UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 6

) CERCLA Docket No
)
) Administrative Order on Consent for
) Remedial Investigation/Feasibility Study
)
) Proceeding under Sections 104, 122(a),
) 122(d)(3), and 122(h) of the
) Comprehensive Environmental Response
) Compensation and Liability Act, 42
) U.S.C. §§ 9604, 9622(a), 9622(d)(3),
) and 9622(h).

ADMINISTRATIVE ORDER ON CONSENT FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY

I. INTRODUCTION

1. This Administrative Order on Consent ("Order") is entered into voluntarily by the United States Environmental Protection Agency (EPA) and Molycorp, Inc. ("Molycorp"). The Order requires that Molycorp prepare and perform a remedial investigation and feasibility study (RI/FS) for the Molycorp, Inc., Site in Taos County, New Mexico (the "Site"). Molycorp must also reimburse EPA for all past response costs and all response costs incurred in connection with the RI/FS, subject to the reservations of rights in Sections XXV and XXVI.

II. JURISDICTION

- 2. This Order is issued under the authority vested in the President of the United States by Sections 104, 122(a), 122(d)(3), and 122(h) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9604, 9622(a), 9622(d)(3), 9622(h) (CERCLA). This authority was delegated to the Administrator of EPA on January 23, 1987, by Executive Order 12580, 52 Fed. Reg. 2926 (1987); further delegated to Regional Administrators by EPA Delegation No. 14-14-C (September 13, 1987); and redelegated by the Regional Administrator to the Director, Superfund Division, by EPA Delegation No. R6-14-14-C (August 4, 1995).
- 3. Molycorp agrees to undertake all actions required by the terms and conditions of this Order. In any action by EPA or the United States to enforce the terms of this Order, Molycorp consents to and agrees not to contest the authority or jurisdiction of EPA to issue or enforce this Order, and agrees not to contest the validity of this Order or its terms.

III. PARTIES BOUND

- 4. This Order applies to and is binding upon EPA and upon Molycorp, its agents, successors, and assigns. Molycorp is responsible for carrying out all actions required of it by this Order. The signatories to this Order certify that they are authorized to execute this Order and legally bind the parties they represent to this Order. Any change in the ownership or corporate status of Molycorp, the mine facility, or the Site, including any transfer of assets, will not alter Molycorp's responsibilities under this Order.
- 5. Molycorp must provide a copy of this Order to any subsequent owners or successors before ownership rights or stock or assets in a corporate acquisition are transferred. Molycorp must provide a copy of this Order to all contractors, subcontractors, laboratories, and consultants retained to conduct any work performed under this Order, within 14 days after the effective date of this Order or the date of retaining their services, whichever is later. Molycorp must condition all such contracts upon satisfactory compliance with this Order. Notwithstanding the terms of any contract, Molycorp is responsible for compliance with this Order and for ensuring that its subsidiaries, employees, contractors, consultants, subcontractors, agents and attorneys comply with this Order.

IV. STATEMENT OF PURPOSE

- 6. In entering into this Order, the objectives of EPA and Molycorp are: (a) to determine the nature and extent of contamination and any threat to the public health, welfare, or the environment caused by the release or threatened release of hazardous substances, pollutants or contaminants at or from the Site, by conducting a remedial investigation; (b) to determine and evaluate alternatives for remedial action to prevent, mitigate or otherwise respond to or remedy any release or threatened release of hazardous substances, pollutants, or contaminants at or from the Site or facility, by conducting a feasibility study; and (c) to recover response and oversight costs incurred by EPA as specified in this Order.
- 7. EPA and Molycorp are aware that Molycorp's activities at the Site are subject to regulation under several statutory regimes, including the New Mexico Mining Act and the New Mexico Water Quality Act as well as CERCLA. EPA intends, to the extent practicable and consistent with CERCLA and the National Contingency Plan (NCP), 40 C.F.R. Part 300, to work with the New Mexico Environment Department; the Mining and Minerals Division of the New Mexico Energy, Minerals and Natural Resources Department; and the State and Federal Natural Resource Trustees, to coordinate activities in connection with the Site and avoid duplicative efforts.
- 8. EPA and Molycorp acknowledge that Molycorp holds Other Permits, which require Molycorp to conduct certain investigations and studies within specified schedules ("Outside Study"). If Molycorp seeks to use an Outside Study as part of the Work required under this Order, Molycorp must so state its intent in writing to the EPA, specifically identifying the Outside Study. Subject to EPA approval, the Outside Study will then constitute a Deliverable under the Work Plan, and will be

governed by the terms of this AOC, including the procedures applicable to all other Deliverables set forth in Section IX, Paragraphs 36-44. Use of an Outside Study does not affect the need to comply with the requirements of the RI/FS Guidance (see citation in Statement of Work). Accordingly, EPA may require Molycorp to repackage data gathered in an Outside Study into a format appropriate for the RI/FS. EPA and Molycorp further acknowledge that Molycorp may be required to take abatement or remedial action under the terms of its Other Permits. When such abatement or remediation action is required, at Molycorp's written request EPA will review the proposed action and coordinate with the State of New Mexico. Molycorp remains responsible for compliance with all of its permits and with this Order.

- 9. "Other Permits" means ground water discharge permits 1055, 933, and 132 issued by the New Mexico Environmental Department; mining permit TA001RE issued by the Mining and Minerals Division of the New Mexico Energy, Minerals and Natural Resources Department; NPDES Permit No. NM0022306 issued by the EPA; and any other environmental permit that is subsequently issued by the State of New Mexico or the EPA.
- 10. The activities conducted under this Order are subject to approval by EPA and must provide all appropriate necessary information (with the exception of the risk assessments performed by EPA) for the RI/FS and for a record of decision that is consistent with CERCLA and the NCP. The activities conducted under this Order must be conducted in compliance with all applicable EPA guidance documents, policies, and procedures.

V. DEFINITIONS

11. Unless otherwise expressly provided in this Order, terms used in this Order that are defined in CERCLA or in regulations promulgated under it will have the meaning assigned to them in CERCLA or the regulations. Whenever terms listed below are used in this Order, the following definitions apply:

"ARARs" means all applicable local, state, and Federal laws and regulations, and all "applicable requirements" or "relevant and appropriate requirements" as defined at 40 CFR § 300.5 and 42 U.S.C. § 9621(d).

"CERCLA" means the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601 to 9675.

"Contaminant" has the definition at 42 U.S.C. § 9601(33); as used in this Order "contaminant" includes hazardous substances and pollutants. Reference to "contamination" includes media where any hazardous substance, pollutant, or contaminant has come to be located.

"Day" means a calendar day unless expressly stated to be a business or working day. In computing any period of time under this Order, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period runs until the end of the next day not a Saturday, Sunday, or Federal holiday.

"Deliverable" means any action, activity, task, or submission required to be done by Molycorp under this Order. A deliverable is Work.

"EPA" means the United States Environmental Protection Agency and its successor agencies.

"MMD" means the Mining and Minerals Division of the New Mexico Energy, Minerals and Natural Resources Department and its successor agencies.

"Molycorp" means Molycorp, Inc., a Delaware corporation and a wholly-owned subsidiary of Union Oil Company of California.

"National Contingency Plan" or "NCP" means the National Oil and Hazardous Substances Pollution Contingency Plan promulgated under Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, including any amendments.

"NMED" means the New Mexico Environment Department and its successor agencies.

"Order" means this document, including the Statement of Work and all other attachments to this document and other documents incorporated by reference into this document, and any EPA-approved submissions required under the terms of this document. EPA-approved submissions will be incorporated into and become a part of the Order upon final written approval by EPA.

"Paragraph" means a portion of this Order identified by an Arabic numeral followed by a period. References to paragraphs in the Statement of Work (SOW) will be so identified (for example, "SOW Paragraph 15").

"Performance Standards" means those cleanup standards, work standards, standards of control, and other requirements, criteria, or limitations specified in the Order, including the SOW. Because EPA-approved submissions are an enforceable part of the Order, cleanup goals and other substantive requirements, criteria, or limitations specified in EPA-approved submissions are Performance Standards. EPA will use the Performance Standards to determine whether the work required by the Order has been completed. Except where it is inconsistent with this Order, as determined by EPA, the RI/FS Guidance and the other EPA guidance cited in the Order are Performance Standards.

"Requirements of this Order" or a similar term means: payments that Molycorp is to make under this Order; work that Molycorp is to perform under this Order; scheduled deadlines that Molycorp is to meet under this Order, including deadlines in schedules in EPA-approved submissions; and any other obligation of Molycorp under this Order. It is a violation of this Order for Molycorp to fail to perform a requirement of this Order.

"Schedule" means the list of RI/FS activities and deliverables with dates for completion, prepared and submitted as a part of the RI/FS Work Plan in accordance with SOW Paragraph 1.

"Section" means a portion of this Order identified by a Roman numeral and includes one or more paragraphs. References to sections in the SOW will be so identified (for example, "SOW Section V").

