared to the impacts assessed in the SEIS. These reviews will be conducted in accordance with CAPs EAP-023 and EAP-026, "Coordination of NEPA with Other Environmental Laws and Regulations" (DOE 1993b). Appropriate assessments will be conducted as appropriate for those actions determined to be outside the SEIS.	DOE UO ES&CRC	These reviews will commence in FY 94.

Mitigation Number	Mitigation Commitment	SEIS/ROD Page Reference	SEIS Cross References	Mitigation Implementation	Responsibility To Implement	Mitigation Implementation Status/Comments
NC-5	<p>Nonsteamflood Tertiary Recovery: Should nonsteamflood tertiary oil recovery techniques become necessary to achieve MER compliance in the future, appropriate NEPA documentation will be prepared for proposed implementation projects.</p>	<p>1-13 2-13</p>		<p>Nonsteamflood tertiary recovery proposals would be identified early on in project planning and documentation. Integration of NEPA into project planning and budget review will be developed pursuant to CAP EAP-027, "Integration of NEPA in Project Planning and Budget Review" (DOE 1993b). Implementation of this CAP will ensure any such project proposals are identified for separate NEPA reviews.</p>	<p>DOE UO</p>	<p>Completion of P&P's is scheduled.</p>

**APPENDIX B:
RECORD OF DECISION (ROD) FOR THE
SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT,
PETROLEUM PRODUCTION AT MAXIMUM EFFICIENT RATE,
NAVAL PETROLEUM RESERVE NO. 1 (ELK HILLS),
KERN COUNTY, CALIFORNIA.**

DEPARTMENT OF ENERGY

Compliance with the National Environmental Policy Act: Record of Decision for Continued Operation of Naval Petroleum Reserve No. 1 (Elk Hills), Tupman, California.

Agency: U.S. Department of Energy

Action: Record of Decision

Summary: Pursuant to the Council on Environmental Quality regulations (40 CFR Parts 1500-1508), which implement the procedural provisions of the National Environmental Policy Act (NEPA), and the U.S. Department of Energy National Environmental Policy Act regulations (10 CFR Part 1021), the Department of Energy, Office of Fossil Energy, is issuing a Record of Decision on the continued operation of Naval Petroleum Reserve No. 1, Kern County, California. The Department of Energy has decided to continue current operations at Naval Petroleum Reserve No. 1 and implement additional well drilling, facility development projects and other activities necessary for continued production of Naval Petroleum Reserve No. 1 in accordance with the requirements of the Naval Petroleum Reserves Production Act of 1976 (Public Law 94-258). The final Supplemental Environmental Impact Statement,

entitled "Petroleum Production at Maximum Efficient Rate, Naval Petroleum Reserve No. 1 (Elk Hills), Kern County, California (DOE/SEIS-0158)," was released on September 3, 1993.

Public Availability: To receive a copy of the final Supplemental Environmental Impact Statement or Record of Decision, please contact Mr. James C. Killen, Director, Planning, Analysis, and Program Support Division, U.S. Department of Energy, Naval Petroleum Reserves in California, Tupman, California, 93276, (805) 763-6038.

For information on the National Environmental Policy Act process, contact Ms. Carol M. Borgstrom, Director, Office of National Environmental Policy Act Oversight, U.S. Department of Energy, 1000 Independence Avenue, SW, Washington, DC, 20585, (202) 586-4600, or (800) 472-2756.

Background: Naval Petroleum Reserve No. 1 (NPR-1) is a large oil and gas field of approximately 74 square miles (47,409 acres) located about 25 miles southwest of Bakersfield in Kern County, California. NPR-1, which was established by Executive Order in 1912 for National defense purposes, is jointly owned and operated by the Federal Government under the jurisdiction of the Department of Energy (DOE), and Chevron U.S.A. Inc. pursuant to a Unit Plan Contract that became effective in 1944. The Government has a 78 percent interest (approximately) in NPR-1 hydrocarbon

production and Chevron's interest is approximately 22 percent. Currently, the Government's share of NPR-1 oil production is sold on the open market, with proceeds deposited in the U.S. Treasury, and/or transferred to the U.S. Strategic Petroleum Reserve for storage as protection against future oil supply disruptions. NPR-1 natural gas production is either processed into natural gas liquids for sale on the open market, or reinjected into NPR-1 hydrocarbon reservoirs for pressure maintenance and/or enhanced oil recovery.