"Site" means the Molycorp, Inc. Site. The Site consists of a molybdenum mine and milling facility approximately four miles east of the village of Questa in Taos County, New Mexico, on approximately three square miles of land owned by Molycorp (lat. 36°41' 54" N., long. 105°30' 18" W). In addition, the Site includes a tailings pipeline running along State Highway 38, and the area in the vicinity of the pipeline, and four tailings ponds above the village of Questa (lat. 36°42' 13" N., long. 105°36' 40" W.; and lat. 36°42' 08" N., long. 105°37' 54" W.), as well as all other areas where any hazardous substance, pollutant, or contaminant from mining, milling, and tailings disposal operations has come to be located. The Site includes at least the area surrounded by a broken line and labeled "approximate mine boundary" on the attached map (Attachment B).

"State" means the State of New Mexico, including NMED and MMD.

"Statement of Work" or "SOW" means the Statement of Work for the development of an RI/FS for the Site, as set forth in Attachment A to this Order. The Statement of Work is incorporated into this Order and is an enforceable part of this Order.

"Submission" means any written materials Molycorp is required to produce under this Order, including correspondence, memoranda, notifications, plans, reports, specifications, and schedules. A submission is a Deliverable. Submissions include work plans and the schedules therein. Once a submission is approved in writing by EPA, the submission is incorporated into this Order and becomes an enforceable part of this Order.

"Work" means all activities Molycorp is required to perform under this Order. Work includes Deliverables.

"Work Plan" means a plan, to be developed by Molycorp for EPA review and approval in accordance with the Statement of Work, that includes schedules for and descriptions of Work that Molycorp will undertake under this Order.

VI. EPA's FINDINGS OF FACT

- 12. Respondent Molycorp, Inc., is a Delaware corporation and is a wholly-owned subsidiary of Union Oil Company of California, a California corporation.
- 13. Molycorp is the owner and operator of the Site, which consists of a molybdenum mine and milling facility approximately four miles east of the village of Questa in Taos County, New Mexico. on approximately three square miles of land owned by Molycorp. In addition, the Site includes a tailings pipeline running along State Highway 38, and tailings ponds west of the village of Questa, as well as all other areas where any hazardous substance, pollutant, or contaminant from mining, milling, and tailings disposal operations has come to be located. The mine is surrounded by the Carson National Forest and is approximately two miles from the Latir Peak Wilderness Area. The Red River, which runs past the southern side of the mine and tailings ponds, flows to the west into the Rio Grande River approximately three miles downstream of the tailings ponds. A once-popular multiple use watershed, the Red River continues to be a fishery and is home to a state fish hatchery 3 miles downstream of the Site. In addition, the river provides water for irrigation and livestock watering, and serves as wildlife habitat. In 1983, the Red River and the Rio Grande River in the vicinity of their confluence were designated as a Wild and Scenic River by Congress. Two major (Columbine Creek and Cabresto Creek) and numerous small tributaries enter the Red River between the Molycorp mine and the tailings ponds. Further, numerous wetlands have been documented in the area by the U.S. Fish and Wildlife Service, and several threatened or endangered species, including the Mexican spotted owl, the mountain plover, and the bald eagle, may occur near the Site.
- 14. The Molybdenum Corporation of America (MCA) acquired mining rights to Sulphur Gulch, now part of the Site, in 1920. Small-scale underground mining operations were conducted until 1923, when MCA built a mill at the facility. The underground workings continued to grow, and by 1954 extended over 35 miles at 14 production levels. By this time, all but the lowest three production levels were designed to drain ground water by gravity out a mile-long service portal (now closed) above the elevation of the Red River. The lower three production levels gathered drainage in a sump and this water was pumped to the service portal where it was allowed to drain by gravity to the Red River.
- 15. Underground mining operations were conducted until 1958, and resumed in 1981, continuing through today. In addition, an open pit was developed in 1965. During open pit mining operations, approximately 328 million tons of potentially acid-generating waste rock have been excavated and deposited in large piles surrounding the mine. After the molybdenum is extracted at the mine through milling and concentrating operations, the spent tailings are transported in a slurry inside a series of pipelines to tailings ponds approximately six miles west of the mine. The pipelines run parallel to the Red River along approximately six of the nine miles of pipeline, in the flood plain of the river and

within a few feet of it in places. An estimated 95 million tons of fine-grained tailings have been deposited in the four tailings ponds.

- 16. After solids settled in the tailing's ponds, waste water was discharged through an arroyo to the Red River, approximately one mile south of Pope Lake. This location became the permitted National Pollutant Discharge Elimination System (NPDES) Outfall 001 in September 1993. Before Molycorp constructed an ion exchange plant in 1983, waste water from the tailings ponds was not treated before it was discharged to the Red River.
- 17. On April 29, 1974, Molybdenum Corporation of America (MCA) shortened its name to Molycorp, Inc. On July 29, 1977 Union Oil Company of California acquired all the shares of Molycorp, Inc.
- 18. In 1983 Molycorp ceased open pit mining and began production from a new underground mine at the Site. Overland flow from the mine that is not intercepted or diverted to the underground workings has the potential to discharge to the Red River. Currently, water from the mine is either piped to the tailings ponds, enters the ground water through the underground mine, or discharges to the Red River (especially during storms). Some ground water below the mine is collected in a sump and pumped to the mill for eventual discharge to the tailings pond. There are no bottom liners beneath the mine waste rock piles or the tailings ponds, potentially allowing infiltration of contaminated leachate to the underlying aquifers.
- 19. Waste rock, airborne dust, tailings, runoff, and leachate released from the Molycorp facility may have potentially contained hazardous substances including cadmium, copper, lead, silver, zinc, arsenic, chromium, cobalt, and sulfuric acid. These substances, under certain conditions of dose, duration, or extent of exposure, may produce adverse health and environmental effects, including the following:
 - Arsenic Arsenic can damage many tissues, including the nerves, stomach and intestines, and skin. Low levels of exposure to inorganic arsenic may cause nausea, vomiting, and diarrhea; decreased production of red and white blood cells; abnormal heart rhythm; and blood vessel damage. Ingesting inorganic arsenic increases the risk of skin cancer and tumors of the bladder, kidney, liver, and lung. Arsenic is a known human carcinogen. Breathing inorganic arsenic increases the risk of lung cancer.

<u>Cadmium</u> – Long-term exposure to low levels of cadmium in air, food, or water can lead to a build up of cadmium in the kidneys and possible kidney disease. Other potential long term effects are lung damage and fragile bones. Cadmium is classified as a probable human carcinogen.

<u>Chromium</u> – The most common forms of chromium are chromium(0), chromium(III), and chromium(VI). Chromium(VI) is more toxic than chromium(III). Long-term exposures to high

or moderate levels of chromium(VI) can damage the nose (bleeding, itching, sores) and lungs, and it can increase the risk of lung cancer. Skin contact with liquids or solids containing chromium(VI) may lead to skin ulcers. Chromium(VI) is a known human carcinogen.

<u>Cobalt</u> – Long-term inhalation effects on animals include lung damage and increased red blood cell counts. Long-term ingestion of cobalt by animals has resulted in effects on the heart, liver, kidneys, blood, and testes. Effects on the lungs, including asthma, pneumonia, and wheezing, have been found in workers who breathed high levels of cobalt in the air. The International Agency for Research on Cancer has determined that cobalt is a possible carcinogen to humans.

<u>Copper</u> – Long-term exposure to copper dust can irritate the nose, mouth, and eyes, and cause headaches, dizziness, nausea, and diarrhea. Ingestion of higher than normal levels of copper may cause vomiting and stomach cramps. Very young children are sensitive to copper, and long-term exposure to high levels of copper in food or water may cause liver damage and death. <u>Lead</u> – Lead can affect almost every organ and system in the body. The most sensitive is the central nervous system, particularly in children. Lead also damages kidneys and the immune system. The effects are the same whether it is inhaled or ingested. Exposure to lead is more dangerous for young and unborn children. Harmful effects include premature births, smaller babies, decreased mental ability in the infant, learning difficulties, and reduced growth in young children. These effects are more common after exposure to high levels of lead. In adults, lead may decrease reaction time, cause weakness in fingers, wrists, or ankles, and possibly affect the memory. Lead may cause anemia. It can cause abortion and damage the male reproductive system. Lead is classified as a probable human carcinogen.

<u>Silver</u> – Ingesting or inhaling silver compounds over a long period can cause some areas of the skin and other body tissues to turn gray or blue-gray. Exposure to dust containing relatively high levels of silver compounds such as silver nitrate or silver oxide may cause breathing problems, lung and throat irritation and stomach pain. Skin contact with silver compounds has been found to cause mild allergic reactions, such as rash, swelling, and inflammation, in some people.

<u>Sulfuric acid</u> – Sulfuric acid is corrosive and causes localized effects on the skin, eyes, and the respiratory and gastrointestinal tracts. Sulfuric acid contained in acid mine drainage lowers the pH of ground and surface water, reducing its capacity to support plants and wildlife, and it tends to mobilize metals contained in soil and rock.

Zinc – Ingestion of large amounts of zinc over time can cause anemia, pancreas damage, and lower levels of high density lipoprotein cholesterol. Irritation was also observed on the skin of rabbits, guinea pigs, and mice when exposed to some zinc compounds.

20. Numerous spills from the pipeline have occurred. A 1981 Site Inspection report by EPA referred to "constant" breakages of the tailings pipeline, and in 1996 Molycorp reported to

NMED that 239 leaks in the tailings pipeline had occurred from 1966 through 1991. In 1980-81, Molycorp moved the pipeline away from the river (up to approximately 1/4 mile) where feasible. Other actual or potential releases from the mine have included uncontrolled runoff from the mine and seepage from ground water affected by hazardous substances released by mining operations. Molycorp has constructed containment systems to collect storm water runoff. Both the shallow ground water and surface waters draining the site, like the Red River, have potentially been impacted by acidic, metalsladen waters released by mining operations.

- 21. A 1966 baseline water quality survey of the Red River stated that the chemical quality of the river was exceptional and that the water was suitable for a wide range of beneficial uses, including domestic, industrial, recreational, and trout propagation. U.S. Department of Health, Education, and Welfare, Federal Water Pollution Control Administration, A Water Quality Survey, Red River of the Rio Grande, New Mexico (January 1966). In 1971, EPA conducted a study of the Red River and concluded that the chemical quality and biological conditions of the Red River remained very good, but that occasional breaks in the Molycorp tailings pipelines had resulted in some degradation of river quality and biota. EPA Region 6, Surveillance and Analysis Division, A Water Quality Survey: Red River and Rio Grande, New Mexico (November 1971). The New Mexico Game and Fish Department discovered in the course of routine population studies that fish were conspicuously absent in the middle reach of the Red River where thriving populations once existed. New Mexico Game & Fish Department, Fish Surveys of Red River (1960 and 1988). Specifically, 1960 fish census data indicate approximately 572 fish per mile estimated in the river, whereas the 1988 fish census found no fish in this reach of the river. See NMED, Ground Water Protection and Remediation Bureau, Expanded Site Inspection Report on Molycorp, Inc. Questa Division, Taos County, New Mexico, at 3-4 (October 20, 1995) ("ESI"). One recent study described population levels of fish and benthic invertebrates higher than 1960 baseline conditions. See Chadwick Ecological Consultants, Red River Aquatic Biological Monitoring, 2000. Such an increase in total biota does not, however, establish that the watershed ecosystem is as healthy as in 1960 and previous years.
- 22. Beginning in the late 1970s, EPA and the Federal Bureau of Land Management (BLM) began documenting major impacts to the Red River due to mining and mining-related activities. BLM's 1978-83 water quality study of the Red River and the Rio Grande found a downstream increase in concentrations of various constituents due to mining and mining-related activities. Garn, H.S., *Point and Nonpoint Source Trace Elements in a Wild and Scenic River of Northern New Mexico*, in *Journal of Soil and Water Conservation*, Vol. 40, No. 5 (1985). In 1982, EPA evaluated the Red River for potential impairment from metals loading, and found that concentrations of total arsenic, cadmium, and silver exceeded the EPA recommended criteria. EPA Office of Research and Development, Environmental Monitoring Systems Laboratory, *Site Specific Water Quality Assessment: Red River, New Mexico* (1982).

- 23. In 1992, the New Mexico Water Quality Control Commission submitted a report to the United States Congress documenting elevated levels of metals, including cadmium, copper, lead, silver, and zinc, near the mine. New Mexico Water Quality Control Commission, Water Quality and Water Pollution Control in New Mexico (1990 and 1992). Since 1992, at least four subsequent reports were prepared and submitted by various state and Federal agencies, all further establishing significant metals contamination in the Red River due to mine activities. See ESI; EPA Ground Water Center for Excellence (GWCE), Report on Hydrological Connection Associated with Molycorp Mining Activity, Questa, New Mexico (February 1998) ("EPA Hydrological Report"); Allen, B.D. et al., Geochemistry of the Red River Stream System Before and After Open-Pit Mining, Questa Area, Taos County, New Mexico (Final Report prepared for the New Mexico Office of the Natural Resources Trustee) (October 1999); NMED Surface Water Quality Bureau, Red River Ground Water Investigation (March 1996).
- 24. The NMED ESI conducted from April 1994 to October 1995 (cited in Paragraph 21) involved sampling various media for the presence and distribution of hazardous substances in the surface water, ground water, soil, and air. NMED concluded that both the mine waste rock and tailings ponds contained hazardous substances and that a release of these hazardous substances to ground water and surface water in the vicinity of the mine had occurred.
- 25. The EPA Hydrological Report conducted from 1997 to 1998 found that a probable hydrological connection existed, subject to specific sampling verification, between the tailings ponds and the Red River, as well as between the mine waste rock piles, the naturally occurring erosional scars, and the Red River seep discharges. See EPA Ground Water Center for Excellence (GWCE), Report on Hydrological Connection Associated with Molycorp Mining Activity, Questa, New Mexico (February 1998) ("EPA Hydrological Report").
- 26. The Site has been proposed to the National Priorities List (NPL), 40 C.F.R. Part 300, App. B., in accordance with Section 105 of CERCLA, 42 U.S.C. § 9605. National Priorities List for Uncontrolled Hazardous Waste Sites, Proposed Rule No. 32, 65 Fed. Reg. 30,489 (May 11, 2000). Molycorp submitted comments in opposition to that proposal on July 10, 2000.

VII. CONCLUSIONS OF LAW AND DETERMINATIONS

- 27. The Site is a "facility" as defined in Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).
- 28. Materials at the Site and disposed of at the Site, including the materials described in Paragraph 19, and the constituents thereof, include "hazardous substances" as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).
- 29. The presence of hazardous substances at the Site, and the past, present or potential movement of hazardous substances at or emanating from the Site, constitute actual and/or threatened "releases" as defined in Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

- 30. Molycorp is a "person" as defined in Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).
- 31. Molycorp is a potentially responsible party under Sections 104, 107 and 122 of CERCLA, 42 U.S.C. §§ 9604, 9607 and 9622. Molycorp is the current owner and operator of the Site.
- 32. Molycorp's operations have caused the release of hazardous substances into air, soil, surface water, and ground water at the Site.
- 33. The actions required by this Order are necessary to protect the public health or welfare or the environment, or in the public interest, 42 U.S.C. § 9622(a), are consistent with CERCLA and the NCP, 42 U.S.C. §§ 9604(a)(1), 9622(a), and will expedite effective remedial action and minimize litigation, 42 U.S.C. § 9622(a).

VIII. NOTICE

34. By providing a copy of this Order to the State, EPA is notifying the State that this Order is being issued and that EPA is the lead agency for coordinating, overseeing, and enforcing the response action required by the Order.

IX. WORK TO BE PERFORMED

35. All Work performed under this Order must be under the direction and supervision of qualified personnel. Within 21 days of the effective date of this Order, and before the Work outlined below begins, Molycorp must notify EPA in writing of the names, titles, and qualifications of the supervising personnel of its prime contractors and laboratories to be used in carrying out the Work. Within 7 days of selection, and at least 7 days before commencement of the Work, Molycorp must notify EPA in writing of the names, titles and qualifications of supervisory personnel of any subcontractor. The qualifications of the persons undertaking the Work for Molycorp will be subject to EPA's review and disapproval. This Order is contingent on Molycorp's demonstration to EPA's satisfaction that Molycorp is qualified to perform properly and promptly the actions set forth in this Order. If EPA disapproves in writing of any supervising person's qualifications, Molycorp must notify EPA of the identity and qualifications of the replacement within 21 days of the written notice. If EPA subsequently disapproves of the replacement, EPA may terminate this Order and conduct a complete RI/FS, and seek reimbursement for costs and penalties from Molycorp. During the course of the RI/FS, Molycorp must notify EPA in writing of any changes or additions in the supervising personnel used to carry out the Work, providing their names, titles, and qualifications. EPA has the same right to disapprove changes and additions to supervisory personnel as it has regarding the initial notification.

- 36. Molycorp must conduct activities and submit Deliverables as provided by the Statement of Work (SOW), as implemented by the Work Plan, for the development of the RI/FS. All such Work must be conducted in accordance with CERCLA; the NCP; EPA guidance, including the "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (OSWER Directive # 9355.3-01), guidance documents referenced therein, and guidance documents referenced in the SOW, as may be amended or modified by EPA; the SOW; the standards, specifications and other requirements of work plans and sampling and analysis plan approved by EPA; and schedules approved by EPA.
- 37. Molycorp must make all submissions to EPA in accordance with the schedule contained in the SOW or other schedules approved by EPA.
- 38. All major deliverables (as listed in Paragraph 82) that Molycorp submits to EPA must contain the following statement, signed by a responsible corporate official or by Molycorp's Project Coordinator (as named and approved under Paragraph 70):

To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations

In all other instances in which this Order requires a submission to EPA, the submission must be signed by a responsible corporate official of Molycorp or by the Project Coordinator. Notwithstanding such a delegation of responsibility, Molycorp remains liable for the proper performance of the Work required by this Order. For purposes of this Order, a responsible corporate official is an official who is in charge of a principal business function.

39. After review of any submission, EPA may: (a) approve (in whole or in part) the submission; (b) approve the submission but require modifications, which may include deletions or additions prepared by EPA, which Molycorp must incorporate into the text of the submission as directed by EPA in writing; (c) disapprove (in whole or in part) the submission and direct Molycorp to resubmit the submission after incorporating EPA's modifications, which may include deletions or additions prepared by EPA, which Molycorp must incorporate into the text of the submission exactly as directed by EPA in writing; (d) disapprove the submission and assume responsibility for performing all or any part of the RI/FS; or (e) any combination of the above. Once approved by EPA in writing, and subject to the result of any dispute resolution, a submission or an approved portion of a submission is incorporated into and fully enforceable under this Order, and Molycorp must proceed to take any action required by the submission.