NPR-1 was maintained in essentially a shut-in reserve status until the mid-1970's when Congress, in response to the Arab Oil Embargo of 1973, passed the Naval Petroleum Reserves Production Act of 1976 (Public Law 94-258), which directed that NPR-1, the adjacent NPR-2, and NPR-3 in Wyoming, be produced for an initial period of 6 years at the maximum efficient rate. Under the Act, maximum efficient rate means the maximum rate of hydrocarbon production that optimizes economic return and ultimate hydrocarbon recovery. Public Law 94-258 also provided the President with the authority to continue production from the Reserves beyond the initial 6 years for an additional and unlimited number of increments of up to three years each. For each added period of production, the President must certify to Congress that it remains in the National interest to continue producing the Reserves. Currently, the Naval Petroleum Reserves are authorized for maximum efficient rate production through April 5, 1997.

Approximately 700 million barrels of oil and 200 million gallons of natural gas liquids have been produced from NPR-1 hydrocarbon reservoirs since the field was opened up to full development in 1976. In 1992, NPR-1 became only the 13th domestic oil field to produce a cumulative total of 1 billion barrels of oil since its initial development began in 1912. Since 1976, revenues in excess of \$15 billion have been deposited into the U.S. Treasury from NPR-1 operations. In 1988, NPR-1 hydrocarbon reserves were estimated to be approximately 524-831 million barrels of oil and 1,790-2,497 billion cubic feet of natural gas.

In 1979, DOE published an Environmental Impact Statement (EIS) (DOE/EIS-0012) which described the existing environment at NPR-1 and analyzed the petroleum development activities that were anticipated at that time. The development activities described and evaluated included the drilling of approximately 350 new oil, gas and water wells; construction of two new Lease Automatic Custody Transfer facilities; construction of two gas facilities to process up to 700 million cubic feet per day of wet natural gas; construction of wastewater facilities capable of disposing of approximately 30,000 barrels per day of produced water; and construction of an additional 40,000 square feet of building space for administration and other support facilities. Implementation of these activities increased NPR-1's oil production to a peak level of approximately 181,000 barrels per day by July, 1981. Oil production at NPR-1 has declined since then to the

current level of approximately 65,000 barrels per day. NPR-1 currently produces approximately 299-320 million cubic feet per day of natural gas and processes 379,000-456,000 gallons per day of natural gas liquids (propane, butane and natural gasoline).

In an Environmental Assessment prepared in 1985 (DOE/EA-0261), DOE described the potential environmental impacts that could result from implementation of a pilot steamflood project of the Shallow Oil Zone at NPR-1. The Shallow Oil Zone pilot steamflood project subsequently was implemented and a large expansion of this project is proposed and analyzed in the final Supplemental Environmental Impact Statement (SEIS). In 1987, DOE prepared another Environmental Assessment (DOE/EA-0334) which described the potential impacts that could result from the divestiture of NPR-1 and NPR-3. Implementation of this action would require a Congressional directive, which has not occurred.

Primarily as a result of the need to drill additional oil, gas, and water wells at NPR-1, expand the Shallow Oil Zone steamflood project, expand natural gas operations, and reduce power costs and air pollution emissions by constructing a cogeneration facility, the decision was made to prepare a Supplement to the 1979 EIS to analyze the environmental impact of these and other proposed actions. Accordingly, DOE published a Notice of Intent announcing its decision in the Federal Register on April 4, 1988 (53 FR 10922). Pursuant to the Notice of Intent, three public

scoping meetings were held in April 1988 and the issues and concerns raised by the public were used in the development of the SEIS. The basis for the SEIS is the April 1989 NPR-1 Long Range Plan, which describes a myriad of planned operations and development projects, maintenance activities, and environmental protection initiatives over the next 25-30 years. A description and evaluation of the existing NPR-1 environment also was provided in the SEIS to assess the level of impacts, if any, that resulted from the NPR-1 activities that were implemented following publication of the 1979 EIS.

In May 1992, DOE published and distributed approximately 200 copies of the draft SEIS. A Notice of Availability of the draft SEIS and an announcement of a public hearing in Bakersfield, California on June 24, 1992 was published in the Federal Register on June 5, 1992 (57 FR 24038). Only one speaker provided oral testimony at the public hearing. DOE received 122 written comments from 13 government agencies and interested individuals during the 55-day comment period following publication of the Notice of Availability. DOE considered and responded to all comments on the draft SEIS in the development of the final SEIS. A transcript of the public hearing and all written comments on the draft SEIS were included in the final SEIS.