- 40. In the event of approval or approval with modifications by EPA, Molycorp must proceed to take any action required by the submission, as approved or modified by EPA.
- 41. Within 21 days of receipt of a notice of disapproval or approval with modifications, or within the time specified by EPA in its notice of disapproval or approval with modifications, Molycorp must correct the deficiencies and resubmit the submission for approval. Notwithstanding the notice of disapproval or approval with modifications, Molycorp must proceed, at the written direction of EPA, to take any action required by any non-deficient portion of the submission.
- 42. If, on resubmission by Molycorp, EPA again disapproves a previously disapproved submission, EPA may deem the submission untimely and inadequate, and stipulated penalties will begin to accrue as of the date of EPA's notice of disapproval under this paragraph. EPA also retains the right to perform its own studies, complete the RI/FS (or any portion of the RI/FS) under CERCLA and the NCP, and seek reimbursement from Molycorp for its costs, and to seek any other appropriate relief.
- 43. If EPA takes over some of the tasks, but not the preparation of the RI/FS, Molycorp must fully incorporate and integrate information supplied by EPA into the final RI/FS report.
- 44. Failure of EPA to comment on, approve of, or disapprove of Molycorp's submissions within a specified period will not constitute approval by EPA. Any failure by EPA to comment on, approve or disapprove any submission before the scheduled date of commencement of Work, when approval is required by that date under the terms of the SOW, operates to extend the Schedule until EPA so acts. In such an instance, the Schedule will be extended by the number of days between the date approval was required and the date EPA acts.

45. Off-site shipments of hazardous substances.

- (a) Before any off-site shipment of hazardous substances from the Site for disposal related to this Order (including actions performed under Other Permits pursuant to Paragraph 8), Molycorp must provide written notification of the shipment to EPA's designated Remedial Project Manager (RPM). This notification must include evidence that Molycorp has inquired of the appropriate regulatory authority regarding the recipient facility's present compliance with all applicable environmental permits and/or interim status requirements, and the results of such inquiry. This notification requirement does not apply to any such off-site shipments when the total volume of such shipments will not exceed 10 cubic yards.
- (b) For an off-site, out-of-state shipment of hazardous substances from the Site for disposal related to this Order (including actions performed under Other Permits pursuant to Paragraph 8) that exceeds a total volume of 10 cubic yards, the

written notification described in part (a) of this paragraph must also be submitted to the appropriate state environmental official in the receiving state, and must include the following additional information where available: (1) the name and location of the facility to which the hazardous substances are to be shipped; (2) the type and quantity of the hazardous substances to be shipped; (3) the expected schedule for the shipment of the hazardous substances; and (4) the method of transportation. Molycorp must notify the same official in the receiving state of major changes in the shipment plan, such as a decision to ship the hazardous substances to another facility within the same state, or to a facility in another state.

(c) The identity of the receiving facility and state will be determined by Molycorp following the award of the contract for the remedial investigation and feasibility study or removal activities. Molycorp must provide all relevant information on the off-site shipments of hazardous substances from the Site for disposal related to this Order, including information under the categories noted in Paragraph 45(b) above, as soon as practicable after the award of the contract and at least 14 days before the hazardous substances are actually shipped.

X. EPA'S RISK ASSESSMENTS

- 46. EPA will perform the baseline human health risk assessment and the ecological risk assessment. Molycorp must support EPA in the effort by providing various information to EPA through the Technical Coordination Group process as outlined in this Order and SOW. The major components of the risk assessments include contaminant identification, exposure assessment, toxicity assessment, and human health and ecological risk characterization. EPA will provide, after review of Molycorp's site characterization summary, sufficient information concerning the baseline risks such that Molycorp can begin drafting the Feasibility Study Report and the Memorandum on Remedial Action Objectives. This information will normally be in the form of two or more risk assessment memoranda prepared by EPA. One memorandum will generally include a list of the chemicals of concern for human health and ecological effects and the corresponding toxicity values. Another will list the current and potential future exposure scenarios, exposure assumptions, and exposure point concentrations that EPA plans to use in the risk assessments. The public, including Molycorp, may comment on these memoranda.
- 47. After considering any significant comments received, EPA will prepare a risk assessment report based on the data collected during the site characterization. EPA will release this report to the public at the same time it releases the final RI report. Both reports will be put into the administrative record for the site.
- 48. EPA will respond to all significant comments on the memoranda or the risk assessment that are resubmitted during the formal comment period on the Proposed Plan in the Responsiveness Summary of the Record of Decision.

XI. MODIFICATION OF THE WORK PLAN

- 49. If, at any time during the implementation of this Order, Molycorp identifies a need for additional data, Molycorp must submit a written proposal to the RPM within 20 days of identification. The proposal must outline the additional data needs, state the general plan to collect or generate the additional data, identify specific changes or additions to relevant approved plans, and describe necessary schedule modifications. EPA, in consultation with the Project Coordinator, will determine whether the additional data will be collected and whether it will be incorporated into reports and deliverables.
- 50. In the event of conditions posing an immediate threat to human health or welfare or the environment, Molycorp must notify EPA and the State immediately. In the event of unanticipated or changed circumstances at the Site, Molycorp must notify the RPM by telephone within 24 hours of discovery of the unanticipated or changed circumstances. In addition to its authority under the NCP, if EPA determines that the immediate threat or the unanticipated or changed circumstances warrant changes in the work plan, EPA may modify or amend the work plan in writing accordingly, or may direct Molycorp to submit a proposed amended work plan within a specified amount of time. Molycorp must perform the work plan as modified or amended and approved by EPA.
- 51. EPA may determine that, in addition to tasks defined in the initially approved Work Plan, other work may be necessary to accomplish the objectives of the RI/FS as set forth in the Statement of Work. EPA may require that Molycorp perform such work in addition to those required by the initially approved Work Plan, including any approved modifications, if it determines that such actions are necessary for a complete RI/FS. Molycorp must confirm its willingness to perform the additional work in writing to EPA within seven days of receipt of the EPA request, or Molycorp may invoke dispute resolution. Subject to EPA resolution of any dispute, Molycorp must implement the additional tasks that EPA determines are necessary. The additional work must be completed according to the standards, specifications, and schedule set forth or approved by EPA in a written modification to the Work Plan or written Work Plan supplement. EPA reserves the right to conduct the work itself at any point, to seek reimbursement from Molycorp, and/or to seek any other appropriate relief.
- 52. EPA recognizes that Molycorp maintains ongoing operations at the Site. Molycorp must conduct ongoing operation, management, and maintenance activities at the Site in a manner that minimizes interference with activities under this Order to the extent practicable. If, however, Molycorp determines that its ongoing operation, management and maintenance activities at the Site, or modifications of those activities, may interfere with timely implementation of actions required under this Order or plans approved in accordance with this Order, or may substantially impact the quality or type of data collected, Molycorp must notify EPA as soon as practicable, but at least 10 days before implementation of the proposed activities. The notice must generally describe the proposed operation, management or maintenance activities, and the schedule for them; the potential interference with or impacts on implementation of required actions or data collection under this Order, including interference

with schedules; modifications or amendments, as may be necessary, to affected plans or schedules, and, as applicable, ways to minimize these interferences or impacts; and alternatives to the proposed activities. EPA must respond to Molycorp's notice in writing within 15 days of receipt. The RPM and Molycorp's Project Coordinator must attempt to resolve all issues related to the alleged interference or impact, including any proposed modifications to any approved plan or schedule.

53. If during implementation of the field work required under this Order Molycorp identifies a technical improvement in investigative procedures, Molycorp may complete and submit to EPA a Workplan Refinement Notice. The Workplan Refinement Notice must provide a description of the proposed refinement, a rationale for use of such refinement, a discussion of technical merit, any potential or actual impact on project schedule or costs, and impacts on other approved plans. EPA may indicate approval by signing and dating the signed Workplan Refinement Notice submitted to EPA. Molycorp may not conduct any activity incorporating a change proposed by Workplan Refinement Notice until the notice is approved by the RPM.

XII. EMERGENCY RESPONSE AND NOTIFICATION OF RELEASES

54. If activities conducted under this Order cause or threaten to cause a release of hazardous substances, pollutants, or contaminants from the Site that presents or may present an endangerment to the public health, welfare, or the environment, Molycorp must immediately take all appropriate action to prevent, abate or minimize the release and endangerment caused or threatened by the release. Molycorp must take these actions in accordance with all applicable provisions of this Order, including the Health and Safety Plan. In addition to notifications otherwise required by law, Molycorp also must immediately notify the RPM of the incident and related Site conditions. In addition, Molycorp must submit a written report to EPA within seven (7) days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate the release or endangerment caused or threatened by the release and to prevent the recurrence of such an event.

XIII. QUALITY ASSURANCE

- 55. Molycorp must ensure that work performed, samples taken and analyses conducted conform to the requirements of the Statement of Work and guidance documents identified therein. Molycorp must ensure that field personnel used by Molycorp are properly trained in the use of field equipment and in chain of custody procedures.
- 56. To provide quality assurance and maintain quality control regarding all samples collected pursuant to this Order, Molycorp must:
 - (a) Ensure that all contracts with laboratories utilized by Molycorp for analysis of samples taken in accordance with this Order provide for access of EPA personnel and EPA authorized representatives.