The final SEIS on the proposed action was released in August 1993. A Notice of Availability of the document was published in

the Federal Register on September 3, 1993 (58 FR 46969) which announced an incorrect due date for comments of October 18, 1993. An amended Notice of Availability subsequently was published in the Federal Register on September 17, 1993 (58 FR 48650) revising the due date to October 5, 1993. Of eight comment letters received on the final SEIS, only the Environmental Protection Agency (EPA) and a local consultant commented on substantive issues. EPA reiterated concerns about the method used to compare impacts of the proposed action and alternatives, completion of the final Biological Opinion for the proposed action, ingestion of oil field chemicals by site wildlife, waste minimization, wetlands delineation, air quality, and sump closures, and recommended deferring expanding operations that may impact groundwater quality in the northeast portion of the site. EPA also recommended discussing in the Record of Decision the feasibility of re-entering shut-in wells as an option to drilling new wells to increase production. Michael R. Rector, a local water resources consultant, raised concerns about groundwater mining and commented that groundwater downdip from site produced water disposal wells should be analyzed for the presence of benzene, toluene and xylenes.

With the exception of the comments regarding comparison of alternative action impacts, deferring operations in the northeast portion of the site, and the feasibility of re-entering shut-in wells, all concerns have been addressed in this Record of Deci-

sion under Major-Environmental Impacts and Mitigation Action Plan.

With regard to the comparison of alternatives, EPA commented that it stands by its earlier comment on the draft SEIS that impacts associated with the no action alternative should be the basis for the comparison of alternative action impacts. DOE maintains that the methodology used in the SEIS is the same, substantively, as that advocated by EPA. This is explained as follows. It is EPA's opinion that in comparing impacts between alternatives, the no action alternative should be the baseline for the comparison. For example, if no action has an impact of X, and the proposed action has an impact of X+Y, then comparisons of these two alternatives should state that the impacts of the proposed action are Y greater than no action. In contrast, the SEIS sometimes makes this comparison by stating that no action has an impact that is X less than the proposed action. DOE believes that either comparison satisfies the requirement under 40 CFR 1502.14 "...to present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining issues....". Impacts from existing operations comprising no action are presented in detail in Section 3.0, "Existing Environment." Impacts of the proposed action and the modified proposed action are presented in detail in Section 4.0, "Environmental Impacts of the Proposed Action and Alternatives." A summary of the elements and impacts of no action, the proposed action, and

the modified proposed action are presented in comparative form by Tables 2.0-1 and 2.0-2 in Section 2.0, "Alternatives." These tables, together with supporting text, result in a form that sharply contrasts differences between alternatives, as required.

Regarding the comment on the northeast portion of the site, DOE is not proposing to expand operations that may impact groundwater quality in that area. The only activities planned in this area are remediation or facility repair and replacement projects that are designed to enhance the level of environmental protection. These projects are routinely evaluated for environmental impacts, including groundwater impacts, as a matter of standard practice prior to their implementation.

The use of existing shut-in oil production wells for other purposes such as waterflood, gas injection or in the development of underlying/overlying oil or gas zones can provide a significant capital savings and, therefore, is always given serious consideration at NPR-1. Prior to the formal abandonment of any shut-in wells, a determination is made that the well cannot serve any other useful purpose. Table 1.2-3 of the final SEIS indicates that 382 new wells would be completed through the year 2025 under the proposed action. In comparison, for this same time period, the proposed action would involve a total of 571 conversions of existing wells to a different use.

Alternatives Considered: Three alternatives were evaluated in the SEIS: Proposed Action, No Action (Alternative 1), and Modified Proposed Action (Alternative 2). In addition, Alternative 3 (Nonsteamflood Tertiary Oil-Recovery Strategies) and two other alternatives were initially considered and dismissed from further evaluation.

Proposed Action. The proposed action is to continue operating NPR-1 in accordance with the requirements of the Naval Petroleum Reserves Production Act of 1976 by implementing the activities described in the 1989 NPR-1 Long Range Plan. This includes the operation and maintenance of all existing facilities; a program to drill, redrill, or deepen approximately 382 wells, 148 of which would be for the phased 500-acre, 625 million British thermal units per hour Shallow Oil Zone steamflood project; a program to perform approximately 2,663 well remedial jobs as needed to ensure efficient operation and maintenance of approximately 2,697 wells; a program to recycle produced water to the maximum extent technically and economically feasible for use as source water for waterflood operations; a program to abandon approximately 1,080 wells; construction and operation of approximately 46,250 horsepower of additional gas compression for gas-lift and gas-injection projects (37,500 horsepower gas; 8,750 horsepower electric); construction and operation of compression and processing facilities to compress, transport and process up to an additional 100-150 million cubic feet per day of gas

(fourth gas plant); construction of new facilities and increased use of existing facilities to expand waterflood operations by approximately 106,000 barrels per day; construction and operation of a 42-megawatt cogeneration facility; construction and operation of a 170,000-220,000 gallon per day butane isomerization facility; a program to investigate, remediate, or otherwise manage numerous old inactive waste sites; a program to reclaim by 1998 approximately 1,045 acres of disturbed lands not needed for current or future NPR-1 operations; the permitting of third parties to construct, operate and maintain pipelines, conduct geophysical surveys and perform other necessary oil-field related activities on NPR-1; and the continued implementation of a comprehensive environmental protection program.

Alternative 1: No future Development (No Action). This alternative provides for continued production of NPR-1 by operating and maintaining existing wells and facilities only. It does not include any new development projects needed to enhance efficiency or off-set natural production declines (no new drilling, enhanced recovery, cogeneration, etc.). It does include all maintenance projects, facility development projects and environmental protection initiatives included in the proposed action that are necessary for maintaining the safety and quality of the NPR-1 environment.

Alternative 2: Proposed Action Excluding the Shallow Oil Zone Steamflood Expansion, Gas Processing Expansion, and Cogeneration Project (Modified Proposed Action). This alternative provides for all activities included in the proposed action, except that the 148-well, 500-acre Shallow Oil Zone steamflood expansion would not be implemented; expansion of NPR-1's gas processing capacity by 100-150 million cubic feet per day (fourth gas plant) would not be undertaken; and the 42-megawatt cogeneration plant would not be constructed.

Alternative 3: Nonsteamflood Tertiary Oil-Recovery Strategies. This alternative provides for all of the activities included in the proposed action and implementation of nonsteamflood tertiary recovery techniques that have been carried out on a limited basis at other oil fields. Examples of these techniques include alkali surfactant polymer injection, micellar polymer injection, carbon dioxide injection and in-situ combustion. Although these techniques may have potential in the long term, their implementation in NPR-1 hydrocarbon reservoirs cannot be considered by decision-makers in the reasonably foreseeable future due to limited technical data and unfavorable current and projected future economic conditions. For this reason, studies were not completed to scope these programs to the level of detail needed to address potential environmental impacts. Accordingly, this alternative was dismissed from further consideration in the SEIS.

Divestiture. The possibility of selling the Government's interest in NPR-1 (divestiture) was initially announced in the Notice of Intent to prepare this SEIS as an alternative in the context of continued operations and future development (53 FR 10922, April 4, 1988). Analysis of this alternative would have expanded on the 1987 Environmental Assessment of Divestiture (DOE/EA-0334). This alternative is considered highly speculative in the absence of Congressional action and, therefore, was not developed in the SEIS.

EPA's Proposed Alternative (No Action followed by Proposed Action). In its comments on the draft SEIS, EPA recommended analysis of an additional alternative that would involve implementing the no action alternative for the near term and then proceeding with the proposed action at a later date. A brief analysis of this alternative was included in the final SEIS. The analysis indicated that ultimate hydrocarbon recovery losses of approximately 66 million barrels of oil and 132 billion cubic feet of natural gas would occur by deferring development activities at NPR-1 for a period of 10 years. Because this alternative would not allow DOE to meet the purpose and need for the proposed action, which is to produce NPR-1 at the maximum efficient rate in accordance with the Naval Petroleum Reserves Production Act of 1976, it was dismissed from further consideration in the final SEIS.

Environmentally Preferred Alternative. The environmentally preferred alternative is the no action alternative (Alternative 1). Habitat disturbance associated with this alternative is significantly less than for all other alternatives analyzed in the SEIS. Future impacts associated with continued NPR-1 operations would diminish more rapidly under this alternative as NPR-1's economic life would be reached much sooner than would occur under other alternatives (approximately 2000-2010). This alternative would require legislative redirection of DOE's current mission to produce NPR-1 in accordance with the Naval Petroleum Reserves Production Act of 1976.