- (b) Ensure that all laboratories utilized by Molycorp for analysis of samples taken in accordance with this Order perform analyses according to EPA methods or alternative methods satisfactory to EPA.
- (c) Ensure that all laboratories utilized by Molycorp for analysis of samples taken in accordance with this Order participate in an EPA or EPA-approved QA/QC program or alternative methods as determined by EPA. As part of the QA/QC program and upon request by EPA, such laboratories must perform, at no expense to EPA, analyses of samples provided by EPA to demonstrate the quality of each laboratory's data.

XIV. FINAL RI/FS, PROPOSED PLAN, PUBLIC COMMENT, RECORD OF DECISION, ADMINISTRATIVE RECORD

- 57. EPA retains the responsibility for the approval and release to the public of the RI/FS report. EPA retains responsibility for the preparation and release to the public of the proposed plan and record of decision in accordance with CERCLA and the NCP.
- 58. EPA will provide Molycorp with the proposed RI/FS report, proposed plan and record of decision, and allow Molycorp 14 days to comment. After consideration of Molycorp's comments, EPA may release these documents in final form to the public.
- 59. EPA will compile the administrative record file for selection of the remedial action. Molycorp must submit to EPA documents developed during the course of the RI/FS upon which selection of the response action may be based. Molycorp must provide copies of plans, task memoranda for further action, quality assurance memoranda and audits, raw data, field notes, laboratory analytical reports and other reports. Molycorp must also submit any previous studies conducted under state, local or other federal authorities relating to selection of the response action, and all communications between Molycorp and state, local or other federal authorities concerning selection of the response action. EPA has established a community information repository near the site, which will house one copy of the administrative record and other documents that may be of public interest. The address of the repository is:

Village of Questa Buildings 2500 Old State Road 3 P.O. Box 260 Questa, NM 87556 (phone 505.586.0694)

60. Final acceptance by EPA of Section XXIII (Reimbursement of Past Costs) of this Order is subject to Section 122(i) of CERCLA, 42 U.S.C. § 9622(i), which requires EPA to publish

notice of the proposed settlement in the Federal Register, to provide persons who are not parties to the proposed settlement an opportunity to comment on the cost recovery component of the settlement, and to consider comments filed in determining whether to consent to the proposed settlement. After consideration of any comments submitted during the thirty day public comment period held in accordance with Section 122(i) of CERCLA, EPA may withhold consent to all or part of Section XXIII of this Order if comments received disclose facts or considerations indicating that Section XXIII of this Order is inappropriate, improper or inadequate. Otherwise, Section XXIII will become effective when EPA issues notice to Respondents that EPA is not withdrawing from this section of the Order.

XV. PROGRESS REPORTS AND MEETINGS

- 61. Molycorp must make presentations at, and participate in, meetings at the request of EPA during the initiation, conduct, and completion of the RI/FS. In addition to discussion of the technical aspects of the RI/FS, topics will include anticipated problems or new issues. Meeting dates will be coordinated by the EPA RPM and the Project Coordinator.
- 62. In addition to the deliverables set forth in this Order, Molycorp must provide to EPA monthly progress reports by the 10th day of the following month. At a minimum, with respect to the preceding month, these progress reports must: (1) describe the actions taken to comply with this Order during that month; (2) include all results of sampling and tests and all other data received by Molycorp; (3) provide an index of raw data collected during the month; (4) describe work planned for the next two months with schedules relating such work to the overall project schedule for RI/FS completion; and (5) describe all problems encountered and any anticipated problems, any actual or anticipated delays, and solutions developed and implemented to address any actual or anticipated problems or delays.
- 63. If EPA determines that any monthly report is deficient, the RPM will notify Molycorp within 10 days of receipt of the monthly report. Molycorp must submit a revised monthly report within 10 days of receipt of notice of deficiency.

XVI. SAMPLING, ACCESS, AND DATA AVAILABILITY/ADMISSIBILITY

- 64. EPA will make available to Molycorp validated data generated by EPA, in accordance with this Order, unless the data are exempt from disclosure under any federal or state law or regulation. Existing data that Molycorp seeks to use as part of the Work performed under this Order will be provided to EPA in a GIS compatible format to the extent feasible, with all GIS data sets in a UTM or State Plane coordinate system. EPA recognizes that survey data at the Molycorp Mine Site in Questa has been generated historically in the mine coordinate system and that conversion of this data to a different coordination system is inherently subject to errors.
- 65. Molycorp must orally notify EPA at least 15 days before conducting significant field events as described in the Statement of Work, Work Plan, or sampling and analysis plan. At the oral or written request of EPA or the State, or at the request of EPA's oversight assistant (named in

accordance with Paragraph 74), Molycorp must allow split or duplicate samples to be taken by EPA or the State (and their authorized representatives) of any samples collected by Molycorp in implementing this Order. All split samples of Molycorp will be analyzed by the methods identified in the SOW.

66. At all reasonable times, EPA and its authorized representatives have the authority to enter and freely move about all property at the Site (and off-site areas where work is being performed), and to use a camera, sound recording device or other documentary equipment, for these purposes:

inspecting conditions, activities, the results of activities, records, operating logs, and contracts related to the Site or Molycorp and its contractor as authorized by this Order;

reviewing the progress of Molycorp in carrying out the terms of this Order;

conducting tests as EPA or its authorized representatives deem necessary; and

verifying the data submitted to EPA by Molycorp.

EPA and its representatives entering the Site will comply with applicable regulations promulgated by the Occupational Safety and Health Administration (OSHA) and the Mine Safety and Health Administration (MSHA). Molycorp must allow these persons to inspect and copy all records, files, photographs, documents, sampling and monitoring data, and other writings related to work undertaken in carrying out this Order. Nothing herein may be interpreted as limiting or affecting EPA's right of entry or inspection authority under federal law. All parties with access to the Site under this paragraph must comply with all approved health and safety plans.

- 67. Molycorp may assert a claim of business confidentiality covering part or all of the information submitted to EPA in accordance with the terms of this Order under 40 C.F.R. Section 2.203, provided the claim is allowed by Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7). This claim must be asserted in the manner described by 40 C.F.R. Section 2.203(b) and substantiated at the time the claim is made. Information determined to be confidential by EPA will be given the protection specified in 40 C.F.R. Part 2. If no such claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA or the state without further notice to Molycorp. Molycorp agrees not to assert confidentiality claims with respect to any data related to environmental site conditions, or site features or conditions that could cause a release to the environment; site health and safety; archaeological, historical, or cultural resources; sampling; or monitoring.
- 68. In entering into this Order, Molycorp agrees not to object to any data gathered, generated, or evaluated by EPA, the state or Molycorp in the performance or oversight of the work, if the data has been verified according to the quality assurance/quality control (QA/QC) procedures required by the Order or any EPA-approved work plans or sampling and analysis plans. If Molycorp objects to any other data relating to the RI/FS, Molycorp must submit to EPA a report that identifies and explains its objections, describes all acceptable uses of the data, and identifies any limitations to the

use of the data. The report must be submitted to EPA within 15 days of the monthly progress report containing the data. This paragraph does not limit Molycorp's right to object to the relevance, use, or interpretation of the data.

69. If any part of the Site, or an off-site area that is to be used for access or is within the scope of the RI/FS, is not owned by Molycorp, Molycorp must obtain, or use its best efforts to obtain, site access agreements from the present owner(s) within 30 days of the effective date of this Order or within 30 days of identifying the need for such access, if that need is not identified until after the effective date of this Order. EPA will assist in such efforts with respect to land owned by the United States. The agreements must provide access for EPA, its contractors and oversight officials, the state and its contractors, and Molycorp or its authorized representatives, and must specify that Molycorp is not EPA's representative with respect to liability associated with site activities. Molycorp must provide a copy of the pertinent access agreement to EPA before initiating field activities on any property that is the subject of an access agreement. Molycorp's best efforts include providing reasonable compensation to any off-site property owner. If access agreements are not obtained within 30 days of the effective date, Molycorp must immediately notify EPA of its failure to obtain access. If Molycorp cannot obtain access agreements, EPA may obtain access for Molycorp, perform the field activities with EPA contractors, or terminate the Order. If EPA performs the field activities with EPA contractors and does not terminate the Order, Molycorp must perform all other activities not requiring access to that Site, and must reimburse EPA for all costs incurred in performing the activities. Molycorp additionally must integrate the results of any such activities undertaken by EPA into its reports and deliverables. Further, Molycorp agrees to indemnify the U.S. Government as specified in Section XXVIII of this Order. In accordance with Paragraph 95, Molycorp also must reimburse EPA for all costs and attorney fees incurred by the United States to obtain access for Molycorp.