Decision: DOE has decided to continue current NPR-1 operations and implement additional well drilling, facility development projects and other activities necessary for continued production of NPR-1 in accordance with the requirements of the Naval Petroleum Reserves Production Act of 1976 (Public Law 94-258).

Discussion and Justification of Decision. Pursuant to the Naval Petroleum Reserves Production Act of 1976 and subsequent Presidential certifications, DOE is required to produce NPR-1 at the maximum efficient rate through April 5, 1997. To continue to meet this mandate, continued and enhanced NPR-1 operations are necessary.

The decision to produce the Naval Petroleum Reserves at the

maximum efficient rate was initially authorized by Congress in 1976 to address emergency energy needs in response to the Arab oil embargo of 1973-1974. At that time, the Naval Petroleum Reserves were administered by the Secretary of the Navy. Effective October 1, 1977, the DOE Organization Act (Public Law 95-91) transferred jurisdiction of the Naval Petroleum Reserves to the new DOE. NPR-1 oil production since 1976 has either been sold on the open market, transferred to the Department of Defense for national security purposes, or transferred to the Strategic Petroleum Reserve for storage in the event of future oil supply disruptions.

In recent years, Congress has recognized other significant reasons for continued maximum efficient rate production of the Naval Petroleum Reserves. In addition to military preparedness and National defense reasons, the following issues were considered in the most recent extension of the Naval Petroleum Reserves Production Act:

1. National economic impacts, including the direct effect on net Federal revenues and the broader effects on the economy;
2. National energy strategy, reflecting the effects of oil import requirements in the absence of an extension; and
3. Local and regional concerns, involving the effects of

operating the Naval Petroleum Reserves on local economies and on upstream and downstream elements of the petroleum industry in the areas served by the Naval Petroleum Reserves.

Selection of the no action alternative (Alternative 1) would not allow DOE to meet the statutory mandate to produce NPR-1 at the maximum efficient rate, and would result in ultimate recovery losses of up to 500 million barrels of oil and more than 250 billion cubic feet of natural gas reserves. This represents a reduction of 58 percent of the remaining oil reserves and 20 percent of the remaining gas reserves, respectively. Under this alternative, the economic return on NPR-1 investment would be greatly diminished in comparison to that of the proposed action.

Selection of the modified proposed action alternative (Alternative 2) would eliminate important facility projects including Shallow Oil Zone steamflooding, expanded gas processing, and cogeneration power production that are needed to ensure continued maximum efficient rate production at NPR-1, as required by the Naval Petroleum Reserves Production Act of 1976. As in the case of Alternative 1, implementation of Alternative 2 would not allow DOE to meet its statutory mandate.

Major Environmental Impacts and Mitigation Action Plan. The environmental impacts that could result from implementation of the proposed action were summarized in Table 2.0-2 and analyzed

in detail in Section 4.0 of the final SEIS. DOE believes that most of these impacts can either be eliminated or reduced to acceptable levels. Accordingly, a total of 88 mitigation commitments were made in the final SEIS to ensure impact levels would be minimized to the maximum extent possible. These mitigation commitments form the basis of the NPR-1 Mitigation Action Plan to reduce potential impacts from proposed action activities. The NPR-1 Mitigation Action Plan provides detailed activities, implementing organizations, activity milestone dates and mitigation monitoring protocol. Upon publication of the Record of Decision in the Federal Register, the Mitigation Action Plan will be made available for public review in reading rooms at the offices of the Naval Petroleum Reserves in California and DOE Headquarters in Washington, DC. The plan will also be provided to local libraries.

As noted earlier, EPA and a private water resources consultant provided substantive comments on the final SEIS. EPA encouraged DOE to continue ongoing efforts to identify wetland resources on NPR-1. As detailed in the Mitigation Action Plan, a formal wetland delineation study of potential wetlands on NPR-1 will be conducted in 1994. This study will be coordinated with both the U.S. Army Corps of Engineers and EPA. If jurisdictional wetlands are identified, DOE will comply with the provisions of the Clean Water Act regarding wetland disturbances.