XVII. DESIGNATION OF PROJECT COORDINATOR AND RPM

- 70. On or before the effective date of this Order, Molycorp must designate a Project Coordinator, who will be responsible for administering all of Molycorp's Work required by the Order. Molycorp must submit the designated Project Coordinator's name, address, telephone number, and qualifications to EPA. To the greatest extent possible, during work on the Site the Project Coordinator must be present at the Site or readily available. EPA retains the right to at any time disapprove of any Project Coordinator selected by Molycorp. If EPA disapproves in writing of a selected Project Coordinator, Molycorp must designate a new Project Coordinator and notify EPA of that person's name, address, telephone number, and qualifications within seven days following EPA's disapproval.
- 71. Molycorp has the right to change its Project Coordinator. At least seven days before the change, EPA must be notified in writing of the designated Project Coordinator's name, address, telephone number, and qualifications.
- 72. EPA has designated Mark Purcell of the EPA Region 6 Superfund Division as its Remedial Project Manager (RPM) for the Site. EPA's RPM has the authority lawfully vested in an

RPM and On-Scene Coordinator (OSC) by the NCP. In addition, the RPM has the authority, consistent with the NCP, to halt any work required by this Order, and to take any necessary response action upon determining that conditions at the site may present an immediate and substantial endangerment to public health or welfare or the environment. The absence of the RPM from the area under study pursuant to this Order is not cause for the stoppage or delay of work. EPA has the right to change its designated RPM. Molycorp must be notified of the change in writing

- 73. To the greatest extent possible, communications between Molycorp and EPA should be directed to the Project Coordinator and RPM in writing. In addition to paper copies, Molycorp shall provide to the EPA a copy of all submissions on 3.5-inch computer disks or CDs, or by electronic transmission. The text shall be in a format compatible with either WordPerfect® 9 or later versions, or Microsoft® Word® 2000 or later versions, and data shall be in a format compatible with either Lotus 1-2-3® release 9.5 for Windows® or later versions, or Microsoft® Excel® 2000 or later versions. Communications include all documents, reports, notices, approvals, and other correspondence submitted under this Order. All communications submitted under this Order must be directed as follows:
 - (a) Documents to be submitted to EPA shall be sent to:

Mark Purcell (6SF-LT) Remedial Project Manager EPA Region 6 1445 Ross Avenue Dallas TX 752027 (Three Copies)

and simultaneously to

Mary Ann Menetrey
New Mexico Environment Department
P.O. Box 26110
Santa Fe NM 87502

Kerrie Neet Mining and Minerals Division New Mexico Energy, Minerals and Natural Resources Department 1220 South St. Francis Santa Fe NM 87505 Glenn Sekavec
Regional Enforcement Officer
U.S. Department of the Interior
Post Office Box 649
Albuquerque, New Mexico 87103

and any other addresses EPA may designate in writing.

(b) Documents to be submitted to Molycorp should be sent to:

Anne Wagner
Environmental Manager
Molycorp, Inc.
P.O. Box 469
3 ½ miles east of Questa on State Road 38
Questa, New Mexico 87556

Molycorp must notify EPA in writing of any change in this address.

74. EPA will arrange for a qualified person to assist in its oversight and review of the conduct of the RI/FS, as required by Section 104(a) of CERCLA, 42 U.S.C. § 9604(a). The oversight assistant may observe work and make inquiries in the absence of EPA, but is not authorized to modify the work plan.

XVIII. OTHER APPLICABLE LAWS

75. Molycorp must comply with all applicable local, state, and federal laws and regulations when performing the RI/FS. No local, state, or federal permit is required for any portion of any action conducted entirely on site, including studies, if the action is selected and carried out in compliance with Section 121 of CERCLA.

XIX. RECORD PRESERVATION

76. All records and documents in EPA's and Molycorp's possession that relate to the conduct of work under this Order must be preserved for the duration of this Order and for at least 10 years after commencement of construction of any remedial action. Molycorp must acquire and retain copies of all documents that relate to the conduct of work under this Order and are in the possession of its employees, agents, accountants, contractors, or attorneys. After this 10-year period, Molycorp must notify EPA at least 90 days before the documents are scheduled to be destroyed. If EPA requests that the documents be saved, Molycorp must, at no cost to EPA, give EPA the documents or copies of the documents.

XX. DISPUTE RESOLUTION

- 77. Any disputes concerning activities or deliverables required under this Order will be resolved as follows:
 - (a) The RPM and the Project Coordinator should first attempt to resolve informally all matters in dispute. Whenever possible, the RPM and the Project Coordinator are to operate by consensus.
 - (b) If the RPM and the Project Coordinator cannot resolve a dispute within 24 hours, or if Molycorp objects to an EPA notice of deficiency or any other decision made by EPA under this Order, Molycorp may submit to EPA's RPM a written notice of objection within 14 days of receipt of EPA's notice or decision. Molycorp's written objection must define the issue in dispute and state the basis of Molycorp's objections. EPA then has 21 days to provide Molycorp with a written response addressing Molycorp's objections. EPA and Molycorp then have an additional 14 days to reach agreement on the issue in dispute. EPA and Molycorp may agree to utilize, at Molycorp's expense, the services of a third-party mediator in their effort to reach agreement.
 - (c) If an agreement is not reached within 14 days after EPA provides Molycorp with a written response to Molycorp's written objections, Molycorp may request a determination by EPA's Chief of the Louisiana/New Mexico Branch of the Superfund Division, EPA Region 6 ("Branch Chief"). The Branch Chief's determination will be in writing. Within two days of receiving the Branch Chief's determination, Molycorp may request a review by the Director of the Superfund Division, EPA Region 6 ("Division Director") of any determination made by the Branch Chief. The Division Director's decision is EPA's final decision. Molycorp must proceed in accordance with EPA's final decision regarding the matter in dispute, regardless of whether Molycorp agrees with the decision. If Molycorp does not agree to perform or does not actually perform the work in accordance with EPA's final decision, EPA reserves the right in its sole discretion to conduct the work itself, to seek reimbursement from Molycorp, to seek enforcement of the decision, to seek stipulated penalties, and to seek any other appropriate relief.
 - (d) EPA will consider all objections, responses, and determinations for inclusion in the administrative record, in accordance with 40 C.F.R. § 300.810.
- 78. While a matter is pending in dispute resolution, Molycorp is not relieved of its obligations to perform and conduct activities and submit deliverables on the schedule set forth in the

work plan. The invocation of dispute resolution does not stay the accrual of stipulated penalties under this Order.

XXI. DELAY IN PERFORMANCE/STIPULATED PENALTIES

- 79. For each day that Molycorp fails to complete a deliverable in a timely manner or fails to produce a deliverable of acceptable quality, or otherwise fails to comply with the requirements of this Consent Order, Molycorp will be liable for stipulated penalties as specified in this Section XXI. Penalties begin to accrue on the day that performance is due or a violation occurs, and extend through the period of correction. Where a revised submission by Molycorp is required, stipulated penalties will continue to accrue until a satisfactory deliverable is produced. EPA will provide written notice for violations that are not based on timeliness; nonetheless, penalties will accrue from the day a violation commences. Payment will be due within 30 days of receipt of a demand letter from EPA.
- 80. Molycorp must pay interest on the unpaid balance, which will begin to accrue at the end of the 30-day period, at the rate established by the Department of Treasury in accordance with 30 U.S.C. Section 3717. Molycorp must further pay a handling charge of 1 percent, to be assessed at the end of each 31 day period, and a 6 percent per annum penalty charge, to be assessed if the penalty is not paid in full within 90 days after it is due.
 - 81. Molycorp must make all payments by forwarding a check to:

EPA Superfund - Molycorp Site (DL)
CERCLIS #NMD002899094
Superfund Accounting
P.O. Box 360582M
Pittsburgh, Pennsylvania 15251
ATTN: COLLECTION OFFICER FOR SUPERFUND

Checks should identify the name of the site, the site identification number, the account number, and the title of this Order. A copy of the check and any transmittal letter must be forwarded to the RPM.

- 82. For the following major deliverables, stipulated penalties will accrue in the amount of \$1000 per day, per violation, for the first 14 days of noncompliance; \$1500 per day, per violation, for the 15th through 30th days of noncompliance; and \$5000 per day, per violation, for all violations lasting beyond 30 days.
 - 1) An original and any revised work plan.
 - 2) An original and any revised sampling and analysis plan.
 - 3) An original and any revised remedial investigation report.

- 4) An original and any revised treatability testing work plan.
- 5) An original and any revised treatability study sampling and analysis plan.
- 6) An original and any revised feasibility study report.
- 83. For the following interim deliverables, stipulated penalties will accrue in the amount of \$500 per day, per violation, for the first 7 days of noncompliance; \$750 per day, per violation, for the 8th through 14th days of noncompliance; \$1200 per day, per violation, for the 15th through 30th days of noncompliance; and \$2000 per day, per violation, for all violations lasting beyond 30 days.
 - 1) Technical memorandum on modeling of site characteristics.
 - 2) Preliminary site characterization summary.
 - 3) Summary of RI data.
 - 4) Identification of candidate technologies memorandum.
 - 5) Treatability testing statement of work.
 - 6) Treatability study evaluation report.
 - 7) Memorandum on Remedial Action Objectives.
 - 8) Memoranda on development and preliminary screening of alternatives, assembled alternatives screening results, and final screening.
 - 9) Report on comparative analysis of alternatives.
- 84. For the monthly progress reports, stipulated penalties will accrue in the amount of \$100 per day, per violation, for the first 7 days of noncompliance; \$500 per day, per violation, for the 8th through 14th days of noncompliance; \$1000 per day, per violation, for the 15th through 30th days of noncompliance; and \$1500 per day, per violation, for all violations lasting beyond 30 days.
- 85. Molycorp may dispute EPA's right to penalties by invoking the dispute resolution procedures under Section XX. Penalties will accrue but need not be paid during the dispute resolution period. If Molycorp does not prevail upon resolution, all penalties are due to EPA within 30 days of resolution of the dispute. If Molycorp prevails upon resolution, the penalties at issue in the dispute resolution need not be paid. EPA in its discretion may forgive all or part of any stipulated penalties under this 0rder.