WP-15

As indicated in the final SEIS and associated Mitigation Action Plan, DOE is committed to remediating all inactive sumps and managing active sumps in accordance with Waste Discharge Requirements issued by the State of California's Central Valley Regional Water Quality Control Board. DOE is actively proceeding with plans to continue the remediation of historic produced water sumps. The Mitigation Action Plan also provides details (Mitigation Nos. WG-30 and WR-9) of a site-wide sump closure plan that was approved in 1991 by the Central Valley Regional Water Quality Control Board. EPA will be provided a copy of this closure plan as suggested in their comment. DOE is permitted to sump wastewater at NPR-1 by Waste Discharge Requirements #58-491 and #68-262, which prohibit the release of wastewater into unlined sumps located on alluvial soils if the wastewater exceeds 1,000 parts per million total dissolved solids. Accordingly, wastewater sumps on or near alluvial soils have been lined or taken out of service. DOE will continue to ensure the integrity of the liners at these locations.

WR-3
WR-4

DOE will complete a Groundwater Management Protection Plan for NPR-1 in 1994. The management plan will include, among other components, a site-wide Groundwater Monitoring Plan. On September 28, 1993 DOE briefed the California Department of Water Resources, the California Central Valley Regional Water Quality Control Board and the Kern County Water Agency on the development of these groundwater plans. DOE acknowledged the need to better

WR-3
WR-4

characterize groundwater in the northeast portion of NPR-1 due to its proximity to a subsurface water bank under development by the water agencies. DOE facilitated a discussion of their respective interests regarding the development of NPR-1 groundwater plans. Future data review and exchange activities were discussed, which DOE will honor. Continued interactions with these agencies will be given a high priority by DOE.

The Groundwater Protection Management Plan will also address concerns raised by Mr. Rector regarding the withdrawal of water-flood source water and produced water injection activities on the south flank of NPR-1. DOE regularly monitors the quality of the source well water, including tests for volatile organics such as benzene, toluene, and xylenes as Mr. Rector suggested in his comment. Potential adverse impacts to the NPR-1 aquifer from groundwater withdrawal will continue to be monitored as well.

Other concerns raised by EPA regard issues with the potential for major environmental impacts. Acknowledgement of these concerns is included in the following discussion of the major environmental impacts associated with the proposed action and the principal mitigation measures planned to minimize the impacts.

1. **Potential erosion from construction disturbances to 1,569 acres on and off NPR-1.**

Soil Conservation Service erosion control/site-rehabilitation measures will be implemented in planning, design, and operational activities.

GS-1

2. Slight possibility of subsidence and induced seismicity due to increased withdrawal of source water from the Tulare Formation and oil and gas withdrawal from deep producing formations.

GS-2

NPR-1 facilities will be designed in accordance with the latest edition of the Uniform Building Code and the recommendations of the NPR-1 Geotechnical and Earthquake Engineering Study.

3. Production of drilling wastes associated with a 382-well drilling program, 2,663 remedials, and 1,080 abandonments.

Drilling fluid additives utilized at NPR-1 will be limited to those that are included on the list of approved nonhazardous drilling fluid additives issued by the California Department of Health Service in 1982.

WG-5

4. 100,000-181,000 barrels per day of produced wastewater would require recycling or disposal.

To the extent technically and economically feasible, produced water will be recycled for use as source water for waterflood operations.

5. Nonhazardous solid waste quantities from construction and operations would increase above the current volume of 24,000 cubic yards per year.

NPR-1 will establish and implement a waste minimization program to reduce the volume of all nonhazardous solid wastes.

6. Hazardous waste from construction and operations would increase slightly above the current level of approximately 19,800 pounds per year.

Hazardous waste minimization reviews will be conducted for all proposed facility projects. State of California regulatory requirements, such as the Hazardous Waste Reduction and Management Review Act of 1989 (SB 14) will be followed. In addition, NPR-1 will comply with Executive Order 12856 (Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements) which was signed on August 3, 1993. This order requires Federal agencies to the maximum extent possible to reduce, recycle and

WR-1
11/11/93

WG-2

WG-2
11/11/93

treat toxic chemical waste. As required by the Order, NPR-1 will report in a public manner toxic chemicals entering any waste-stream from the facility, and will improve local emergency planning, response and accident notification procedures.

WG-2
WG-3
WG-4

7. Fugitive particulate emissions from construction activities and seismic survey disturbances on approximately 8,349 acres.

AQ-7

NPR-1 will develop and implement a particulate matter control plan.