86. The stipulated penalties provisions do not preclude EPA from pursuing any other remedies or sanctions available to EPA because of Molycorp's failure to comply with this Order, including conduct of all or part of the RI/FS by EPA. Payment of stipulated penalties does not alter Molycorp's obligation to complete performance under this Order.

XXII. FORCE MAJEURE

- 87. Molycorp's activities under this Order must be performed within the time limits set forth in this Order and in the attached SOW, unless performance is delayed by events constituting a force majeure. "Force majeure," for purposes of this Order, is defined as any event arising from causes entirely beyond the control of Molycorp or any entity controlled by Molycorp, including contractors and subcontractors, that delays the timely performance of any obligation under this Order notwithstanding Molycorp's best efforts to avoid the delay. The requirement that Molycorp exercise "best efforts to avoid the delay" includes using best efforts to anticipate any potential force majeure event and best efforts to address the effects of any potential force majeure event (1) as it is occurring and (2) after it occurs, so that the delay is minimized to the greatest extent practicable. Examples of events that are not force majeure events include increased costs or expenses of any work to be performed under this Order or the financial difficulty of Molycorp to perform any work.
- 88. If any event occurs or has occurred that may delay the performance of any obligation under this Order, whether or not caused by a force majeure event, Molycorp must notify by telephone the Remedial Project Manager or, in her absence, the Director of the Superfund Division, EPA Region 6, within 48 hours of when Molycorp knew or should have known of the event that might cause a delay. Within seven days thereafter, Molycorp must provide in writing the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to mitigate the effect of the delay; and a statement as to whether, in the opinion of Molycorp, the event may cause or contribute to an endangerment to public health, welfare or the environment. Molycorp must exercise best efforts to avoid or minimize any delay and any effects of a delay. Failure to comply with the above requirements will preclude Molycorp from asserting any claim of force majeure.
- 89. If EPA agrees that the delay or anticipated delay is attributable to force majeure, the time for performance of the obligations under this Order that are directly affected by the force majeure event will be extended by agreement of the parties, in accordance with Paragraph 117 of this Order, for a period of time not to exceed the actual duration of the delay caused by the force majeure event. An extension of the time for performance of the obligation directly affected by the force majeure event will not, of itself, extend the time for performance of any subsequent obligation.
- 90. If EPA does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, or does not agree with Molycorp on the length of the extension, the issue will be subject to the dispute resolution procedures set forth in section XX of this Order. In any such proceeding, to qualify for a force majeure defense, Molycorp will have the burden of demonstrating by

a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure event, that the duration of the delay was or will be warranted under the circumstances, that Molycorp did exercise or is exercising due diligence by using its best efforts to avoid and mitigate the effects of the delay, and that Molycorp complied with the requirements of Paragraph 88.

91. If Molycorp carries the burden set forth in Paragraph 90, the delay at issue will be deemed not to be a violation of the affected obligation of this Order.

XXIII. REIMBURSEMENT OF PAST COSTS

- 92. Within 15 days of the effective date of this Order, Molycorp must remit a certified or cashier's check to EPA in the amount of \$200,000.00, pursuant to the demand in the RI/FS Special Notice Letter dated November 6, 2000, together with interest that has accrued thereon at the rate of interest specified for the Hazardous Substances Superfund under CERCLA Section 107(a), for past response costs incurred by the United States in connection with the Site from October 1, 1980, to February 28, 2001. Past costs in excess of \$200,000 will be reviewed and paid by Molycorp according to the procedure described in Paragraphs 96 through 99, except that EPA may submit an accounting for these past costs at any time; this past costs accounting will not affect the annual schedule described in Paragraph 96 for submission of the accounting for future costs. Costs incurred after February 28, 2001, will be treated as future response costs.
- 93. The check should be made payable to the "EPA Hazardous Substance Superfund" and should reference the "Molycorp Site, Questa, New Mexico," the EPA Region and Site/Spill ID Number "06 DL," and "EPA Docket Number _____," and must be sent by overnight mail to:

EPA Superfund - Molycorp Site (DL)
CERCLIS #NMD002899094
Superfund Accounting
P.O. Box 360582M
Pittsburgh, Pennsylvania 15251
ATTN: COLLECTION OFFICER FOR SUPERFUND

94. Copies of the check should be sent simultaneously to the RPM and to:

Chief, Superfund Cost Recovery Section (6SF-AC) U.S. Environmental Protection Agency, Region 6 1445 Ross Avenue Dallas, Texas 75202-2733

All amounts paid by Molycorp under this section will be deposited in the Molycorp Special Account within the EPA Hazardous Substance Superfund described in Section XXIV.

XXIV. SPECIAL ACCOUNT FOR RESPONSE AND OVERSIGHT COSTS

- 95. In accordance with Section 122(b)(3) of CERCLA, 42 U.S.C.§ 9622(b)(3), Molycorp agrees to provide funds to EPA for the payment of response costs. EPA will establish the Molycorp Special Account within the EPA Hazardous Substance Superfund (the "Molycorp Special Account") to retain those funds, which EPA will use for the payment of response costs incurred by the United States or the State with respect to this Order. Response costs include all costs incurred by the United States or the State in overseeing Molycorp's implementation of the requirements of this Order and activities performed by the government as part of the RI/FS and community relations, including: time and travel costs of EPA and State personnel and associated indirect costs, contractor costs, attorney costs, cooperative agreement costs, technical assistance grant costs, compliance monitoring, collection and analysis of split samples, inspection of RI/FS activities, Site visits, discussions regarding disputes that arise under this Order, review and approval or disapproval of reports, costs of obtaining access to property as may be necessary to carry out activities required under this Order, costs of performing risk assessment, costs of redoing any of Molycorp's tasks, and all other direct and indirect costs, and interest.
- 96. Following the issuance of this Consent Order, EPA will submit to Molycorp on an annual basis an accounting of all response costs, including oversight costs, incurred by the U.S. Government with respect to this RI/FS. Response costs may include all types of costs identified in the preceding paragraph. Any summaries, including EPA's certified Agency Financial Management Systems summary data ("SCORPIOS Reports"), or such other summary as certified by EPA, shall serve as basis for payment demands. Molycorp will have 30 days to request detailed backup information to support all or part(s) of the certified financial summaries. This detail information may include, but is not limited to, contractor invoices, signed EPA employee timesheets, travel expense authorizations and reports, and other reimbursement reports. Molycorp will make payment for response costs within 30 days of receipt of this backup information as specified in Paragraphs 97 through 99.
- 97. Molycorp must, within 30 days of receipt of each accounting, remit a certified or cashier's check, or an Electronic Funds Transfer (EFT) in accordance with EFT instructions provided by EPA, for the amount of those costs. Interest will accrue from the later of: the date payment of a specified amount is demanded in writing; or the date of the expenditure. The interest rate is the rate of interest on investments for the Hazardous Substances Superfund in section 107(a) of CERCLA.
- 98. Checks should be made payable to the Hazardous Substances Superfund and should include the name of the site, the site identification number, the account number and the title of this Order. Checks should be forwarded to:

EPA Superfund - Molycorp Site (DL) CERCLIS #NMD002899094 Superfund Accounting P.O. Box 360582M Pittsburgh, Pennsylvania 15251

ATTN: COLLECTION OFFICER FOR SUPERFUND

The check should be made payable to the "EPA Hazardous Substance Superfund" and should reference the "Molycorp Site, Questa, New Mexico," the EPA Region and Site/Spill ID Number "06 DL," and "EPA Docket Number _____." Molycorp must submit notice of payment including a copy of the EFT transmittal documentation, cashier's check, or certified check to the RPM and to:

Chief, Superfund Cost Recovery Section (6SF-AC) U.S. Environmental Protection Agency, Region 6 1445 Ross Avenue Dallas, Texas 75202-2733

99. Molycorp agrees to limit any disputes concerning costs to accounting errors and the inclusion of costs outside the scope of this Consent Order. Molycorp must identify any contested costs and the basis of its objection. All undisputed costs must be remitted by Molycorp in accordance with the schedule set forth above. Disputed costs must be paid by Molycorp into an escrow account while the dispute is pending. Molycorp bears the burden of establishing an EPA accounting error or the inclusion of costs outside the scope of this Consent Order.

XXV. RESERVATIONS OF RIGHTS AND REIMBURSEMENT OF OTHER COSTS

- 100. EPA reserves the right to perform its own studies; to terminate, take over, or undertake activities required under this Consent Order in the event of deficient submissions or other nonperformance; to seek reimbursement for the costs of those actions; and to seek any other appropriate relief. If EPA performs its own studies or terminates, takes over, or undertakes activities required under this Consent Order, those studies and activities will be conducted under CERCLA and will not be inconsistent with the NCP. EPA will consult with Molycorp's Project Coordinator in advance regarding such studies and activities.
- 101. EPA reserves the right to bring an action against Molycorp under Section 107 of CERCLA for recovery of all response costs, including oversight costs, incurred by the United States at the site that are not reimbursed by Molycorp, any costs incurred in the event EPA performs the RI/FS or any part of it, and any future costs incurred by the United States in connection with response activities conducted under CERCLA at this Site.
- 102. EPA reserves the right to bring an action against Molycorp to enforce the past costs and response and oversight cost reimbursement requirements of this Order, to collect stipulated

penalties assessed pursuant to section XXI of this Order, and to seek penalties pursuant to Section 109 of CERCLA, 42 U.S.C. § 9609.

- 103. Except as expressly provided in this Order, each party to this Order reserves all rights and defenses it may have. Nothing in this Order affects EPA's removal authority or EPA's response or enforcement authorities, including the right to seek injunctive relief, stipulated penalties, statutory penalties, and/or punitive damages.
- 104. After satisfying the requirements of this Order, Molycorp will have resolved its liability to EPA for the work performed by Molycorp pursuant to this Order. The activities conducted pursuant to this Order, if approved by EPA, will be considered consistent with the NCP. Further, Molycorp is entitled to protection from contribution actions or claims as provided by Section 113(f)(2) of CERCLA for matters addressed in this Order. The "matters addressed in this Order" are the work performed by Molycorp under the requirements of the Order and the costs paid by Molycorp pursuant to this Order. Molycorp is not released from liability, if any, for any costs not paid by Molycorp pursuant to this order, or for response actions beyond the scope of this Order regarding removals, other operable units, remedial design/remedial action of this operable unit, or activities arising pursuant to Section 121(c) of CERCLA, 42 U.S.C. § 9621(c).

XXVI. DISCLAIMER

- 105. By signing this Order and taking actions under this Order, Molycorp does not admit, adopt, or concede EPA's Findings of Fact or Conclusions of Law, nor does it acknowledge that the release or threatened release of hazardous substances at or from the Site constitutes an imminent or substantial endangerment to the public health or welfare or the environment. Molycorp reserves the right to contest the Findings of Fact and Conclusions of Law in any proceeding regarding the Site other than an action brought by the United States to enforce this Order. Further, the participation of Molycorp in this Order may not be considered an admission of liability and is not admissible in evidence against Molycorp in any judicial or administrative proceeding, other than a proceeding brought by the United States to enforce this Order or a judgment relating to it. Molycorp agrees not to contest the validity or terms of this Order, or the procedures underlying or relating to it, in any action brought by the United States to enforce its terms. Molycorp retains its rights to assert claims against other potentially responsible parties at the Site under Section 113 of CERCLA, 40 U.S.C. § 9613.
- 106. Nothing in this Order is intended by the Parties to be used against Molycorp as a collateral estoppel in any proceeding other than one by the United States to enforce this Order (including any collection proceeding pursuant to Section XXI (Delay in Performance/Stipulated Penalties)). Molycorp represents that it has agreed to this Order to provide assistance to EPA and to avoid unnecessary conflict or litigation.

XXVII. OTHER CLAIMS

- 107. In entering into this Order, Molycorp waives any right to seek reimbursement under Section 106(b) of CERCLA, 42 U.S.C. § 9606(b). Molycorp also waives any right to present a claim under Section 111 or 112 of CERCLA. This Order does not constitute any decision on preauthorization of funds under Section 111(a)(2) of CERCLA. Molycorp further waives all other statutory and common law claims against EPA, including contribution and counterclaims, relating to or arising out of conduct of the RI/FS.
- 108. Nothing in this Order constitutes or may be construed as a release from any claim, cause of action or demand in law or equity against any person, firm, partnership, agency, subsidiary or corporation not a signatory to this Order for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous substances, pollutants, or contaminants found at, taken to, or taken or released from the Site. Nothing in this Order may be construed to create any rights in, or grant any cause of action to, any person not a party to this Order.
- 109. Nothing in this Order is a finding that Molycorp is the sole responsible party under CERCLA for the Site. EPA and Molycorp expressly reserve all rights (including any right to contribution, including any contribution claims that may exist against the United States and its agents and instrumentalities, excluding EPA), defenses, claims, demands, and causes of action that each may have with respect to any matter, transaction, or occurrence relating in any way to the Site against any person not a party to this Order.
 - 110. Molycorp must bear its own costs and attorneys fees.

XXVIII. FINANCIAL ASSURANCE, INSURANCE, AND INDEMNIFICATION

- assurance instrument in the amount of \$2,000,000. If EPA approves the proposal, within 30 days after that approval Molycorp must execute the financial assurance instrument. If EPA disapproves the proposal, within 15 days Molycorp must submit an alternative proposed financial assurance instrument. Beginning on January 1, 2003, and each calendar year thereafter, Molycorp must adjust, if appropriate, the financial assurance sufficiently to perform the work and other activities required under this Order. The amount of the adjustment is subject to EPA approval.
- 112. If at any time the net worth of the financial instrument or trust account is insufficient to perform the work and other obligations under the Order for the upcoming quarter, Molycorp must provide written notice to EPA within seven days after the net worth of the financial instrument or trust

account becomes insufficient. The written notice must describe why the financial instrument or trust account is funded insufficiently and explain what actions have been or will be taken to fund the financial instrument or trust account adequately.

- 113. (a) Before commencement of any work under this Order, Molycorp must secure, and must maintain in force for the duration of this Order, and for two years after the completion of all activities required by this Order, Commercial General Liability (CGL) and automobile insurance, with limits of \$1,000,000, combined single limit, naming as additional insured the United States EPA. The CGL insurance must include Contractual Liability Insurance in the amount of \$1,000,000 per occurrence, and Umbrella Liability Insurance in the amount of \$2,000,000 per occurrence.
 - (b) Molycorp must also secure, and maintain in force for the duration of this Order and for two years after the completion of all activities required by this Order, the following:
 - i. Professional Errors and Omissions Insurance in the amount of \$1,000,000.00 per claim/aggregate.
 - ii. Pollution Liability Insurance in the amount of \$1,000,000.00 per occurrence.
 - (c) For the duration of this Order, Molycorp must satisfy, and must ensure that its contractors and subcontractors satisfy, all applicable laws and regulations regarding the provision of employer's liability insurance and workmen's compensation insurance for all persons performing work on behalf of Molycorp in furtherance of this Order.
 - (d) If Molycorp demonstrates by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering the same risks but in a lesser amount, then with respect to that contractor or subcontractor Molycorp need provide only that portion of the insurance described above that is not maintained by the contractor or subcontractor.
 - (e) Before commencement of any work under this Order, and annually thereafter on the anniversary of the effective date of this Order, Molycorp must provide to EPA proof of such insurance and a copy of each insurance policy.
- 114. At least seven days before commencing any work under this Order, Molycorp must certify to EPA that the required insurance has been obtained by that contractor.

115. Molycorp agrees to indemnify and hold the United States Government, its agencies, departments, agents, and employees harmless from any and all claims or causes of action arising from or on account of negligent or wrongful acts or omissions of Molycorp, its employees, agents, servants, receivers, successors, or assignees, or any persons, including firms, corporations, subsidiaries and contractors, in carrying out activities under this Order. The United States Government or any agency or authorized representative thereof may not be held as a party to any contract entered into by Molycorp in carrying out activities under this Order.

XXIX. EFFECTIVE DATE AND SUBSEQUENT MODIFICATION

- 116. The effective date of this Order will be the date it is signed by EPA and Molycorp.
- 117. This Order may be amended by mutual agreement of EPA and Molycorp. Amendments must be in writing and will be effective when signed by EPA. The RPM does not have the authority to sign amendments to the Order.
- 118. No informal advice, guidance, suggestions, or comments by EPA regarding reports, plans, specifications, schedules, and any other writing submitted by Molycorp may be construed as relieving Molycorp of its obligation to obtain such formal approval as may be required by this Order. Any deliverables, plans, technical memoranda, reports (other than progress reports), specifications, schedules and attachments required by this Order are automatically incorporated into this Order upon approval by EPA.

XXX. TERMINATION AND SATISFACTION

- 119. This Order will terminate when Molycorp demonstrates in writing and certifies to the satisfaction of EPA that all activities required under this Order, including all activities required under the Statement of Work, any additional work, payment of past costs, response and oversight costs, and any stipulated penalties demanded by EPA, have been performed, and EPA has approved the certification; or when EPA terminates the Order under Paragraph 35, 69, or 100.
- 120. The certification described in the preceding paragraph must be signed by a responsible official representing Molycorp. The representative must make the following attestation: "I certify that the information contained in or accompanying this certification is true, accurate, and complete." For purposes of this Order, a responsible official is a corporate official who is in charge of a principal business function.

Sections XIX (Record Preservation), XXIII (Reimbursement of Past Costs), and XXIV (Special Account for Response and Oversight Costs) of this Order.

BY: ______ DATE: ______

Molycorp Inc.

Print Name and Title

BY: ______ DATE: ______

Director, Superfund Division
U.S. Environmental Protection Agency
Region 6

activities required under this Order have been performed, including any additional work, payment of Response Costs including oversight costs, and any stipulated penalties demanded by EPA. Termination of this Order in accordance with this section will not terminate Molycorp's obligation to comply with

EPA will approve the certification and terminate this Order when it is satisfied that all

Attachment A Statement of Work

Attachment B Map