EPA also recommended that measures be implemented to ensure compliance with the requirements of EPA's emissions trading policy. It should be noted that all air permitting operations at NPR-1 are closely coordinated with the San Joaquin Valley Unified Air Pollution Control District to ensure compliance with applicable regulations. Accounting of emission reductions is a District staff function. These issues are closely monitored by the California Air Resources Board and Region IX of EPA.

AQ-6

8. Increases in current operational emissions by a maximum of approximately 133.6, 124.2, 367.0, 0.7, 5.8, and 85.8 pounds per hour of reactive organic gas, nitrogen oxide, carbon monoxide, sulfur dioxide, total suspended particulate, and particulate matter with aerodynamic diameters less than 10

microns, respectively, as the result of proposed new sources.

New compressor engines will be equipped with low nitrogen oxide emission precombustion chambers. Steam generators, heaters, and cogenerators also will be equipped with appropriate low nitrogen oxide combustion technology. Anode beds will be watered frequently to reduce reactive organic gas emissions.

EPA also inquired if, in the absence of a State Implementation Plan, whether the impacts of continued and proposed NPR-1 operations would be in conformity with the provisions of the Federal Clean Air Act. NPR-1 will operate either under locally mandated New Source Review regulations if the State Implementation Plan is approved by EPA, or under Federally mandated New Source Review regulations if the plan is not approved. Further, operations regulated under New Source Review would be exempt from the conformity provisions as outlined in the March 1993 draft Rule (55 FR 13866). It should also be pointed out that in 1994, EPA will review the local Air Pollution Control District's proposed Federal operating permit program. Even if EPA approves the operating permit program, EPA would still retain the authority to veto permits that are not issued in accordance with the approved program.

AC-5

9. Oils, chemicals, and produced waters could inadvertently spill and degrade groundwater.

All spills will be cleaned up as they are identified in accordance with the NPR-1 Spill Prevention, Control, and Countermeasure Plan.

WG-6

10. Development of 1,569 acres of wildlife habitat on and off NPR-1 and potential for adverse impacts to wildlife from inadvertent harassment, vehicle mortality and contact with hydrocarbons and/or oil-field chemicals.

Preactivity surveys will be conducted by qualified personnel prior to any construction, maintenance, clean-up, or other ground disturbance in undeveloped areas to minimize the amount of habitat disturbed and to avoid protected species and their habitat to the maximum extent possible. Disturbed habitats will be revegetated as part of an ongoing habitat reclamation program.

10-2

10-3

In 1987, the U.S. Fish and Wildlife Service rendered a non-jeopardy Biological Opinion for the continued operation and development of NPR-1 at the maximum efficient rate of production. On October 9, 1991, consultation for maximum efficient rate production was reinitiated by DOE for the SEIS, and by letter dated May 28, 1993 (received by DOE on June 7, 1993), the U.S. Fish and Wildlife Service issued a draft Biological Opinion for

10-1

this action which also concluded non-jeopardy. This consultation is still in progress, and when it is completed DOE will comply with the requirements contained in the new Biological Opinion. The U.S. Fish and Wildlife Service indicated by letter dated April 12, 1993, that the 1987 Biological Opinion will remain in effect for all activities specifically described therein until the current consultation is complete. DOE will continue to comply with the requirements of the 1987 Biological Opinion until such time as they are superseded by new requirements in subsequent Biological Opinions.

Most impacts associated with the proposed action of the SEIS and the 1993 draft Biological Opinion (including those associated with no action) were addressed in the 1987 Biological Opinion. For those proposed new activities that were not so addressed, DOE will not make any irreversible or irretrievable commitments of resources which would foreclose the formulation or implementation of any reasonable and prudent alternatives needed to avoid violating section 7(a)(2) of the Endangered Species Act until the impacts of these new activities have been subjected to review under section 7 of the Endangered Species Act. EPA recommended that no Record of Decision be issued until a new final Biological Opinion had been issued, and discussed the need to prepare additional National Environmental Policy Act documentation should the final Biological Opinion require modified operations not evaluated in the SEIS. DOE believes that the limitation on

1B-1

1C-1

proceeding with new activities pending receipt of a final Opinion assures compliance with the Endangered Species Act. Furthermore, DOE commits to completing such documentation if required by the new Opinion.

NC-1

TB-1

EPA also questioned what steps DOE will take to prevent ingestion of chemicals by threatened, endangered and other animal species on NPR-1. DOE has in place a comprehensive program to prevent the ingestion of oil field chemicals by wildlife. This program includes, but is not limited to, adherence to the facility Spill Prevention Control and Countermeasure Plan; proper storage, handling and disposal of chemical containers; procuring bulk chemicals whenever possible to eliminate storage in the field; proper management of hazardous wastes in conforming 90-day storage facilities; prompt evacuation of oily fluids from structures; managing current waste disposal sites in accordance with permit requirements; and remediating historical waste disposal sites. These standard management practices all provide protection from ingestion of oil field chemicals by wildlife.

TB-3

To further reduce the potential for adverse impacts to listed species, DOE agrees to implement the following mitigation activities addressed in the May 28, 1993 draft Biological Opinion:

- a. Continue to implement an endangered species program, including the NPR-1 Wildlife Management Plan;

b. Continue to conduct the endangered species worker education/training program;

TB-7

c. Continue to conduct preactivity surveys as appropriate to minimize habitat disturbances and harm or mortality to listed species;

TB-2

d. To the extent feasible, avoid sensitive habitats such as San Joaquin kit fox dens, giant and Tipton kangaroo rat burrows, and burrows potentially utilized by blunt-nosed leopard lizards;

e. Refrain from destroying San Joaquin kit fox dens that cannot be avoided until approval is obtained from the U.S. Fish and Wildlife Service;

f. Continue to implement a habitat reclamation program to reclaim disturbed areas that are no longer needed for oil-field operations;

TB-4

g. Minimize off-road vehicle travel;

h. Prohibit employees from bringing pets onto NPR-1;

i. Clean up oil and chemical spills in accordance with the Spill Prevention Control and Countermeasure Plan.

j. Continue to evaluate sumps and catch basins to identify potential hazards to wildlife and remediate these hazards to the extent feasible;

k. Continue to evaluate and, to the extent feasible, remediate well cellar covers posing hazards to wildlife; and

l. Continue to report to the U.S. Fish and Wildlife Service on an annual basis on the status of the endangered species program.

TR-9

11. Potential disturbance of cultural resources from development of 1,569 acres on and off NPR-1.

NPR-1 will develop and implement a cultural resource management plan for the protection of cultural resources.

CR-1

12. Potential for well blowouts and gas explosions from closed compressor facilities.

DOE will continue to conduct internal safety appraisals of all NPR-1 facilities.

RA-2d
RA-2e

Unavoidable Adverse Impacts. The unavoidable adverse impacts resulting from the proposed action that cannot be fully mitigated are as follows:

1. Some soil erosion would occur, especially in areas of new construction if major storms occur before soil stabilization measures take effect.

2. There is some potential for subsidence as the result of oil, gas, and water withdrawals from underlying geologic structures.

3. Inadvertent releases of oil or other oil field chemicals that are not entirely recovered on a timely basis could, over a period of time, migrate into and degrade groundwater aquifers.

4. Small net increases in the NPR-1 emissions of carbon monoxide and particulate matter could occur, resulting in minor increases in ambient concentrations of these pollutants in western Kern County.

5. There would be unavoidable, long-term adverse impacts to a net of 74 acres of wildlife habitat on and off NPR-1 as a result of permanent construction disturbances. (See Table 2.2-1 on page 2-11 of the final SEIS.)

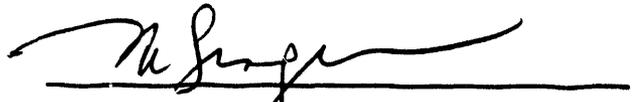
6. The loss of habitat, potential exposure to hydrocarbons or other oil field chemicals and site activities may result in the death, injury and displacement of some plants and animals, including threatened and endangered species.

7. There is a very small potential that produced wastewater disposed of into disposal wells and sumps might degrade off-site groundwaters.

8. Increased consumption of energy and fresh water supplies would occur.

Conclusion. The production of NPR-1 in accordance with the Naval Petroleum Reserves Production Act of 1976 continues to serve a vital role in National defense, U.S. Treasury revenues, and local, regional, and National economics. Until Congress and the President modify the mission of DOE with respect to the Naval Petroleum Reserves, DOE will continue to produce NPR-1 in the most efficient and environmentally responsible manner possible.

Issued at Washington DC, this 25th day of February, 1994.



for Jack S. Siegel
Acting Assistant Secretary
for Fossil Energy

DATE

FILMED

8/12/94

END

